Assessment of blood pressure measurement technique by objective structured practical examination in the 1st year MBBS students

Lata Balraj Buktar, Sharad Baban Mankar, Narhari Prabhakar Pophali
Department of Physiology, Shri Vasantrao Naik Government, Medical College and Hospital, Yavatmal, Maharashtra, India
Correspondence to: Lata Balraj Buktar, E-mail: latabuktar@gmail.com
Received: July 16, 2021; Accepted: August 13, 2021

ABSTRACT

Background: This topic has been chosen for educational research project, because as per newly introduced competency-based medical education, we have to introduce the new assessment method for practical examination that is objective structured practical examination (OSPE) in our institution. Hence, we will introduce it and we will assess the feasibility of OSPE. Aims and Objectives: This study aims to know the feasibility of OSPE for blood pressure measurement as an assessment tool in physiology and to obtain students and teachers feedback on OSPE to know its strengths and weaknesses. Materials and Methods: This is an observational study conducted in the month of February 2020 in the Department of Physiology at Shri Vasantrao Naik Government Medical College, Yavatmal. We assessed the 1st year medical students by OSPE for blood pressure measurement by palpatory and auscultatory method. After the OSPE, the perception of students and teachers regarding OSPE was taken in percentage form on 5-point Likert’s scale. Results: One hundred and sixty-one 1st year medical students participated in the study as the participation was voluntary. We observed the performance of the students for blood pressure measurement by OSPE for palpatory and auscultatory method and feedback for the same was taken from them on 5-point Likert’s scale. The majority of the students and faculty (90–95%) found that OSPE is a better method for practical assessment as compared to traditional practical methods. Conclusion: We conclude that OSPE for blood pressure measurement is a very useful method of assessment of practical skills in undergraduate training, as it gives feedback to the students and to the teachers and provides integration in teaching and evaluation.

KEYWORDS: Objective Structured Practical Examination; Competency-based; Psychomotor; Affective; Communication

INTRODUCTION

Medical Council of India (now National Medical Council of India) aims at a competent Indian Medical Graduate since 2015, but finally in 2019, MCI has drastically revised the traditional curriculum and introduced the competency-based medical curriculum. In competency-based medical curriculum, the undergraduate medical curriculum is designed with a goal to create an Indian Medical Graduate possessing the requisite knowledge, skills, attitudes, values, and responsiveness so that he or she may function appropriately and effectively.[1]

The current competency-based medical curriculum focuses on competence and assessment of these acquired competencies and outcomes. It gives emphasis to skill development right from phases one. The competencies “Shows How” (SH) or “Perform” (P) are listed in relation to the skills to be acquired by the learner. The traditional method of practical assessment has several problems, especially in terms of its outcome. In such examinations, marks awarded reflect only the general performance of the students without assessing the individual
competencies. Objective structured practical examination (OSPE) assesses practical competencies in an objective and structured manner with direct observation of students performance during planned clinical practical examination. OSPE is a method where students are observed on various steps with the help of a checklist.\[3,4\]

The checklist is a list of a statement describing the actions expected by the candidates during OSPE. It covers a broad area of domain such as knowledge, psychomotor, and communication skills as follows:

a. Intellectual or cognitive skills are defined as abilities such as application, analysis, and synthesis as building on basic knowledge and are related to underlying component of knowledge.

b. Psychomotor or procedural skills require manual dexterity and include laboratory and clinical skill.

c. Communication skills are defined as the ability to communicate with others in a given situation.

In OSPE, the marking is objective and due to this, there is increased validity and reliability. There is integration of teaching and evaluation. There is no monotony and the variety in it maintains student’s interest. There is provision of feedback to students and teachers. In OSPE, there is uniformity which provides the same standards to all the students.\[3,4\]

The deficiencies observed in traditional practical examinations are well known. In these examinations, the objectivity and the validity of practical examination are always a matter of concern. Feedback which is an essential component of the practical assessment is totally missing in traditional practical examination. Students are assessed on overall general performance without assessing them on their competence.\[5\]

Hence, a more valid and more objective method of practical examination are the need of the hour if we want to assess the individual competencies of the students. The OSPE has been one such method introduced by the Medical Council of India in the 2019 MBBS curriculum. This method is derived from objective structured clinical examination by Harden and Glasson.\[6\]

MATERIALS AND METHODS

The study was conducted in the Department of Physiology at Shri Vasantrao Naik Government Medical College (SVNGMC), Yavatmal. Ethics approval was obtained from the Institutional Ethical Committee SVNGMC, Yavatmal, vide ethical clearance certificate no. SVNGMC/IEC/LTR/06/23/01/20. A total number of two hundred 1st-year MBBS students were enrolled, out of which 161 students were participated in the study and six teachers were involved in assessment for blood pressure measurement by OSPE.

During clinical practical demonstrations of blood pressure measurement by auscultatory and palpatory method, the students were informed about the OSPE, as they were being exposed to OSPE for the 1st time. At the same time, they were explained regarding the traditional practical examination of blood pressure measurement. A checklist of 14 points for palpatory and auscultatory methods was shared with them and how blood pressure measurement was done by OSPE with the help of checklist achieving competency which was demonstrated to them. In second term examinations, we have planned to introduce OSPE as a tool of assessment for blood pressure measurement. There was a gap of 2 months between the practical demonstration of blood pressure measurement and the second term examination.

A structured checklist was prepared by the faculty of the physiology department and was validated by the senior faculty. A feedback questionnaire was designed for the students and the teachers about the contents of OSPE, their overall experience about the OSPE, its feasibility, and objectivity.

In the second term examination for blood pressure measurement, we have prepared clinical question slips based on 14-point checklist for the palpatory and auscultatory method. We have assessed the students in six batches, one batch having 25 students and six faculty of physiology were involved in the examination. Students were called according to their roll number. One by one they picked up one clinical question slip and accordingly they were assessed for blood pressure measurement. Eighty-one students went for palpatory and 80 went for the auscultatory method of blood pressure measurement. According to checklist for satisfactory performance, one mark and, for unsatisfactory performance, zero were given as follows.

RESULTS

A total of 161 students have participated in the study as the participation was voluntary.

Performance of the Students for Palpatory [Table 1] and Auscultatory [Table 2] Method of Blood Pressure Measurement by (OSPE)

We observed that students performed better on the following points of OSPE for blood pressure measurement.

Stands on the right side of the subject, makes subject comfortable in the sitting position, explains the procedure in the local language, exposes the arm properly, ties the cuff properly, palpates the radial artery, raises the mercury column of sphygmomanometer up to 30 mmHg after the disappearance of the radial pulse, and slows release of the valve 2–4 mm/s completely deflate the cuff after reading.

Students were weak and improvement is needed on the following points of OSPE for blood pressure measurement.
Check the mercury column of sphygmomanometer at zero levels, keep the sphygmomanometer at heart level, complete deflation of the cuff, and wait for 1–2 min when unsure about the reading, expression of blood pressure in even number with the unit, covers the exposed area properly, and informs the subject regarding completion of procedure and thanks subject. It is observed that students were lacking in attitude values and proper communication with subjects.

Feedback from the Students for Blood Pressure Measurement for (OSPE) [Table 3]

Majority of the students 90–95% found OSPE as a better method of assessment as compared to traditional practical methods, 94% found OSPE prepares them better for the task,
Table 3: Analysis of feedback questionnaire by students

<table>
<thead>
<tr>
<th>Feedback questionnaire</th>
<th>SD %</th>
<th>D %</th>
<th>CS %</th>
<th>A %</th>
<th>SA %</th>
<th>A&amp;S %</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSPE is a better method of assessment for blood pressure measurement as compared to traditional practical methods.</td>
<td>0</td>
<td>0</td>
<td>4.37</td>
<td>45.96</td>
<td>49.68</td>
<td>95.64</td>
</tr>
<tr>
<td>OSPE prepares the students thoroughly for the task.</td>
<td>0</td>
<td>0</td>
<td>6.21</td>
<td>54.03</td>
<td>39.75</td>
<td>93.78</td>
</tr>
<tr>
<td>OSPE more reliable and better stimulus for learning than the traditional examination.</td>
<td>0</td>
<td>0</td>
<td>8.69</td>
<td>47.20</td>
<td>44.09</td>
<td>91.29</td>
</tr>
<tr>
<td>OSPE covers important and relevant points of learning objectives</td>
<td>3.10</td>
<td>3.10</td>
<td>9.31</td>
<td>57.14</td>
<td>27.32</td>
<td>84.46</td>
</tr>
<tr>
<td>OSPE makes the students aware of areas of weaknesses.</td>
<td>0</td>
<td>0</td>
<td>9.31</td>
<td>53.41</td>
<td>37.26</td>
<td>90.67</td>
</tr>
<tr>
<td>OSPE minimizes the luck factor in the examination.</td>
<td>0</td>
<td>0</td>
<td>11.18</td>
<td>49.06</td>
<td>39.75</td>
<td>88.81</td>
</tr>
<tr>
<td>OSPE decreases the chances of failing compared to conventional examination for the first MBBS students.</td>
<td>4.96</td>
<td>6.83</td>
<td>12.42</td>
<td>44.72</td>
<td>29.81</td>
<td>74.53</td>
</tr>
<tr>
<td>OSPE less stressful as compared to the traditional examination.</td>
<td>7.45</td>
<td>6.83</td>
<td>19.87</td>
<td>44.72</td>
<td>21.11</td>
<td>65.83</td>
</tr>
<tr>
<td>The use of checklist in OSPE makes the examination fair and unbiased.</td>
<td>5.59</td>
<td>6.21</td>
<td>6.83</td>
<td>41.61</td>
<td>39.75</td>
<td>81.36</td>
</tr>
<tr>
<td>OSPE helps in emphasizing all the steps in the measurement of blood pressure.</td>
<td>0</td>
<td>0</td>
<td>50.31</td>
<td>55.27</td>
<td>39.75</td>
<td>95.02</td>
</tr>
</tbody>
</table>

SD: Strongly disagree, D: Disagree, CS: Cannot say, A: Agree, SA: Strongly agree

Table 4: Analysis of feedback questionnaires by teachers

<table>
<thead>
<tr>
<th>Feedback questionnaire</th>
<th>SD %</th>
<th>D %</th>
<th>CS %</th>
<th>A %</th>
<th>SA %</th>
<th>A&amp;S %</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSPE is a better method of assessment for blood pressure measurement as compared to traditional practical methods.</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE prepares the students thoroughly for the task.</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE more reliable and better stimulus for learning than the traditional examination.</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE covers important and relevant points of learning objectives</td>
<td>0</td>
<td>0</td>
<td>70</td>
<td>30</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE makes the students aware of areas of weaknesses.</td>
<td>0</td>
<td>0</td>
<td>50</td>
<td>50</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE minimizes luck factor in examination.</td>
<td>0</td>
<td>0</td>
<td>40</td>
<td>60</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE decreases the chances of failing compared to conventional examination for the first MBBS students.</td>
<td>0</td>
<td>20</td>
<td>20</td>
<td>40</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>OSPE less stressful as compared to the traditional examination.</td>
<td>0</td>
<td>40</td>
<td>10</td>
<td>30</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>The use of checklist in OSPE makes the examination fair and unbiased.</td>
<td>0</td>
<td>0</td>
<td>100</td>
<td>0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>OSPE helps in emphasizing all the steps in the measurement of blood pressure.</td>
<td>0</td>
<td>0</td>
<td>60</td>
<td>40</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

SD: Strongly disagree, D: Disagree, CS: Cannot say, A: Agree, SA: Strongly agree

91% found OSPE more reliable and better stimulus for learning as compared to traditional examinations, 89% said that it removes luck factor part from the examination, 66% found that it was less stressful, 81% agreed on use of the checklist in OSPE makes practical fair, and unbiased 74%. OSPE decreases the chances of failing compared to conventional examination. About 84% found OSPE covers important and relevant points of learning objectives. About 91% agreed on use OSPE makes the students aware of areas of weaknesses. About 95% found that OSPE helps in emphasizing all the steps in the measurement of blood pressure.

Feedback from the Faculty for Blood Pressure (OSPE) [Table 4]

The faculty was satisfied with the feedback part associated with OSPE for blood pressure measurement but preparing a checklist was time consuming. Hence, the number of students makes the examination exhaustive as lack of staff for the number of students.

DISCUSSION

SVNGMC, Yavatmal, is affiliated to Maharashtra University of Health Sciences, Nashik, till last year, all assessment examinations were conducted in the traditional pattern. This is the 1st time we had introduced a competency-based medical curriculum in our institution, so it was mandatory to take practical examinations by OSPE. Before implementation of OSPE, an attempt had been made in department of physiology, Yavatmal, to test the feasibility of OSPE for blood pressure measurement as an assessment tool for clinical practical examination. In our present study, we have received highly encouraging results. We have conducted OSPE for blood pressure measurement with the help of 14-point checklist for palpatory and auscultatory method. We took the help of six faculty members from the physiology department; due to constraints of limited faculty, we conducted the OSPE examination by dividing the 161 students into six batches on 6 consecutive days. Some students found OSPE a bit stressful
experience, may be due to the checklist with the examiners, but this anxiety can be eliminated if the students were repeatedly exposed to OSPE. We observed that almost all students were very much in favor of OSPE as they participated voluntarily in the study. It also enhanced the interaction between teachers and students. However, some students from Rajasthan found it stressful as the traditional exam.

Similar findings were reported by Vani et al. and Mohan et al.[5,7] Rahman et al. and Menezes et al. also observed that OSPE is a better tool as compare to the traditional practical method for assessing the practical skills of MBBS students in physiology and other paramedical, subjects.[8,9] In blood pressure measurement, multiple skills are tested at the same time and so OSPE will inculcate critical thinking ability in students. Many studies on OSPE reported favorable results and positive students’ responses.[10] Studies carried out at various medical colleges such as Manipal and Nagpur concluded that the students are in favor of OSPE and they found that the OSPE is a better option for practical examination as compare to the traditional practical examination.[11] OSPE was an effective tool to find out good and poor performers in physiology practical examinations and improvement on weaker areas can be focused.[6,10] Here, in OSPE, the procedure and the students are evaluated by giving importance to their clinical practical skills. There is objectivity in OSPE; there is uniformity in assessing students by all the teachers because all were agreed on the standard checklist for BP measurement. Hence, it was easier for marking and evaluation. Similarly, there was no subjectivity in this method. Students took more interest due to variety and kept themselves alert during the whole process of examination, which is not found in the traditional examination.[12,13]

We received an encouraging results on that basis, we strongly recommend OSPE as an effective practical assessment tool for blood pressure measurement. If such examinations are taken on regular as well as term wise basis as an assessment tool, then it can enhance student-teacher interaction.

Strength of the Study

1. Same assignment and same difficulty level to P for the students, so it is less bias and more reliable.
2. It brings objectivity in exams
3. It helps to improve and provide chance to score better.
4. Student-teacher interaction was more and it leads to motivation for the students.

Limitations of the Study

1. Student-to-teacher ratio is very poor in almost all medical colleges in India, and to carry out OSPE, more facilitator are required
2. As checklist is with examiner, the students may have apprehension in their mind while performing.

CONCLUSION

We conclude that OSPE for blood pressure measurement is a very useful method of assessment for practical skills in undergraduate training, as it gives feedback to the students and to the teachers and provide integration in teaching and evaluation.

REFERENCES


How to cite this article: Buktar LB, Mankar SB, Pophali NP. Assessment of blood pressure measurement technique by OSPE. National Journal of Physiology, Pharmacy and Pharmacology 2022;12:2 (Online First). DOI: 10.5455/njppp.2022.12.08276202113082021

Source of Support: Nil, Conflicts of Interest: None declared.