

## Objective Structured Practical Examination v/s Traditional Clinical Examination in Human Physiology: Faculty's perception

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**Abstract: Background & Objectives:** Traditional clinical examination (TCE) mainly focuses on the “*knows*” and “*knows how*” aspects, while Objective structured practical examination (OSPE) focuses on the “*shows how*” aspect in ‘*Miller's pyramid of competence*’. The current study was designed to understand the faculty's perception of the OSPE in comparison with the TCE in Physiology and whether it would be feasible and what needs to be done to make it acceptable. **Method:** The study was conducted in the Department of Physiology at the K.J. Somaiya Medical College, Mumbai, India after the approval from the Institutional Ethics Committee with 50 first year MBBS medical students. At the end of the 4 days of TCE- OSPE session, the faculty members answered an open ended questionnaire regarding their experience on objectivity, reliability, validity and feasibility of TCE and OSPE as the assessment tools. **Results:** All the faculty members felt that the OSPE is a relevant, unbiased and a fair tool for the formative assessment which emphasised on the aspects of objectivity and structured checklist standardization. OSPE actually helped students understand what they really need to do in the clinical skills performance testing and what skills are important. OSPE highlighted the areas of weaknesses and fallacies during the clinical skills setting. Overall the OSPE was perceived as a relevant tool along with TCE for overall assessment of students. Participating faculty members also felt that the successful incorporation of a new assessment tool could positively motivate other faculty members towards innovations in the field of medical education. **Interpretation & Conclusion:** We conclude that the objectivity, reliability and standardization of OSPE along with the comprehensive global assessment approach of the traditional clinical assessment are required for an overall judgement of the performance by the medical students.

**Key Words:** Objective structured practical examination, Traditional clinical examination, Faculty perception

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**Introduction:** The aim of medical education is to produce competent doctors with sound clinical skills. Accreditation Council for Graduate Medical Education (ACGME) has developed six inter-related domains of competency which are knowledge, patient care, professionalism, communication and interpersonal skills, practice based learning and improvement, and systems based practice<sup>1</sup>. To initiate active learning, the assessment tools needs to be effective and crucial. It has been widely accepted that assessment of students' performance and clinical competence, along with the measurement of knowledge, should contribute to the students' overall evaluation since assessment drives learning<sup>2</sup>. Brown and Knight rightly stated that, ‘Assessment is at the heart of the student experience’<sup>3</sup>. This is also known as steering effect of examination. "Steering effect" means that the students learn best those subjects on which they expect to be examined<sup>4</sup>. This effect should be taken into account when evaluating students. The process of assessment can be defined as taking a sample of student work, making inferences from it and then estimating his/her

worth in terms of marks or grades. The nature of assessment tasks influences the approaches to learning which students adopt<sup>2,3,5</sup>. Newble and Jaeger<sup>6</sup> described that by changing clinical assessment tool in the final year from a pass/fail system based on ward reports, to a clinical practical examination increased the time spent by medical students on the wards. Hence, the current focus of medical education in India is to improve the assessment tools which can positively influence the quality of medical education and the health care system<sup>7</sup>. At present, in Maharashtra, India, Maharashtra University of Health Sciences (MUHS) Nashik, grants MBBS (Bachelor of Medicine and Bachelor of Surgery) degree after successful completion of 9 semesters of pre-clinical, paraclinical and clinical subjects. Human Physiology is taught as a pre-clinical subject in the first 2 semesters of the MBBS course<sup>8</sup>. A traditional clinical examination (TCE) in physiology involves performing a particular clinical procedure followed by the bedside viva voce. The assessment of the student in TCE is based on global performance rather than candidate's individual clinical

competency<sup>9,10</sup>. TCE mainly focuses on the “knows” and “knows how” aspects, i.e., the base of the ‘Miller’s pyramid of competence’<sup>11</sup>.

It was felt that there is a need for 1) a more objective, structured assessment method and 2) sensitisation of the faculty towards the newer assessment systems like OSPE. We also wanted to modernise our assessment methods and make it more competence based. Hence as a part of the FAIMER (Foundation of Advancement in International Medical Education and Research) project, an OSPE was introduced as a formal method of assessment for the first time in the first MBBS Human physiology 2<sup>nd</sup> semester since we believed that the OSPE is a standardised tool and focuses on the “shows how” aspects of the ‘Miller’s pyramid of competence’<sup>11</sup>. It has proved advantages over the traditional assessment method by being objective and structured<sup>9</sup>. The OSPE can also reduce the examiners’ variability in marking the students<sup>10</sup>.

The current study was designed to understand the faculty’s perception of the OSPE in comparison with the TCE method in the field of Physiology with respect to the range, objectivity, applicability and feasibility of the assessment tools and recommendations to make OSPE acceptable as a tool for formative and summative assessment.

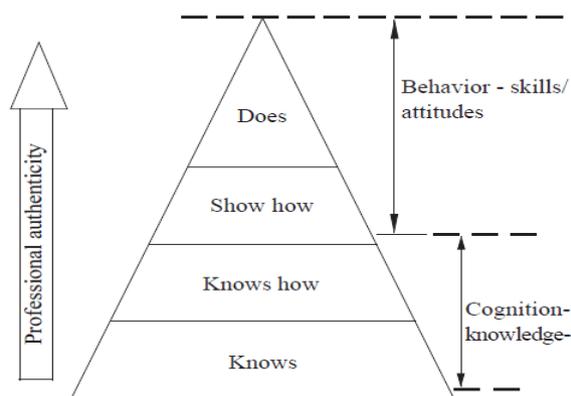


FIG.1 Miller's pyramid.

**Material and Method:** Ethical committee approval: The study was conducted in the Department of Physiology at the K.J. Somaiya Medical College and Research Centre, Mumbai, India (MUHS University) after the approval from the Institutional Ethics Committee for Research on Human Subjects with 50 first year MBBS medical students. An orientation programme regarding newer assessment tools and techniques for faculty members was organised

with practice sessions. The students participating in the study were introduced to the OSPE system by short lecture and a role play organised by the faculty members and a written informed consent was taken for the same.

In the traditional assessment method, each student performed a clinical skill which was followed by a bedside viva-voca on the same and the judgement of the students was done based on overall performance of the students. Each student received different clinical procedure to demonstrate and the questions asked were unique to each one with no standardisation or uniformity. While in the OSPE, blueprint of the structured checklist for observed and unobserved stations was prepared as per Bloom's taxonomy<sup>12</sup> along with examiners' and students' instruction manual. Each of these checklists for clinical procedures, manuals, standard answers were validated by senior faculty members and experienced medical educators.

The OSPE set up had 10 stations focusing on communication skills, psychomotor skills in the form of performing a clinical procedure, interpretation of data with difficulty levels ranging from 'must know' to 'desirable to know' to 'nice to know' sections. Each station was allotted 3-5 minutes to complete with rest stations in-between. A time of 2 minutes was given to each student to facilitate movement between stations and read the instructions.

A total of 6 faculty members from the department of Physiology took part in the set up. Three examiners from the department of Physiology with a teaching experience of 35, 6 and 1 years respectively conducted TCE followed by OSPE for same batch of the students while other three faculties were a part of the administration team which concentrated in the general conduction of the entire examination procedure. At the end of the 4 day TCE- OSPE session, the faculty members answered an open-ended questionnaire regarding their experience on conducting TCE and OSPE with respect to objectivity, reliability, validity and feasibility of both the assessment methods. Qualitative analysis was done by identifying themes in faculty responses and grouping responses according to thematic content. The author individually conducted this content analysis and

identified themes and final grouping of responses were developed by consensus.

**Results:** All 6 faculty members responded to the survey. All the faculty members felt that the OSPE is a relevant, unbiased and a fair tool for the formative assessment in medical curriculum. Their general opinion was that OSPE particularly emphasised on the aspects of objectivity and structured checklist standardization. They also felt that OSPE actually helped students understand what they really need to do in the clinical skills performance testing and what skills are important. OSPE highlighted the areas of weaknesses and fallacies during the clinical skills setting. Overall the OSPE was perceived as a relevant tool in understanding students learning and teachers teaching. Participating faculty members also felt that the successful incorporation of a new assessment tool could positively motivate other faculty members towards innovations in the field of medical education.

**Table 1: Merits and demerits of the OSPE as an assessment tool**

Merits	Demerits
<ul style="list-style-type: none"> <li>-With comprehensive blueprinting of the syllabus, OSPE can assess cognitive, psychomotor domains effectively.</li> <li>- Affective domain skills like communication , history taking can be assessed by OSPE</li> <li>- A structured step wise checklist pattern is followed for assessment to incorporate majority of the clinical competencies.</li> <li>- OSPE is a competence based assessment.</li> <li>- Since it focuses on the details of the clinical skills, it aids as a good teaching learning tool.</li> <li>- Less experienced</li> </ul>	<ul style="list-style-type: none"> <li>- Blueprinting of the syllabus, validation of the comprehensive checklist is a tedious and time consuming job.</li> <li>- Administration and conduction of OSPE is time consuming, labour, money and resource intensive.</li> <li>- lesser number and time for the stations reduces the reliability and validity of the OSPE</li> <li>- Compartmentalization in assessing the clinical skills</li> <li>- Less interaction between examiner and examinee</li> <li>- Constant need of innovation in development of OSPE banks to prevent repetition of the</li> </ul>

<ul style="list-style-type: none"> <li>faculty members can be incorporated for assessment.</li> <li>-All the students are asked similar types of questions hence OSPE is less biased</li> </ul>	<ul style="list-style-type: none"> <li>questions.</li> <li>- Limited scope of questions</li> </ul>
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**Table 2: Merits and demerits of the TCE as an assessment tool**

Merits	Demerits
<ul style="list-style-type: none"> <li>- Global judgement of the skills of the student</li> <li>- No compartmentalization of the clinical skills to be judged</li> <li>-Less time consuming</li> <li>- Less effort in organisation and conduction of the examination</li> <li>-More interaction between examiners and examinee</li> </ul>	<ul style="list-style-type: none"> <li>-Biased system hence less valid and reliable</li> <li>-Lacks the structure and uniformity as an assessment tool.</li> <li>-Affective skills like communication, history taking is not judged.</li> <li>-Requires experienced faculty for the judgement of student's performance.</li> </ul>

**Discussion:** The South-East Asian medical universities are shifting their focus from knowledge based to a more competence based medical curriculum with the advent of Graduate medical education. Objective Structured Practical Examination (OSPE) was derived from Objective Structured Clinical Examination (OSCE) and modified by Harden and Gleeson<sup>13</sup>.

Since its introduction in 1975, it has emerged as a 'gold standard' of health professional assessment in a variety of disciplines<sup>14</sup>. However in India; the OSPE has been used as a formative assessment tool in few selected centres all over. The Medical council of India is yet to recognize and recommend OSPE as a formative or summative tool of assessment. The probable reasons could be the lack of awareness and orientation of the faculty towards the newer tools of assessment. In addition, there is also hesitancy in adapting the newer tools with lack of time and training of the faculty<sup>10</sup>.

However, National Board of Examination, Ministry of Health and Family Welfare, India has been using OSCE/OSPE for summative

assessment of postgraduate students for certification in the subjects of Otolaryngology, Ophthalmology, Dermatology and Paediatrics for last few years<sup>10</sup>. Similar use of OSCE/OSPE in undergraduate curriculum is not known in Indian setup. Our objective of the study was to introduce a newer assessment tool with more objectivity, validity and reliability along with the traditional assessment method and to assess the feasibility from the faculty's perception. While doing so, we also wanted to modernise our assessment tool and make it more competence based so that students develop more psychomotor and affective skills. For developing a good assessment tool, four criteria's needs to be fulfilled which includes objectivity, validity, reliability and feasibility<sup>15</sup>.

Our experience with the OPSE was fruitful since it could assess all the three domains of skills effectively i.e. psychomotor domain in the form of elaborate step wise demonstration of the clinical procedures, affective domain in the form of communication skills and cognitive domain in the form of interpretations of the clinical workup which was lacking in the traditional assessment method. However it needs extensive blueprinting of the syllabus, validation and comprehensive checklists for various skills to be demonstrated which is tedious and time consuming process. In traditional assessment method, all the students are asked different questions with different difficulty levels depending on the mood and experience of the examiners which reduces uniformity and increases the biasness. This particular drawback is effectively managed by the administration of OSPE to all the students as all of them are subjected to similar questions with similar difficulty levels. In addition, there are model answers/ checklists provided to the examiners to be objective and fair to all the students. This also ensures less experienced examiners to become more objective and competent in marking the students. However studies have shown that global rating scales score given by expert examiners had a better inter-station reliability and predictive validity than the scores in checklists by OPSE<sup>16,17</sup>.

OSCE/OSPE is a proved 'gold standard' for competency based examinations hence it compels the student to learn the clinical procedure in step wise and accurate manner<sup>14</sup>. OSPE also has a high face validity as both

examiners and examinee agrees with it measuring skills relevant to clinical practice<sup>18</sup>. Content validity could be ensured by rigorous blue printing of the syllabus however study done by Patil<sup>19</sup> have shown that OSPE assesses students superficially in terms of skills demonstration. In addition, competencies like long term patient care, professionalism and ethics cannot be assessed by OSPE<sup>20</sup>.

A similar view was put forward by Verma and Singh which stated that OSCE/OSPE can assess specific skills and is complimentary with TCE. It needs to be used in conjugation with other methods for an overall judgement of the students' performance<sup>21</sup>. In addition, there is a compartmentalization of the skills demonstration in OSPE. Measuring skills in isolation is not equivalent to measuring a whole integrated performance<sup>20</sup>.

OSPE cannot assess all the attributes of clinical competencies effectively demanding the need to combine with other assessment methods<sup>20</sup>. OSPE is a fairly reliable assessment method provided it has large number of stations for all the specific skills demonstrations, good sampling, standardized, validated checklists and standardized subjects<sup>22</sup>. Reliability of OSPE measured by Cronbach's alpha for 1 hour session is as low as 0.54 which can be increased to 0.8 by longer OPSE sessions of 4-8 hours which becomes practically impossible to conduct due to examiners and examinee's fatigability<sup>10,23,24</sup>. Hence, for achieving high level of reliability, OSPE must be combined with other assessment methods<sup>20</sup>.

In addition, other factors, like practicality or feasibility of the assessment tool also needs to be considered before its implementation on a larger scale, focusing on the number of the students to be assessed, number of faculty members involved, availability of subjects, staff, time and money. In comparison to traditional assessment method, OSPE is less time consuming however it requires more time for planning, implementation and setting up. Also adequate number of stations ranging from 20-30 stations, evaluating various domains of clinical skills increases the reliability of the OSPE tool which again becomes impractical due to examiners and examinees fatigue<sup>16,20</sup>.

All the students need to be exposed to similar test situations and criteria to maintain and achieve high level of reliability and eliminate biasness. However it becomes tedious and difficult to arrange real, stimulated patients or standardised subjects for demonstration of various clinical skills since availability of manpower in the form of patients, standardized subjects, and support staff is not always possible. OSPE assesses all the 3 domains of clinical competence viz, cognitive, psychomotor and affective domain unlike the TCE. However, it tests the students in compartments and isolation rather than focusing on the students' ability to look at the patient as a whole. Hence, OSPE, in spite of being a reliable and valid tool of assessment, requires ample of time, faculty training, motivation and man power to effectively conduct and administer. It would be advisable to combine the focused approach of OSPE in assessing certain skills of the students along with the global judgement of traditional assessment method for overall evaluation of the students.

**Conclusion:** Finally we conclude that we can incorporate the positive points regarding the OSPE i.e. the objectivity, fair, standardized checklist approach for the assessment of clinical skills along with the comprehensive global assessment approach of the traditional clinical assessment method for an overall judgement of the medical students for a better teaching-learning experience.

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