

Objective Structured Practical Examination (OSPE) as a tool for assessment of practical skills in basic medical sciences

Vinod Prabhushetty T

Assistant Professor, Dept. of Physiology, M R Medical College, Kalaburagi, Karnataka

Email: drvinod21@gmail.com

Abstract

Introduction: Method of Assessment in medical education plays a major role in student's performance specially in the practicals, mainly the psychomotor domain. The presently followed traditional method has many lacunae & need for newer methods like OSPE. The study has been taken to compare the OSPE with traditional subjective assessment method & to evaluate OSPE as reliable and valid assessment method.

Materials and Method: This comparative study was conducted at Physiology Department, M.R. Medical College, 300 out of 350 apparently healthy, first year students of MBBS, BDS and BHMS streams were included in the study. Practical demonstration on Study of Compound Microscope was conducted. After the demonstration they appeared for practical examination on handling of microscope as per the informed schedule. Students appearing for practical examination were divided into two groups. Group A consisting of 150 students were assessed by traditional subjective method like practical viva-voce. Group B consisting of 150 students were assessed by OSPE which had one observation station carrying 10 marks and 4 minutes was allotted. A check list was prepared based on the objectives and the same is used for assessment and consideration of marks. Chi-square and Z- test was used for statistical analysis and p value of < 0.05 considered as statistically significant.

Results: On observation of mean and standard deviation values of marks scored $Z = 2.63$, $P < 0.05$ was statistically significant and overall performance of two groups $\chi^2 = 48.07$ $P < 0.0001$ highly significant, results indicate that OSPE is effective method of evaluation as shown by the better performance of students.

Conclusion: Hence OSPE is a reliable and valid method of assessment and can be considered in the practical examinations.

Keywords: OSPE, Practical skills, Assessment, Performance

Introduction

Method of Assessment in medical education plays a major role in student's performance. Learning style of student is influenced by the type of assessment method followed.⁽¹⁾ Type of assessment method used also determines students involved with kind of learning activity.⁽²⁾ Learning behavior can be changed as a result of change in the assessment procedure.⁽³⁾

The reliability and validity are the challenges faced during present subjective method of assessing practical skills of a learner. There is a need to introduce certain new innovative methods of assessment which are appropriate and reliable.

Objective structure practical examination is well structured assessment tool with predetermined check list. Harden and Gleeson in 1975 modified OSCE and extended to practical examination that is OSPE.⁽⁴⁾

Both OSCE clinical and OSPE practical components of OSE is becoming an important method of evaluation in the clinical and practical exams as it is nowadays used all over the world due to its reliability, validity and practicability.^(5,6,7) This process is easy to follow and considered to be innovative.

Proper handling and effective use of microscope is one of the important basic skills required to be developed in the laboratory,⁽⁸⁾ so the present study was conducted to observe the role of OSPE as evaluation method in assessing the psychomotor skills of I MBBS, BDS, BHMS students in focusing a given slide/ smear under the microscope.

Materials and Methods

This comparative study was conducted in the Department of Physiology M.R. Medical College. Study was approved by institutional ethics committee. Informed written consent was obtained from all the participants. Number of students included in the study were 350. Inclusion criteria: Apparently healthy, male and female first year students of MBBS, BDS and BHMS streams of HKE Society's Colleges were included in the study. Exclusion criteria: Students who missed the demonstration and for whom the demonstration was not clearly understood and not yet ready for the exam were excluded.

300 out of 350 students attended the practical demonstration on Study of Compound Microscope was conducted in small batches of 30 students. Two weeks after demonstration the students appeared for practical examination on Microscope as scheduled. Assessment was done by the same staff who has conducted the demonstration to avoid the bias based on different perspective of assessors which would affect the score. Participants were randomly distributed for the assessment methods into two batches A & B each comprising 150 students. The Group A were assessed by traditional method/subjective method in which students were allowed to focus the slide according to question they received and after that the focused slide was checked and questions were asked related to the compound microscope. The other 150 students (Group

B) were assessed by OSPE which had one observation station carrying 10 marks. A check list was used to assess the skills or steps required for the effective use of microscope mainly focusing under low power, high power & oil immersion.^(9,10,11)

The methods of assessment of practical skills were compared and analyzed based on the marks, percentage and overall performance of students of both the groups. Chi-square test and Z test were the statistical tests applied and p value of < 0.05 was considered as significant.

Results

On observation of Mean and standard deviation of marks scored by students and applying Z test as shown in Table 1 and Chi-square test was applied for overall performance of the students as shown in Table 2 indicate that OSPE is an effective assessment method as shown by the better performance of students. Group B students performed well getting good score and more number of students from Group B scored $\geq 80\%$ compared to Group A.

Table 1: Shows the comparison of Mean \pm S.D of scores of students of both groups

| Methods | Mean \pm S.D | Z-Test & P-Value |
|-----------------------------------|------------------|---|
| Group A Traditional Methods | 6.20 \pm 1.507 | Z = 2.63 P<0.05 statistically significant |
| Group B OSPE | 7.41 \pm 1.74 | |

Table 2: Shows the performance of students of both groups.

| Methods | Marks $\geq 80\%$ | Marks $\leq 80\%$ | Total |
|--|-------------------|-------------------|------------|
| Group A Traditional Methods | 42 (28.0%) | 108 (72.0%) | 150 (100%) |
| Group B OSPE | 102 (68.0%) | 48 (32.0%) | 150 (100%) |
| Total | 144 | 156 | 300 |
| $\chi^2 = 48.07$ P < 0.0001 highly significant | | | |

Discussion

The results of present study indicates that OSPE is a better assessment method for practical examination as compared to traditional method. The results and comments were based on one observation station of OSPE. Students assessed by OSPE performed well which was based on practical skills which makes it more reliable and valid which was not seen in case of subjective method. The OSPE makes the students to study each finer details of every step, so to perform better. It was also observed that while conducting OSPE the bias of different examiners having different perspectives towards assessment was avoided by well-designed and standardized with checklist and objectives.

These problems continue during traditional method.⁽¹²⁾ The process of conducting OSPE is quite innovative and it will help the student to study following standard guidelines or checklists. In performance based assessment, learners gets to know the certain objectives based on which they are being evaluated.⁽¹³⁾ According to a study on assessment of microscope handling skills suggested that OSPE as an assessment method is properly designed which makes it reliable for practical examinations.⁽¹⁴⁾ OSPE is framed with objectives and based on that a check list is prepared earlier and the same is referred for marks and assessment. With all this a standard is designed for observing the performance level or competencies.^(15,16)

OSPE helps in improving the practical skills, as students demonstrate their practical skills rather than just answering the viva. This makes it more reliable. OSPE is used as an objective tool for assessment of laboratory exercises because of its high reliability.⁽¹³⁾ Opting OSPE will be a more reliable and appropriate method of assessment of practical examination which will also help to reduce the bias and benefits the students in their performance.

Conclusion

As the study was limited to one observation station and based on it the final conclusion is that OSPE is helpful while giving the marks without any bias and performance of students is judged in a more appropriate way and hence OSPE can be considered as reliable and valid assessment method for the routine practical examination in basic medical sciences.

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References

1. Pierre R, Wierenga A, Barton M, Branday JM Chris tie C. Student evaluation of an OSCE in pediatric at the University of the West Indies, Jamaica. BMC Medical Education 2004;4(22):1-7.
2. A-Latif A. An examination of the examinations: the reliability of the objective structured clinical examination and clinical examination. Med Teach. 1992;14(2-3):179-83.
3. Hilliard RI, Susan TE. The use of an objective structured clinical examination with postgraduate residents in pediatrics. Arch Pediatr Adolesc Med 1998;152:74-8.
4. Dandannavar Vijaya S., Schwartz Alan. A comparative study to evaluate practical skills in physiology among 1st phase medical under graduates at JNMC Belgaum: Traditional Practical Examinations Versus Objective

- Structure Practical Examinations (TPE V/S OSPE). *Int. J. Educat. Res. Technol.* Vol 5 [1] March 2014. 126-134.
5. Tervo RC, Dimitrievich E, Trujillo AL, Whittle K, Redinius P, Welliaman L. The Objective Structured Clinical Examination (OSCE) clinical clerkship: an overview. *S D J Med* 1997;50(5):153-6.
 6. Prislis MD, Fitzpatrick CF, Lie D, Giglio M, Radecki S Lewis E. Use of an objective structured clinical examination in evaluating student performance. *Fam Med* 1998;30(5):338-44.
 7. Coovadia HM, Moosa A. A comparison of traditional assessment with objective structured clinical examination (OSCE). *S Afr Med J* 1985;67(20):810-2.
 8. Feroze M, Jacob AJ. OSPE in Pathology. *Indian J Pathol Microbiol* 2002;45(1):53-8.
 9. Pal GK and Pal Pravati. OSPE Methodology. In: Text book of practical physiology. 4th ed. Chennai: Orient Longman. 2016: xi, xiv-xv.
 10. Pal GK and Pal Pravati. Study of Microscope. In: Text book of practical physiology. 4th ed. Chennai: Orient Longman. 2016: 26-36.
 11. Jain A.K. Study of a Compound Microscope. In: Manual of Practical Physiology. 5th ed. Himachal Pradesh: Arya Publications (Avichal Publishing Company). 2016:3-6.
 12. Richa Nigam1, Priyanka Mahawar. Critical analysis of performance of MBBS students using OSPE & TDPE - A comparative STUDY National Journal of Community Medicine Vol 2 Issue 3 Oct-Dec 2011.
 13. Byrne E, Smyth S. Lecturers' experiences and perspectives of using an objective structured clinical examination. *Nurse Educ Pract.* 2008;8(4):283-9.
 14. Kavita G.U, Shashikala P , Nagaraj P Under the microscope: Assessment of microscope handling skills among II MBBS students *J Med Education & Res* 2013;1(1):6-8
 15. Rahman N, Ferdousi S, Hoq N, Amin R, Kabir J. Evaluation of objective structured practical examination and traditional practical examination *Mymensingh Med J.* 2007;16:7-11.
 16. Kundu D, Das H N, Sen G, Osta M, Mandal T, Gautam D. Objective structured practical examination in biochemistry: An experience in Medical College, Kolkata. *J Nat Sc Biol Med* 2013;4:1:103-107.