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Original Research Article

Introduction of Objective Structured Practical Examination (OSPE) in formative assessment in physiology

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Abstract: Assessment for practical skills in medical education needs improvement from subjective methods to objective ones. The quality of an assessment depends on its reliability, validity, educational impact, acceptability and feasibility. An Objective Structured Practical Examination (OSPE) has been considered as one such method. The current study aimed to evaluate the feasibility of using OSPE as a tool for the formative assessment of undergraduate medical education in Physiology. The objectives were to compare the scores of first MBBS Students when assessed by conventional method of assessment and OSPE and to evaluate feedback of medical students and faculty members regarding perception of both assessment methods. 100 1st year MBBS students divided into 4 groups of 25 students each were included in the study. Two practical procedures - Pulse examination and Ankle jerk elicitation were assessed at two different stations by two examiners per station. . One examiner assess by conventional methods and other by OSPE method .At the end of the assessment feedback from the students and teachers were taken about the assessment methods on Likert scale. The students obtained significantly higher marks on being assessed by OSPE as compared with conventional method of assessment during both practical examination exercises. On evaluation of student's responses in feedback questionnaires it was found that OSPE is a less stressful, less exhausting and fair method of assessment. Also on evaluation of feedback responses of teachers it was found that OSPE is a better way to assess the different domains of knowledge of student, which specifically highlights the weak and strong parts of subject of student and compels the student to learn different procedures in detail. The teachers considered this method as more exhausting and stressful. Both students and teachers considered OSPE a better method to be used in future examination.
Keywords: Assessment, OSPE, Undergraduate medical education, Physiology, Feedback

INTRODUCTION

The subject of Physiology is considered as the basis of rational medical practice so its teaching has undergone a paradigm shift in recent years as emphasis is now focused on learning [1]. Assessment is an educational tool that can serve multiple roles; for example, it can provide feedback to learners on areas of strength or weakness and it can provide the teacher, insight into the effectiveness of a given approach [2]. Assessment test, is an integral part of guided and thought-provoking further learning process as it can help the learners to improve their weakness and can guide the teachers for any change in teaching strategies according to needs of learners. The quality of an assessment depends on its reliability, validity, educational impact, acceptability and feasibility [3]. Though marking should depend only on student and patient variability in a clinical examination, it is often seen that examiner variability based on subjectivity can significantly affect scoring [4]. Apparent bias in scoring leads to frustration in students. Objective structured clinical examination (OSCE) as an assessment tool was first described in 1975 by Harden and Glison in an effort to eliminate examiner variability in clinical examination [5]. Objective structured practical examination (OSPE) also appears to be a reliable device with a good capacity for discriminating between different categories of students. It is better in these respects than the conventional practical examination. Moreover, it has scope for being structured in such a way that all the objectives of laboratory teaching can be tested and each aspect can be assigned the desired weightage [6]. Since this method of assessment is yet to be implemented in majority of medical colleges in India, this study was undertaken to better understand the advantages and disadvantages of this assessment

tool in comparison to the current conventional method of assessment and to explore the scope of its applicability in the current examination system.

MATERIAL AND METHODS

The Cross sectional comparative analytical study was done in the department of Physiology, S.M.S Medical College, Jaipur from December 2015 to March 2016 on 100 First MBBS Students after taking permission from institutional ethical committee and clinical trial screening committee. Students who have given consent for the study were included in the study. 100 First Year MBBS students were randomly selected out of eligible students of batch of 250.

The Assessment of students was done after completion of first round of teaching of Human Physiology practical. The faculty members and students were sensitized about the OSPE assessment method during this period of teaching of students. The students were assessed by both types of assessment methods viz. OSPE and conventional method in group of 25. Two clinical procedures were selected for assessment. Two examination stations were set for each group of students for assessment of each practical procedure. At each station two teachers had assessed the students. One teacher had assessed the student by conventional method and the other by the OSPE Checklist. . Different teachers had assessed the students by OSPE method and conventional method. Assessment by the OSPE checklist was done prior to conventional examination. The clinical procedures selected for assessment purpose were (a) Pulse examination (b) Elicit ankle reflex. The comparison of performance of students was done by marks obtained by them in both type of assessment methods. The feedback from students and teachers involved in the study about both types of assessment procedures was taken on an appropriate questionnaires and scoring was done on 5 point Likert scale. The feedback was taken before the display of the result of examination. Descriptive analysis of feedback questionnaires was done.

Statistical Analysis

The scores (marks) were summarized as mean and standard deviation and were analyzed by using unpaired‘t’ test. The responses of feedback were expressed as Percentage (%) on five point Likart’s scale. P value of <0.05 was taken as significant. Primer of Biostatistics version 6.0 was used for statistical analysis.

RESULTS

The present study was conducted on 100 students of First semester examination and 16 teachers of the department of physiology who have assessed the students. The marks obtained by the students after being assessed by different assessment methods are described in Table 1 and Table 2.During Pulse examination, the mean marks obtained by students with assessment by conventional method was 6.29±0.9161 whereas it was 7.785±0.6752 with OSPE method. During elicitation of Ankle jerk, the mean marks obtained by students with assessment by conventional method was 6.30±0.8587 whereas it was 7.39±0.875 with OSPE method.

Table 1: Comparative marks obtained by students during “pulse examination” as assessed by different assessment methods (Maximum marks-10)

Method	N	Mean	SD	‘p’ Value*
Pulse examination-Conventional method	100	6.29	0.9161	<0.001
Pulse examination-OSPE	100	7.785	0.6752	

*Unpaired’ tests

Table 2: Comparative marks obtained by students during “Elicitation of Ankle Jerk” as assessed by different assessment methods (Maximum marks-10)

Method	N	Mean	SD	‘p’ Value*
Ankle Jerk-Conventional method	100	6.3	0.8587	<0.001
Ankle Jerk -OSPE	100	7.39	0.875	

*Unpaired’ test

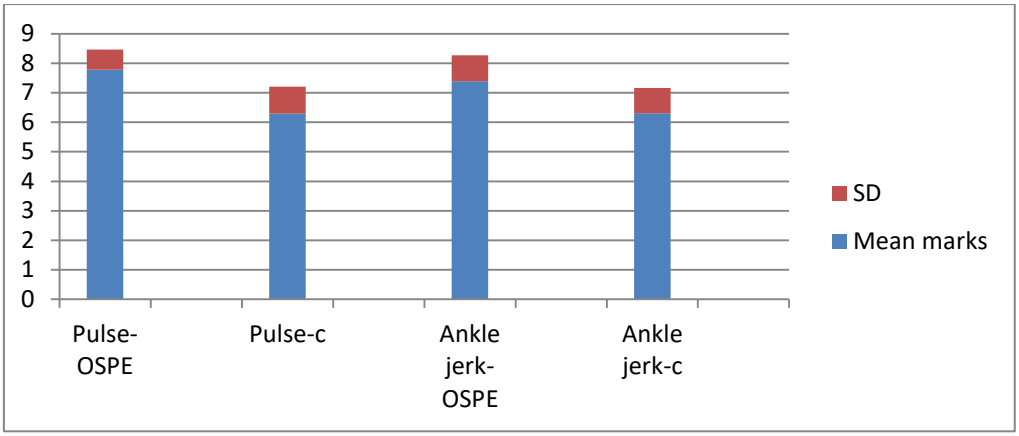

Fig-1: Diagram showing comparative mean marks with SD of assessment of two practical exams by OSPE and Conventional(c) assessment methods.

The response of participating students on comparison of both assessment method obtained on a feedback score based on five points Likart's scale is described in Table 3.

Table 3: OSPE feedback form and response from students

QUESTIONS	Strongly Disagree	Disagree	Neither Agree, Nor Disagree	Agree	Strongly Agree
OSPE is fair method of assessment compared with conventional examination	1(1%)	5(5%)	9(9%)	65(65%)	20(20%)
OSPE tests a wide range of knowledge compared with conventional method	2(2%)	11(11%)	13(13%)	48(48%)	26(26%)
OSPE is easier to pass out compared with conventional method	2(2%)	6(6%)	29(29%)	46(46%)	17(17%)
OSPE is more stressful compared with conventional method.	12(12%)	43(43%)	17(17%)	24(24%)	4(4%)
OSPE is more exhausting compared with conventional method	11(11%)	32(32%)	28(28%)	21(21%)	8(8%)
Attitude of teacher during OSPE was better compared with conventional method.	3(3%)	4(4%)	34(34%)	44(44%)	15(15%)
OSPE is a better way to assess the different aspects of knowledge	3(3%)	9(9%)	18(18%)	54(54%)	16(16%)
OSPE may influence the learning pattern	2(2%)	2(2%)	21(21%)	55(55%)	20(20%)
OSPE should be used as method of assessment in future examinations.	3(3%)	2(2%)	16(16%)	60(60%)	19(19%)

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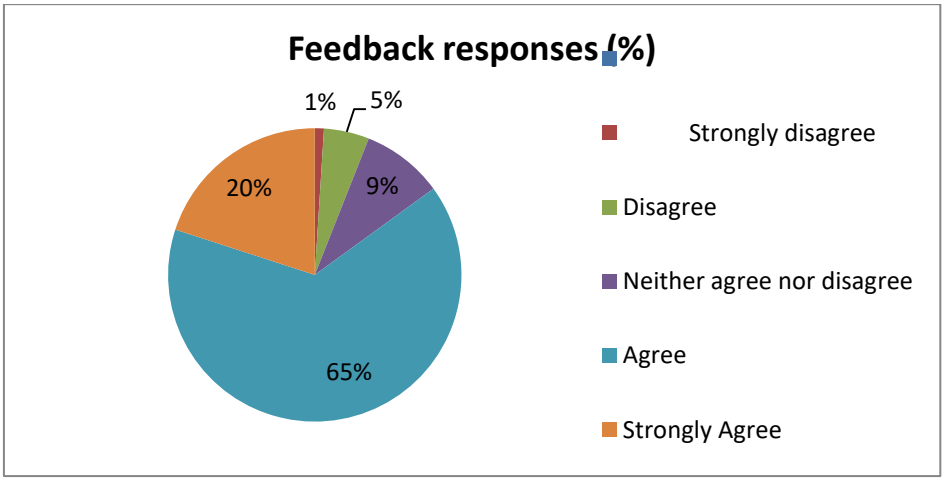

Fig-2: Student response on question- OSPE is fair method of assessment compared with conventional examination

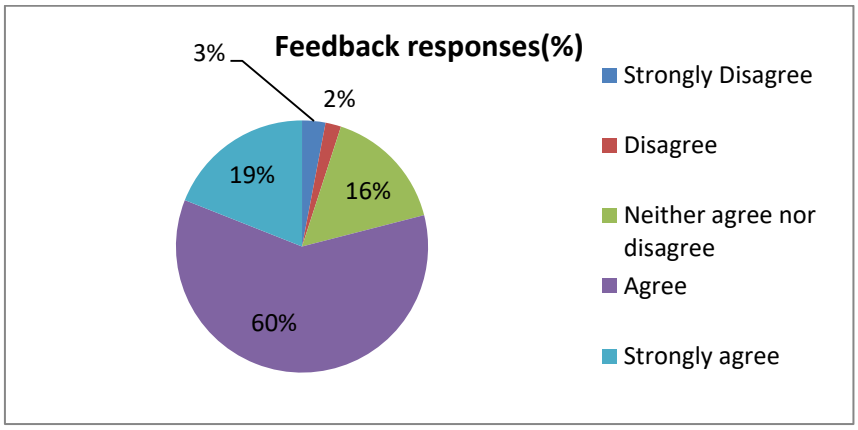

Fig-3: Student response on question- OSPE should be used as method of assessment in future examinations

The response of participating teachers on comparison of both assessment methods obtained on a feedback score based on five points Likart's scale is described in Table 4

Table 4: OSPE feedback form and response from teachers

QUESTIONS	Strongly Disagree	Disagree	Neither Agree, Nor Disagree	Agree	Strongly Agree
OSPE covers a wider range of knowledge as compared with conventional examination	0	2(12.5%)	2(12.5%)	8(50%)	4(25%)
OSPE Compels the student to learn different procedures in detail	0	0	2(12.5%)	11(68.75%)	3(18.75%)
OSPE specifically highlights the weak and strong parts of subject of student.	0	1(6.25%)	0	13(81.25%)	2(12.5%)
OSPE is more stressful compared with conventional method.	2(12.5%)	6(37.5%)	1(6.25%)	1(6.25%)	6(37.5%)
OSPE is more exhausting compared with conventional method	2(12.5%)	4(25%)	2(12.5%)	3(18.75%)	5(31.25%)
OSPE is a better way to assess the different domains of knowledge of student.	0	0	3(18.75%)	8(50%)	5(31.25%)
Checklists in OSPE provides a fair system of marking	0	1(6.25%)	2(12.5%)	10(62.5%)	3(18.75%)
Variability of examiner can be removed in better way by OSPE	0	0	3(18.75%)	9(56.25%)	4(25%)
OSPE should be used as method of assessment in future examinations.	0	1(6.25%)	2(12.5%)	11(68.75%)	2(12.5%)

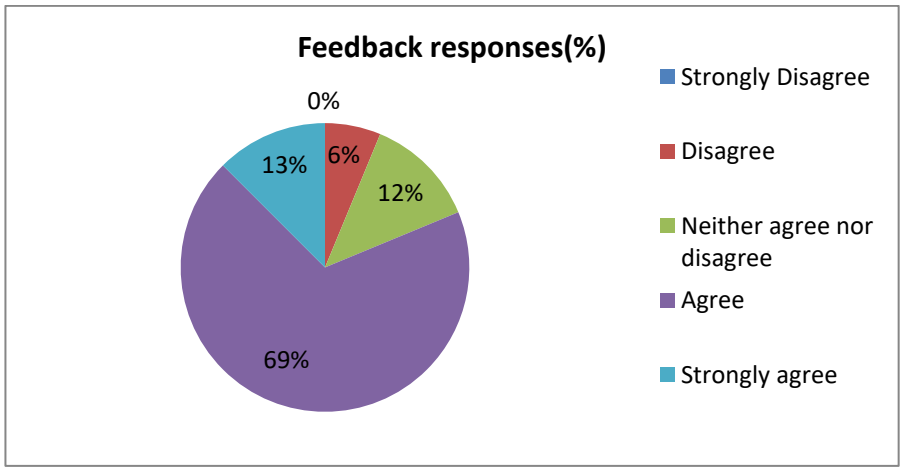

Fig-4: Response of teachers on question- OSPE should be used as method of assessment in future examinations

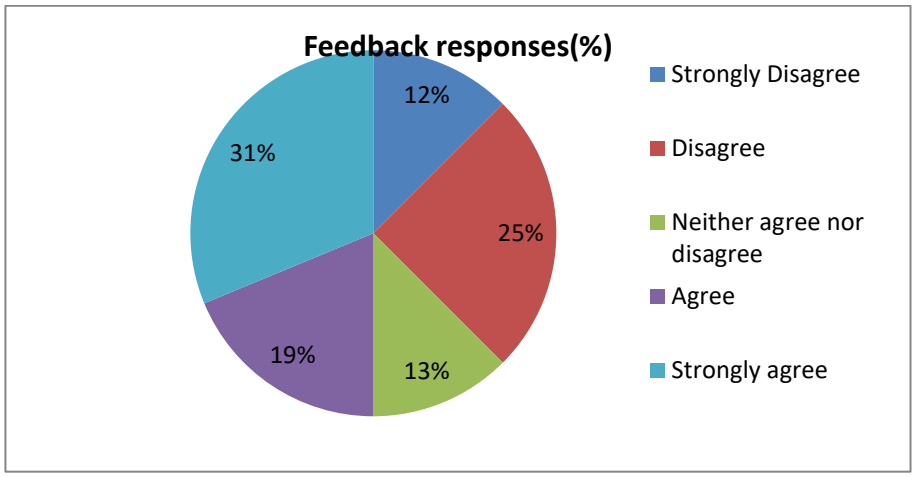

Fig-5: Response of teachers on question- OSPE is more exhausting compared with conventional method

DISCUSSION

The Assessment of learning has been very difficult and time consuming aspects of medical education [7]. Teaching, learning and assessment methodologies used in undergraduate medical education has seen a paradigm shift in response to educational understanding, developing learning technologies and health care agendas [1]. The present study was aimed to perform a comparative assessment of students by two different methods of assessment of their performance in two practical exercises done during physiology practical examination .The practical exercises are "pulse examination" and " Elicitation of Ankle reflex" and the assessment methods were OSPE and Conventional practical examination Feedback responses were obtained from the participating students and teachers on a feedback questionnaire as the primary aim of the study was to introduce the OSPE method of assessment in the institute. The feedback responses aid in sensitization of teachers and students of the OSPE assessment method.

In the present study, the marks obtained by the students with OSPE are significantly higher as compared to conventional method of assessment. Similar results were observed in a study done by Rehana *et al.;* [8]. This may be due to objective nature of the OSPE method of assessment as compared to predominantly subjective nature of conventional method of assessment. Objectivity helps in reduction of bias of examiners during assessment. Feedback is an evaluative response which gives information on all aspects, experiences, difficulties, interpretations and proposals from learners [7]. The perception of students can be used for a series of reforms in the process of improving the quality of teaching and assessment methods [9]. In the present study, on evaluation of feedback responses it was found that students consider OSPE as less stressful and exhausting. These findings are in confirmation with a study done by Rehana *et al.;* in which assessment of laboratory skills in subject of physiology is done by OSPE and viva voce. In this study Students scored significantly higher marks in OSPE. Also on analysis of feedback responses students described it as an easy, uniform, fair, un-stressful and un-biased method of examination and recommended its continuation as an assessment tool for practical examination [8]. Also the attitude of the teachers during assessment was found to be better during OSPE. Majority of students consider OSPE as a fair method of assessment and want to be used as a method of assessment in future examination. Majority of students also agrees that OSPE assess different aspects of knowledge and influence learning behavior. Similar findings were observed in a study done by Mandal *et al.;* in which a comparative analysis was done between objective structured clinical examination (OSCE) and conventional examination (CE) as a formative evaluation tool in Pediatrics in semester examination for final MBBS students. In that study 73.8% of the students opined in favor of objective structured clinical examination as a better formative assessment tool whereas 9.5% students preferred conventional examination [3].

On the basis of these observations it can be inferred that majority of students consider OSPE a better method of assessment. On the evaluation of feedback responses of teachers, majority of them also considers OSPE a better method of assessment which covers a wider range of knowledge as compared with conventional examination, compels the student to learn different procedures in detail and specifically highlights the weak and strong parts of subject of student. Also majority of teachers found that the variability of examiners is reduced in OSPE and this method should be used for assessment in future examinations. A large proportion of teachers consider OSPE as more exhausting and stressful method of assessment .This may be due to need of preparations of specific

checklists for assessment of separate practical exercises which consumes more time and manpower resources.

Experiential learning is continued throughout professional life of medical students, hence effective and accurate evaluation of student performance in practical settings must be ascertained by an updated system of examination [10]. The main objective of medical education is to develop effective learning to understand physiological alterations that forms basis of a disease process [11]. OSPE appeared to be a dependable method with a good capability to discriminate between different categories of students, helped students who showed below average or very high performance on the basis of its cognitive and application skills.

CONCLUSION

OSPE is a better method of assessment than conventional assessment method and should be used in future examination as preferred method of assessment. It is feasible to implement and is accepted more among students and teachers over conventional method of examination.

REFERENCES

1. Rehman R, Razi MS, Syed S, Sultan T. Impact of alterations in teaching methodologies on learning capabilities. JPMA-Journal of the Pakistan Medical Association. 2011 Oct 1; 61(10):982.
2. Pedersen S, Williams D. A comparison of assessment practices and their effects on learning and motivation in a student-centered learning environment. Journal of Educational Multimedia and Hypermedia. 2004 Jul 1; 13(3):283.
3. Mondal R, Sarkar S, Nandi M, Hazra A. Comparative analysis between objective structured clinical examination (OSCE) and conventional examination (CE) as a formative evaluation tool in pediatrics in semester examination for final MBBS students. Kathmandu University Medical Journal. 2012 Oct 2; 10(1):53-6.
4. Mahajan AS, Shankar N, Tandon OP. The comparison of OSPE with conventional physiology practical assessment. J Int Assoc Med Sci Educ. 2004; 14:54-7.
5. Harden RT, Stevenson M, Downie WW, Wilson GM. Assessment of clinical competence using objective structured examination. Br Med J. 1975 Feb 22; 1(5955):447-51.
6. Nayar U, Malik SL, Bijlani RL. Objective structured practical examination: a new concept in assessment of laboratory exercises in preclinical sciences. Med Educ. 1986 May;20 (3): 204-9
7. McLean M, Gibbs T. Twelve tips to designing and implementing a learner-centred curriculum: Prevention is better than cure. Medical teacher. 2010 Jan 1; 32(3):225-30.
8. Rehman R, Syed S, Iqbal A, Rehan R. Perception and performance of medical students in objective structured practical examination and viva voce. Pak J Physiol. 2012; 8(2):33-6.
9. Abraham RR, Raghavendra R, Surekha K, Asha K. A trial of the objective structured practical examination in physiology at Melaka Manipal Medical College, India. Advances in physiology education. 2009 Mar 1; 33(1):21-3.
10. Robertson K. Reflection in professional practice and education. Australian Family Physician. 2005; 34:781–8.
11. Rehman R, Iqbal A, Syed S, Kamran A. Evaluation of integrated learning program of undergraduate medical students. Pak J Physiol. 2011; 7(2):37-41.