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Original Research Article

Objective Structured Practical Examination (OSPE) as an Assessment Method of Laboratory Practical Skill Sessions in First MBBS Students of Biochemistry: A Research Study in SAIMS, Regional Centre of Medical Education, Indore

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Abstract: OSPE act as a good tool to evaluate skill competency in Biochemistry subject. The first MBBS students admitted for 2014-16 batches of SAIMS, Indore were the subjects for the study. After successfully completing the syllabus, OSPE notification was announced 10 days in advance. A total of 122 students were assessed. Each student was assessed by attending 4 procedure and 8 question stations. Coefficient of reliability of questions administered was done by calculating Cronbach's alpha. Among 122 students are present & took this OSPE exercise. 15 students failed to achieve an average of 50% or above in the assessment. However, 39 students on an average achieved >75%, 41 students achieved between 65 to 75% and 27 students scored between 50 to 65%. Cronbach's alpha of the questions administered showed to be having high internal consistency with a 0.80 score. 99% of students believed that OSPE helps them to improve and 82% perceived in both learning and evaluation tool. 100% of the faculty agreed or strongly agreed that such assessment tested objectivity, 87.5% felt that is measured practical skills better and 62.5% felt eliminated examiner bias to a greater extent. OSPE was more objective, measured practical skills better and eliminated examiner bias. Student feedback reflects that such assessment helps them to improve practical skills & it is effective tool both for teaching and evaluation of MBBS students of Biochemistry.
Keywords: OSPE (objective structured practical examination)/ OSCE(objective structured clinical examination), MCQ (multiple choice question), cognitive domain.

INTRODUCTION

Medical education has always had challenges with respect to assessment methods. Subjectivity and inter examiner variation and bias have been highlight of most examinations. There have been attempts to improve and increase the objectivity of written examination by the introduction of structured essay question and MCQs. There has however been a lack of objectivity during the evaluation of student skills competency during the practical examination [8]. Assessment of the students should be based solely on student variability in the skill being tested. However in the current system of evaluation experiment variability and examiner variability have a direct effect on the score of the student. The scores obtained by the student usually reflects the overall performance of the student in the practical examination and is not based on demonstration of individual skill competency of the student [1]. It is with this view in mind that educationists have been trying to devise ways by which skill can be evaluated using an objective tool. One method which can be employed is OSCE/OSPE (Objective structured clinical/practical examination). This can be used as an evaluation as well as teaching tool. OSPE stations can be used to test laboratory based measurements or procedures, microscopic skills, simulation skill and applied medical aspects. There are many steps involved in designing and implementing an OSPE station. After defining the objective, the task to be assessed is identified. This task is broken down into subtasks and score are assigned to each subtask. Checklists are created and the OSPE stations are set up. Stations could be equipped with photomicrographs, specimens, computer graphics or illustrations, X rays, laboratory reports etc depending on the objective of testing station. The students and examiners are oriented

to the process. The results are analyzed and the process is reviewed for future use [7, 15]. The current study was under taken as pilot project to evaluate OSPE as a tool to evaluate a skill competency in Biochemistry subject

AIMS & OBJECTIVES

1. To introduce OSPE as a method of learning and an assessment tool for practical skills in Biochemistry subject for MBBS students in SAIMS, Regional Centre of Medical Education, Indore.
2. To explore the students and faculty perception of OSPE as a learning and assessment tool & its outcome.

MATERIAL & METHODS

The first MBBS students admitted for 2014-16 batch of Sri Aurobindo Institute of Medical College & PG Institute, a Regional centre of Medical Education, Indore were included as the subjects for the study. After successfully completion of the syllabus pertaining to the practical and theory topic based on Colour Reactions of Carbohydrates, Protein, estimations of serum and plasma with different parameter based on colorimeter and Chemistry of Carbohydrates, Protein, lipid, & its metabolism, Vitamin, Minerals, OSPE notification was announced 10 days in advance.

Before administering this tool for evaluation, all the staff members involved in designing and conducting OSPE were trained by attending an Sri Aurobindo Institute of Medical College & PG Institute, a Regional centre of Medical Education, Indore, readymade and peer agreed upon check list formed the basis of assessment in procedure station. Structured questions were formed for question stations and key answers for the same were also prepared.

Since the assessment was being carried out for the first time, the students were oriented towards such a system in advance before administering the tool. A total of 122 students were assessed. The assessment was conducted for a period of six days. Each day assessment was limited to 50 students only. Each student was assessed by attending 4 procedure and 8 question stations. Each station was designed such that the task could be completed comfortably within 3 minutes. Coefficient of reliability of questions administered was done by calculating Cronbach's alpha [2, 3]. A questionnaire on various components of the OSPE was administered to get feedback.

RESULTS

Among 122 students were present and took this OSPE exercise. 15 students failed to achieve an average of 50% or above in the assessment. However, 39 students on an average achieved >75%, 41 students achieved between 65 to 75% and 27 students scored between 50 to 65%.

Table 1 depicts the mean scores of each station & the score obtained by calculation of Cronbach's alpha for testing the internal consistency of the questions administered.

Feedback given by students was constructive and showed high acceptance as presented in Table 2. Table 3 shows faculty feedback on evaluation system based on OSPE.

Table 1: Mean scores & Cronbach's alpha of OSPE station

Type of station	Station Number	Mean Scores
Procedure	1	3.41
	2	3.14
	3	3.51
	4	3.43
Question	5	3.38
	6	3.18
	7	3.30
	8	3.61
	9	3.03
	10	3.39
	11	3.41
	12	3.60
Cronbach's alpha=0.80		

Table 2: Feedback analysis on various aspects of OSPE and on response to questionnaire of 122 students

Criteria	Choice 1	Choice 2	Choice 3	Choice 4
Orientation to OSPE	Very Helpful=27(22%)	Helpful=80(66%)	Somewhat Helpful=15(12%)	-
Relevance to syllabus	Yes=119(98%)	No	Somewhat=3(2%)	-
Environment of OSPE	Very Comfortable =15(12%)	Comfortable=79(65%)	Somewhat=18(15%)	Uncomfortable=10 (8%)
Questions in Response Station	Relevant=121(99%)	Irrelevant=1(1%)	-	-
Time for Procedure Station	Adequate=63(52%)	Somewhat adequate=48(39%)	Inadequate=11(9%)	-
Effect of OSPE	Help to improve=121(99%)	Does not help=1(1%)	-	-
Assessment system	Only Evaluation=5(4%)	Only Learning=17(14%)	Learning & Evaluation=100(82%)	-
Introduction in final Exams	Completely=29(24%)	Partially=83(68%)	Not at all=10(8%)	-

Table 3: Feedback from Faculty on OSPE as an evaluation system

Criteria	Choice 1	Choice 2	Choice 3	Choice 4
Tested Objectivity	Strongly Agree = 5 (62.5%)	Agree= 3 (37.5%)	Somewhat Agree =Nil	Disagree =Nil
Measured Practical Skills better	Yes = 7 (87.5%)	Somewhat= 1 (12.5%)	Not at all =Nil	-
Eliminated Examiner Bias	To a large extent = 5(62.5%)	Somewhat = 3 (37.5%)	Not at all=Nil	-
Intervals to conduct OSPE	More frequently = 8 (75%)	Less frequently = 2 (25%)	Not at all =Nil	-
Introduction of OSPE for evaluation	Only formative = 8 (100%)	Only summative =Nil	Both=Nil	-

DISCUSSION

Objective structured practical examination a multi station, multi task process of assessment is to assess the cognitive, psychomotor and effective domain of medical undergraduates in Biochemistry laboratory practicals. OSPE methods of examination gives the students greater chance to express their knowledge and skill competency.

Several studies have proved the Objective Structured Practical Examination is a valid objective and reliable assessment tool and eliminate examiner bias [10-14]. The current study also showed a positive perception towards OSPE as a innovative, fair, unbaised, valid, reliable assessment method.

Among 122 students in First year MBBS 2014-16 batch of Sri Aurobindo Institute of Medical College & PG Institute, a Regional centre of Medical Education, Indore. Of the 122 sudents, 80 students performance was highly satisfactory, who scored >65% of marks on an average. However, 15 students did not manage to get even 50% of average marks as their performance was equally poor in both performance and question stations. Mean scores of all the procedure and question stations has been shown in Table No. 1. Question administered were checked for coefficient of reliability by calculating Cronbach's alpha. It showed is a reliable assessment method with high internal consistency (Cronbach's alpha score of 0.80). Evaluated marks of question station and check-list of procedure station were made available to the students, who appreciated what they achieved and identified where they need to improve. Similar studies in biochemistry have shown that OSPE is a reliable tool that can be used both for teaching as well as assessment [6, 9].

Feedback given by students was constructive and showed high acceptance as presented in Table No. 2. Feroze and his team have also reported to have got an appreciated feedback [4]. Majority of students appreciated orientation towards OSPE, syllabus and relevance of question asked. Many students found that the manner in which the assessment was conducted was comfortable. 99% of students believed that OSPE helps them to improve and 82% perceived in both learning

and evaluation tool. However 68% of students expressed that OSPE to be introduced partially in the final exams. The most appreciated aspects of OSPE by students were for its objectivity (38%), time saving (31%) and uniformity (28%).

Table No. 3 shows faculty feedback on evaluation system based on OSPE. 100% of the faculty agreed or strongly agreed that such assessment tested objectivity, 87.5% felt that is measured practical skills better and 62.5% felt eliminated examiner bias to a greater extent. Majority of faculty felt that such exercises need to be given more frequently.

However 100% of faculty agreed upon the use of OSPE in formative only. This is similar to the observations made by Krishna Murthy N et al and other worker [5].

Our results agree with the earlier finding that a single type of assessment alone does not meet all the criteria for evaluating student performance. It also helps teachers to think about innovative methods of teaching and evaluation to improve the relevance of biochemistry and to modify question format to improve relevance comprehension of question in the succeding exams.

We perceive that it would help students to develop different learning skills and make better learners. OSPE is feasible in view of the tremendous advantages that it offers, to include the formative assessment of students to improve their clinical competence and to derive an objective score for formative assessment.

OSPE used as a reliable tool to test practical skills in MBBS students of Biochemistry. It was well appreciated & evaluated by the students and faculty respectively. It is accepted & implemented to be a useful learning and assessment tool by students and faculty.

CONCLUSIONS

In conclusion, OSPE has several distinct advantages.

1. OSPE was more objective, measured practical skills better and eliminated examiner bias.
2. Student feedback reflects tha such assessment helps them to improve as it is effective both as teaching and evaluation tool.
3. Many students felt such system to be only a part of their final assessment system.
4. Faculty participated in organizing OSPE felt that such exercise can be given frequently for formative evaluation before introducing it in summative evaluation.

REFERENCES

1. Ananthkrishnan N; Objective structured clinical/practical examination(OSCE/OSPE). J Postgrad Med., 1993; 39(2):82.
2. Bland JM, Altman DG; Statistics notes: Cronbach's alpha. BMJ, 1997; (6):314-572.
3. Cronbach LJ; Coefficient alpha and the internal structure of tests. Psychometrika, 1951; 16(3):297-334.
4. Feroze M, Jacob AJ; OSPE in pathology. Indian Journal of Pathology & Microbiology, 2002; 45:53-57.
5. Krishna Murthy N, Ashakiran S, Deena Mendez MK, Ganesh G, Nandini T; OSPE as a Learning & Evaluation Tool For Biochemistry: First Experience. J Clin Biomed Sci., 2011; 1(2):65.
6. Kundu D, Das HN, Sen G, Osta M, Mandal T, Gautam D; Objective structured practical examination in biochemistry: An experience in Medical College, Kolkata. Journal of Natural Science, Biology and Medicine, 2013; 4(1):103.
7. Medical Education technology Workshop. Participants workbook. Regional training centre, St. John's Medical College, Bangalore, April 2011(3).
8. Ananthkrishnan N, Sethuraman KR, Kumar S; Medical education principles and practice.2nd edn.pondicherry: Alummi Association of National teacher centre. JIPMER, 2000; (1).
9. Nayar U, Malik SL, Bijlani RL; Objective structured practical examination: a new concept in assessment of laboratory exercises in preclinical sciences. Med Educ., 1986; 20(3):204-9.
10. Reznick R; Does it matter where you go to medical school? Med Educ., 1999; 33:557-58.
11. Ruth N; Communicating student evaluation of teaching results: rating interpretation guides (RIG's). Assessment & Evaluation in Higher Education, 2000; 25:121-34.
12. Sehgal R, Dhir BV, Sawhney A; Teaching technologies in Gross Anatomy. J Anatomic Soc India, 1998; 48:36.
13. Smee S; Skill based assessment. British Medical Journal, 2003; 326(7391): 703-06.
14. Tekian A; Have newly graduated physician mastered essential clinical skills? Med Educ., 2002; 36: 406-407.
15. www.idealmed.org/workshop/OSPEJWare.ppt(4).