Section: Medical Education

Original Research Article

TRADITIONAL PHYSIOLOGY PRACTICAL EXAMINATION VERSUS OSPE IN FIRST-YEAR MBBS: A COMPARATIVE STUDY

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Received : 09/12/2024
Received in revised form : 04/02/2025
Accepted : 21/02/2025

Keywords:
Assessments, OSPE, Practical Examination, Reliability, Validity.

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DOI: 10.47009/jamp.2025.7.1.159

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2025; 7 (1); 808-810

Abstract

Background: Traditional practical examinations (TPE) tend to be more subjective and susceptible to examiner bias, which raises concerns about their validity and reliability. The Objective Structured Practical Examination (OSPE) is advocated as an ideal assessment tool within competency-based medical education (CBME) due to its alignment with these essential criteria. This study aimed to compare the performance of first-year MBBS students in TPE and OSPE, alongside evaluating student perceptions of these assessment methods. **Materials and Methods:** The study was carried out on 100 first-year MBBS students. Students were subjected to TPE followed by OSPE. They were evaluated by four examiners using both traditional method and OSPE. The OSPE was structured with observer stations as well as response stations. The mean scores from both assessment methods were calculated and analyzed for statistical significance using Microsoft Excel and SPSS 18.0. P value <0.05 was considered significant. Additionally, Likert's scale based questionnaire on OSPE was prepared and distributed among the students. Their views and perception towards OSPE were noted. **Result:** The study found a statistically significant difference between the mean scores of the traditional format and OSPE. Feedback analysis revealed that a greater number of students preferred OSPE, finding it better in terms of scoring, passing rates, and its ability to evaluate the psychomotor domain. Many students considered OSPE to be more useful and comfortable compared to the traditional examination pattern. Most students did not find OSPE intimidating and expressed the opinion that it should be incorporated as an assessment method in both internal and university examinations. **Conclusion:** By integrating cognitive, psychomotor, and affective domains, OSPE effectively eliminated examiner bias. Although OSPE is time and labor-intensive, the study concludes that it should be introduced and adopted as an assessment tool.

INTRODUCTION

Assessment tools in educational contexts are crucial for evaluating the attainment of educational objectives, necessitating validity and reliability. Besides assessing knowledge, evaluating practical skills is indispensable and should be conducted consistently and reliably, with clear distinctions among different performance levels. With the implementation of competency-based curricula in medical education, numerous institutions have begun exploring the objective structured practical examination (OSPE) method, alongside traditional practical assessments.[1-3]

Originating as a variant of the objective structured clinical examination (OSCE) circa 1975 for preclinical and paraclinical subjects, the OSPE aims to mitigate the subjectivity and uncertain validity and reliability associated with traditional practical exams. The OSPE is characterized by its objectivity through direct observation and assesses both knowledge and its application. Presently, many institutions utilize OSPE for formative assessment during internal examinations, although widespread adoption by universities remains limited.[2,4]

This study seeks to compare the performance of first-year MBBS students in traditional practical exams versus the OSPE format and assess their efficacy as assessment tools. The objectives were to

ISSN (O): 2687-5365; ISSN (P): 2753-6556

compare the scores obtained in OSPE and traditional practical examinations in the subject of Physiology and to gather students' feedback regarding this structured assessment tool.

MATERIALS AND METHODS

The study was conducted by the Department of Physiology on 100 first year MBBS students of C U Shah Medical College, Surendranagar, Gujarat. Institutional ethical committee approval and informed consent from all the students and examiners were taken before the study. The syllabus for the test was announced to the students 15 days in advance to ensure they had enough time to prepare for the test. The students were divided into 3 groups (A, B, C) of 33 students each for practical classes. Each group was first assessed using traditional practical examination, followed by OSPE one week later and both assessments focused on the same topic.

The students were briefed about the OSPE procedure and marking pattern beforehand. The OSPE comprised of procedure station as well as response stations. At the procedure station, students' psychomotor skills were assessed, while the response stations evaluated cognitive skills. Examiners used a checklist to record performance at each station. Each station was allotted 3 minutes, and the total score for both examination schemes was 15.

A total of 96 students were present during both exams. The marks were tabulated, and the mean scores of the two assessment schemes were compared using an unpaired Student's t-test. Additionally, student feedback on a 5 point Likert scale regarding OSPE and traditional practical examinations was obtained using a pre-validated questionnaire, and the results were analyzed with Microsoft Excel and SPSS 18.0.

RESULTS

[Table 1 and Figure 1] illustrate the comparison of mean marks obtained by students in traditional practical tests versus OSPE. A extremely significant difference was observed between the scores of the traditional practical examination and OSPE, with higher scores in OSPE. Students found the questions comprehensible and easy to score, although some reported insufficient time.

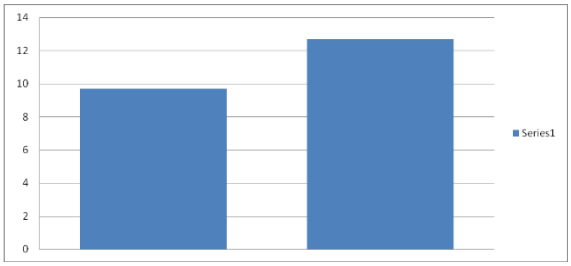

Figure 1: Graphical comparison of mean marks obtained in TPE v/s OSPE

Table 1: Comparison of students'marks obtained in traditional exam vs OSPE.

Test pattern	Students' marks(Mean ± SD)	P value
Traditional Practical Exam	09.71 ± 1.56	<0.0001
OSPE	12.68 ± 1.22	

The feedback results from the students are displayed in Table 2. A majority of students (91.66%) agreed that the OSPE is well-structured, clear, and uniform. Most students (70.84%) found the OSPE to be a useful and feasible examination format and recommended it to be a regular feature of exams while 4% disagree.

Table 2: Feedback of students about OSPE

Sr. No	Question Construct	Strongly agree	Agree	Neutral	Disagree	Strongly Disagree
		n (%)				
1	I was properly sensitized about OSPE	54 (56.8)	34 (35.8)	06 (6.3)	1 (1.1)	0 (0)
2	The questions were well structured	41 (43.2)	48(50.5)	07(7.4)	0 (0)	0 (0)
3	Questions were clear and proper	54 (56.8)	37 (38.9)	04 (4.2)	0 (0)	0 (0)
4	Sufficient time given for each station.	32 (33.7)	48(50.5)	13(13.7)	02 (2.1)	0 (0)
5	Exam was equitable and fair for all students	54 (56.8)	31 (32.6)	10 (10.5)	01(1.1)	0 (0)
6	The OSPE is beneficial for scoring and passing the examination	54 (56.8)	31(32.6)	09(9.5)	02(2.1)	0 (0)
7	The OSPE better assesses skills and performance	29 (30.5)	41 (43.2)	23 (24.2)	03 (3.2)	0 (0)
8	OSPE is more stressful as compared to the traditional method.	05 (5.3)	10 (10.5)	25(26.3)	43 (45.3)	13 (13.7)
9	The examination was well organized	32 (33.7)	57(60)	06 (6.3)	0 (0)	0 (0)
10	OSPE should be followed as the method of assessment of practical skills in Physiology.	29(30.5)	40 (42.1)	23 (24.2)	04 (4.2)	0 (0)
11	The traditional method of assessment of practical skills should continue in Physiology.	06 (6.3)	17(17.9)	33 (34.7)	29 (30.5)	11 (11.6)
12	I found OSPE intimidating	03 (3.2)	16 (16.8)	36 (37.9)	34 (35.8)	07 (7.4)
13	I enjoyed OSPE more than traditional exam.	30 (31.6)	40 (42.1)	22 (23.2)	05 (5.3)	0 (0)
14	Having an observer present is embarrassing	05 (5.3)	27(28.4)	30 (31.6)	29 (30.5)	04 (4.2)
15	I would prefer OSPE over traditional practical	34 (35.8)	37 (38.9)	16 (16.8)	07 (7.4)	02 (2.1)

ISSN (O): 2687-5365; ISSN (P): 2753-6556

	exam					

However, few of students (19.79%) felt that the OSPE was intimidating compared to the traditional format. Also, 33% of students reported that the presence of an observer at the observation station made them slightly self-conscious and somewhat embarrassed. Due to its structured and objective nature, 88% of students believed that pass rates would be higher with the OSPE.

DISCUSSION

Assessment evaluates the extent of adequate preparation and the effectiveness of teaching, considering its overarching goals. Traditionally, assessment techniques have focused on evaluating students primarily in the cognitive domain, neglecting the affective and psychomotor domains.[5,6] The selection of an assessment tool profoundly impacts student performance and their ability to score, addressing various facets of their capabilities.[6,7]

Mean marks in the traditional method were 9.71 and 1.56, whereas in the OSPE format they were 12.68 and 1.22. This difference was statistically significant ($p<.001$). Prior investigations have corroborated similar findings.[8,11]

The objective structured practical examination (OSPE) is recognized for its well-organized, less anxiety-inducing format that aligns closely with syllabus objectives compared to traditional exams.[12] OSPE fosters higher student engagement through its structured station setup, which minimizes examiner biases and the apprehensions typically associated with traditional formats. Many students express a preference for OSPE due to its objective and standardized scoring system, ensuring equitable opportunities and observation periods across all stations.[13,14]

In our research, students overwhelmingly favoured OSPE for its perceived fairness and reduced stress compared to traditional methods.[13,14] OSPE enhances the continuous assessment of practical skills throughout the evaluation period, unlike traditional exams that often assess skills only at the conclusion. This structured approach enhances reliability by directly assessing practical skills rather than relying solely on verbal responses.[15] Despite its resource-intensive nature, OSPE stands out as a highly dependable tool for evaluating laboratory exercises, owing to its structured and objective design.

CONCLUSION

Traditional practical examinations in Physiology are subjective and often exhibit examiner variability, raising concerns regarding their validity and reliability. These examinations lack uniform structure and standardization. The Objective Structured Practical Examination (OSPE) addresses these issues by incorporating objective testing through direct observation and the assessment of knowledge, comprehension, and skills. Our study supports the introduction of OSPE in medical education for the evaluation of practical skills in undergraduate medical students.

REFERENCES

1. Pradhan R, Rathod S, Kharsadiya M, Tamboli D. A comparison between objective structured practical examination and traditional practical examination as an assessment tool in biochemistry. GCSMC J Med Sci. 2021 Jul-Dec;10(2):57-60.
2. Seale JK, Chapman J, Davey C. The influence of assessments on student's motivation to learn in a therapy degree course. Med Educ. 2000;34(8):614–21. doi:10.1046/j.1365-2923.2000.00528.x.
3. Frank JR, Snell LS, Cate OT, Holmboe ES, Carraccio C, Swing SR, et al. Competency-based medical education: Theory to practice. Med Teach. 2010;32:638–45.
4. Harden RM, Gleeson FA. Assessment of clinical competencies using an objective structured clinical examination (OSCE) In: ASME Medical Education Booklet No. 8. Dundee: ASME; 1979. Med Educ. 1979;13(1):39–54.
5. Harden RM, Stevenson M, Wilson DW, Wilson GM. Assessment of clinical competencies using objective structured clinical examination. Br Med J. 1975;1(5955):447-51.
6. Harden RM, Gleeson FA. Assessment of clinical competencies using an objective structured clinical examination (OSCE). In: ASME Medical Education Booklet No. 8. Dundee: ASME; 1979. Med Educ. 1979;13(1):39-54.
7. Ashok NS, Prathab AG, Indumathi VA. Objective structured practical examination as a tool for evaluating competency in gram staining. J Educ Res Med Teach. 2013;1:48-50.
8. Vijaya DS, Alan S. A comparative study to evaluate practical skills in physiology among 1st phase medical undergraduates at JNMC Belgaum: Traditional practical examinations versus objective structured practical examinations (TPE V/S OSPE). Int J Educ Res Technol. 2014;5:126-34.
9. Bairy KL, Adiga S, Shenoy S, Magazine BC, Amberkar M, Kumari MK. OSPE in pharmacology: Comparison with the conventional method and students' perspective towards OSPE. Br Biomed Bull. 2014;2:218-22.
10. Ananthakrishnan N. Objective structured clinical/practical examination (OSCE/OSPE). J Postgrad Med. 1993;39(2):82-4.
11. Watson AR, Houston IB, Close GC. Evaluation of an objective structured clinical examination. Arch Dis Child. 1982;57:390-2.
12. Mokkapati A, Pavani G, Dass SM, Rao MS. Objective structured practical examination as a formative assessment tool for 2nd MBBS microbiology students. Int J Res Med Sci. 2016;4:4535-40.
13. Singh PR, Bhatt R, Singh S. Perceptions towards Implementation of OSPE as an assessment tool in anatomy for undergraduates at a rural medical college in Western India. Natl J Basic Med Sci. 2010;II(1):54-60.
14. Faldessai N, Dharwadkar A, Mohanty S. Objective-structured practical examination: A tool to gauge perception and performance of students in biochemistry. AJMS. 2014;2:32-8.
15. Byrne E, Smyth S. Lecturers' experiences and perspectives of using an objective structured clinical examination. Nurse EducPract. 2008;8(4):283-9.

ISSN (O): 2687-5365; ISSN (P): 2753-6556