



PERFORMANCE OF FIRST-YEAR MBBS STUDENTS IN OSPE

Physiology

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ABSTRACT

This complete enumeration, cross-sectional study was conducted on first-year MBBS students at a municipal medical college. At the “procedure station”, observers with a pre-validated checklist awarded marks (two marks per correct procedural step; maximum = 20 marks). At the “question station”, the students attempted ten short-answer questions (two marks each; maximum = 20 marks). At the “procedure station”, the average score of female students (n=31) was 18.00 +/- 1.55, while that for males (n=48) was 17.83 +/- 1.69, without significant gender difference (Z=0.459; p=0.646). At the “question station”, the average score of female students was 14.97 +/- 1.30; while that for males was 14.15 +/- 1.87, exhibiting significant gender difference in scores (Z=2.297; p=0.021). The proficiency in performing the procedure (psychomotor domain) component of the practical was comparable but the cognitive domain scores of male students was significantly lower than that of their female counterparts.

KEYWORDS

Differential count, Gender difference, OSPE, Physiology

INTRODUCTION

The Objective Structured Practical Examination (OSPE) has undergone subsequent improvements, [1, 2] after it was first described in 1975. [3] In OSPE, the performance of the student is directly observed across several laboratory stations, each of which, is designed to test an element of competence. The students move to the next station when a signal is given and should rotate synchronously (about 4-5 minutes each) through all stations in a pre-determined sequence. [1, 2] Usually, the stations are independent and the students can start at any of the stations and complete the cycle. Each “procedure station” is assigned an observer with a pre-validated check list for scoring the student's performance in the task to be performed at that station. At “question stations”, students write answers to questions. [4]

OSPE is currently a formative evaluation method in select Indian medical colleges [5] and has been introduced as summative appraisal method in few Indian universities. [6, 7] OSPE has not yet been deployed as a routine evaluation tool during MBBS practical examinations in Maharashtra State.

Student performance has to be assessed across a range of situations to ensure a reliable skill-based evaluation. [1] George Miller described four levels for assessing levels of clinical competence – “knows”, “knows how”, “shows how”, and “does”. [8] The OSPE evaluates the psychomotor (competence) component - the “shows how” level. [8] The OSPE evaluates a variety of competencies, [9] eliminates subjectivity, [6] examiner bias, [Reznick et al, 1993] assesses practical psychomotor skills, [9] facilitates uniformity in student assessment, reduces stress levels among students, [7] reduces total time for practical examination, has a broader discrimination index and high reliability [11] and facilitates comprehension of several elements of competencies amongst students. [12] Computer-assisted OSPE (COSPE) expedites the evaluation process. [13]

The impediments in using OSPE include its labour-intensive nature, difficulties in maintaining identical difficulty levels, and observer fatigue. [14] Despite these shortcomings, OSPE brings about an improvement in student assessment. [9] OSPE has been introduced in select Indian universities. [9, 12]

The mode of assessment influences the learning style of student, [15] has a crucial role the learning process, [16] and chiefly determines what students learn [17] while an alteration in the method of student evaluation can transform learning behaviour. [18]

Differential Leukocyte Count was chosen for this study since it is in the “must know” category in the curriculum of Physiology for the First MBBS course. In addition, this practical assesses the psychomotor skills of the student.

MATERIALS AND METHODS

This complete enumeration, cross-sectional study was conducted at a

municipal medical college located at Thane, Maharashtra state, India. The OSPE procedure and the check-list based marking system were explained to first-year MBBS students and written informed consent was obtained from those willing to participate in the study. At the “procedure station”, observers with a pre-validated checklist awarded marks (two marks per correct procedural step; maximum = 20 marks). At the “question station”, the students attempted ten short-answer questions (two marks each; maximum = 20 marks).

The data were statistically analyzed using EpiInfo Version 7.0 (public domain software package from the Centers for Disease Control and Prevention, Atlanta, GA, USA). Continuous data were presented as Mean and Standard Deviation (SD). 95% Confidence interval (CI) was stated as: [Mean-(1.96)* Standard Error] - [Mean+(1.96)* Standard Error]. The standard error of difference between two means (Z) was calculated. Statistical significance was determined at p<0.05.

RESULTS AND DISCUSSION

A total of 31 (39.24%) females and 48 (60.76%) males participated in this study.

Procedure station: The average score (out of 20) of female students was 18.00 +/- 1.55 (95% CI: 17.45–18.55), while that for their male counterparts was 17.83 +/- 1.69 (95% CI: 17.35–18.31). The gender difference in scores at the procedure station was not significant (Z=0.459; p=0.646). The maximum and minimum scores of females and males were identical, while the third quartile, median and first quartile of scores was higher for female students (Fig-1). The procedure station primarily assessed the psychomotor domain at the “shows how” level of Miller's Pyramid. [6]

Question station: The average score (out of 20) of female students was 14.97 +/- 1.30 (95% CI: 14.51–15.43), while that for their male counterparts was 14.15 +/- 1.87 (95% CI: 13.62–14.67), exhibiting significant gender difference in scores (Z=2.297; p=0.021). The maximum scores of females and males were identical. However, the third quartile, median, first quartile and minimum score was higher for female students (Fig-1). The question station primarily assessed the cognitive domain at the “knows” and “knows how” levels.

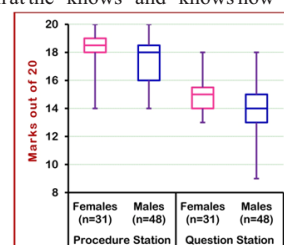


Fig-1: Box plot depicting gender differences in scores

The results imply that while both male and female students were equally adept at performing the procedure (psychomotor domain) component of the practical, the male students were found wanting in the knowledge (cognitive domain) component of the practical, when compared with their female counterparts. Various studies [19-23] have reported that female students performed significantly better, as compared to their male counterparts, which confirms the findings in this study.

CONCLUSION

The scores in performing the procedure component of the practical was comparable between the genders but the cognitive domain scores of male students was significantly lower than that of their female counterparts. Students with lower scores may need remedial teaching.

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