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Original Article

Pharmacology Section

A Study on the Performance of Medical Students in Internal Assessment and its Correlates to Final Examinations of 2nd MBBS Pharmacology Curriculum in a Medical College of Eastern India

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ABSTRACT

Objectives: The present study was undertaken to assess whether performance in the continuous assessment method as determined by internal assessment, correlates to the final summative evaluation in 2nd professional MBBS students in Pharmacology for the last four years (2009-2012).

Materials and Methods: This study was conducted over a period of three months at Nilratan Sircar Medical College and Hospital, Kolkata (West Bengal, India). It was a retrospective non-interventional record-based study based on the students' score sheets of 2nd MBBS Pharmacology examinations.

Results: The strength of correlation between internal assessment marks and total summative examination was fond to be highly significant at $p < 0.0001$, thereby implying that continuous assessment plays a vital role in influencing the overall performance of the undergraduate medical students.

Conclusion: This study revealed that performance in the internal assessment and final examination have a direct correlation although not completely linear, thereby indicating that other possible variables would have influenced the final result of the 2nd MBBS Pharmacology curriculum.

Keywords: Curriculum, Internal assessment, Medical education, Pharmacology

INTRODUCTION

Assessment and evaluation is a continuous activity which should be designed simultaneously with curriculum development [1]. A well-designed system of assessment and evaluation is a powerful educational device [2]. Curriculum is a formal plan of educational experiences and activities offered to a learner by an educational institution, where knowledge, skill and values are to be developed during the MBBS course. In 1997, the Medical Council of India (MCI) made an announcement regarding the assessment pattern of medical graduates [3]. Examinations play a noteworthy role in the conductance of a curriculum. When the Oxford University held the first examination in 1958, it said that examinations would give stimulus to scholars and teachers and would afford an evidence to public how far the effort of both had been successful [4]. Assessment of learning has always been difficult, yet an essential component of an educational program. In the undergraduate medical education system in India, curricular guidelines of Medical Council of India lay emphasis on method of assessment of knowledge and skills in Pharmacology [5]. In view of advances in medical sciences and technology, periodic updating of a curriculum is necessary with proper assessment of the students as per the standard guidelines of the MBBS course. The number of examinations to be held has been left to the institution concerned. The continuous internal assessment and evaluation system is a type of teaching learning activity [6]. It allows the student to study his valued answer scripts, to discuss them with teachers, to seek clarification on the basis of assessment, and to obtain guidance for improvement [7]. The objective of this study was to explore whether performance in the continuous assessment method as determined by internal assessment, correlates to the final summative evaluation in 2nd professional MBBS students in Pharmacology for the last four years.

MATERIALS AND METHODS

The study was conducted over a period of three months in the Department of Pharmacology at Nil Ratan Sircar Medical College and Hospital, Kolkata, West Bengal, India. This was a retrospective non-interventional record-based study involving 624 students, who took a comprehensive internal assessment and final examination in Pharmacology in 2009, 2010 2011, and 2012. The study commenced after approval from the Institutional Ethical Committee (IEC). The study was designed to be completed in 3 months. The entire population consisted of the four batches of students in consecutive years (2009 - 2012) of a tertiary care teaching hospital of Eastern India. Data collection was carried out from the students' score sheet of internal assessment and final summative examination in Pharmacology and the marks obtained in them were considered for our study. Anonymity was maintained uniformly and permission for access to the students' score sheets was obtained from the students' section as well as from the IEC. IA is strictly based on continuous evaluation (may be weekly/fortnightly) of the students as well as periodical examinations. Nature of continuous assessment was through item cards after completion of a system. Each test was objectively assessed and recorded. Assessment for practical was done through day to day evaluation of the students' performance in the practical record book. There were three periodical internal assessment examinations. Fifty percent (50%) of the marks in internal assessment, earmarked for theoretical and practical components were allotted for continuous assessment based on day to day performance recorded for the purpose in item cards. Marks secured in the three periodical assessment examinations counted for awarding rest 50% marks in each component of internal assessment.

STATISTICAL ANALYSIS

Statistical analysis was performed using statistical software GRAPH PAD PRISM version 4.03 for Windows (Graph Pad Software Inc., San Diego, CA, USA). Standard tests for descriptive statistics were applied, which commonly included the use of correlation. Spearman's correlation coefficient (r) was calculated to determine if performance

Parameters	Internal Assessment Marks Out of Full Marks 30 (n= 624)	Total Summative Marks Out Of Full Marks 150 (n= 624)
Minimum	13.33%	10.67%
Median	46.67%	62%
Maximum	73.33%	80%
Mean	46.97%	61.17%

[Table/Fig-1]: Basic characteristics of the marks obtained in internal assessment and final summative examination

in internal assessment was correlated to the performance in the Final summative examination score for each group. P-value of less than 0.05 was considered to be statistically significant.

RESULTS

The Score sheets of total 624 undergraduate students were taken into consideration. The marks of internal assessment were out of full marks 30 while the same for Second Professional MBBS Examination was out of 150. The basic characteristics of the marks obtained in internal assessment and final summative examination are shown in [Table/Fig-1].

To quantify the strength of the relationship between internal assessment marks and total summative examination, we calculated the Spearman correlation coefficient r, which was + 0.2671 with 95% confidence interval of 0.1903 to 0.3405. The correlation was highly significant at $p < 0.0001$.

DISCUSSION

The performance of a student of 2nd Professional MBBS course throughout the stipulated tenure is reflected into the internal assessment results and generally presumed to be a predictor of final summative examination results. In our study we observed that, while it is supported to some extent by the partial direct correlation, the association between internal assessment and final examination performance is not completely linear, thereby indicating other possible variables that may influence the final result. Learning styles (visual, aural, read/write, kinaesthetic and multimodal modes of learning), demographics (age and gender), and entry qualifications are some of the independent variables in this study that were not taken into account. Previous studies by Ghosh et al., [8] Oyebola et al., [9] Moqattash et al., [10] and Mujeeb et al., [11] all reflecting on the medical students assessments had not taken into account the internal assessment score records as an integrative modality for evaluation. This is perhaps the first study showing a definite correlation between continuous evaluation and the final examinations at the end of 2nd MBBS Pharmacology curriculum in the backdrop of the existing medical education system.

The effects of examiner training may be one promising area of research. Medical council of India made it mandatory for all medical colleges to establish medical education units (MEUs) or departments in order to enable faculty members to avail medical education technology (MET) for teaching through faculty development programs, since July 2009 [12]. A second area for research might focus on what personality variables affect oral examination scores. More research is needed on what is being measured in order to justify using the technique for large numbers of candidates. Single assessment does not fulfill all aspects of assessment and there is a need for having a relook at the strategies followed in the existing assessment system.

CONCLUSION

The present study revealed a definite correlation in the performance of medical students in internal assessment and final summative examination in 2nd MBBS Pharmacology examination. This correlation is not completely linear which implies that a number of variables may have influenced the outcome. Therefore, emphasis should be laid upon the assessment of attitudes, communication skills, ethics and interpersonal skills in order to improve the level of performance in continuous assessments as well as in the final examinations of the undergraduate medial students.

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