

Evaluating the Impact of Weekly Assessment and Feedback on the Final Performance of First MBBS Students in Physiology Examinations

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Abstract:

Background: In medical education, assessment and evaluation are ongoing processes that ought to be planned for in tandem with curriculum creation. The goal of the current study was to evaluate the impact of ongoing weekly evaluations and feedback on first-year MBBS students' final performance in the physiology exam.

Methods: The Physiology department of Sri Krishna Medical College & Hospital, Muzaffarpur, Bihar in India conducted a 2-year study in 2022 and 2023. It involved 100 students who underwent rigorous internal assessments and a final physiological test as part of an intervention. Category A received weekly written tests with organized short-answer questions. Students were given one-week notice of the test topics. Faculty and residents graded the tests, and an online randomizer assigned papers to examiners. Each examiner had a model response for reference. After grading, students received feedback and discussed their errors. The university required two semester exams and continuous tutoring. Category B MBBS students did not have weekly assessments but still had to take two semester exams and attend regular tutorials. Data analysis was performed using SPSS version 16.

Results: Over 2 years, 100 students participated in the study. Both Category A and Category B first MBBS students had an age range of 18-27 years. In terms of learner satisfaction, Category A scored a high 4.7 on a 5-point Likert scale, while Category B scored 3.8. Students attributed the positive learning environment to frequent internal exams, weekly feedback in small groups, and instructor's involvement. They found weekly internal assessments more effective than traditional methods. Academic staff noted that students were attentive and needed less guidance. In Semester I, Category B scored 57.69%, while Category A scored 64.26%. In Semester II, Category A achieved 75.24%, while Category B scored 64.3%. Overall, Category A outperformed Category B significantly in both semester exams.

Conclusions: The current study found that medical students performed noticeably better on internal assessments and the final summative test in the First MBBS Physiology exam when they received regular weekly exams and feedback. To raise the performance level in ongoing evaluations and the undergraduate medical students' final exams, emphasis should also be placed on the evaluation of attitudes, communication skills, ethics, and interpersonal skills.

Keywords: Continuous Internal Assessment, Medical Education, Feedback.

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Introduction

The existing MBBS curriculum in India predominantly relies on didactic teaching methods, predominantly through lectures, occasionally complemented by concise tutorial sessions. The potential consequence of this situation is the emergence of a deficiency in the provision of comprehensive medical education. The integration of assessment and evaluation is imperative in the process of curriculum development [1]. A meticulously crafted evaluation system serves as a valuable educational instrument.

In the year 1997, the Medical Council of India (MCI) implemented regulations mandating the successful completion of internal assessments (IA) by undergraduate students prior to their final examinations [2].

The curriculum serves as a framework for delivering organized and systematic educational experiences throughout the duration of the MBBS course. The influence of formative assessment on the process of learning is substantial and warrants meticulous attention in its design and

implementation. The year-end examinations possess inherent limitations in their capacity to evaluate a restricted range of competencies, devoid of any provision for feedback. The internal assessment modality presents an opportunity to evaluate the acquisition of knowledge and deliver feedback, which is an essential component of the pedagogical process [3].

The revised Regulations on Graduate Medical Education (GME) in 2012, as mandated by the MCI, necessitate the successful completion of the IA component in order to qualify for final examinations [4]. The assessment of IA should encompass the meticulous documentation of daily activities, routine evaluations, assigned tasks, scholarly discussions, clinical case analyses, active involvement in community healthcare initiatives, demonstration of competence, aptitude for research endeavors, selection of specialized courses, and acquisition of proficiencies.

The In-training Assessment (ITA) possesses untapped potential in evaluating a wider array of competencies that are not encompassed by year-end examinations. The "quarterly model of internal assessment" postulates the implementation of assessments conducted on a quarterly basis, involving multiple examiners and a variety of tools across diverse content domains [5]. This approach aims to augment the reliability and validity of the assessment process.

In the context of India, the implementation of IA encounters various challenges, including inadequate execution, deficiencies in faculty training, instances of misuse, restricted acceptance, and perceived lack of reliability [6]. The implementation of efficacious formative assessment methodologies has been shown to significantly augment student engagement and foster the development of critical thinking skills.

In certain academic institutions, there is a shift occurring from conventional summative assessments to the implementation of continuous assessment models, wherein assignments are administered following the completion of each module. Although the implementation of formative assessment necessitates a significant investment of time and personnel resources, it yields invaluable feedback that contributes to the enhancement of learning outcomes. This study aims to investigate the effects of continuous weekly assessment and feedback on the ultimate academic achievement of first-year MBBS students in the field of Physiology.

Methods

Study Design: The study was conducted over a duration of two years at Sri Krishna Medical College & Hospital, located in Muzaffarpur, Bihar,

India. The study encompassed a cohort of 100 first-year MBBS students who underwent both internal assessment and a final Physiology examination in the years 2022 and 2023.

Inclusion Criteria: The inclusion criteria encompassed individuals who met the following requirements: being medical students within the age range of 18 to 27 years. The study population consisted of two consecutive cohorts of first-year MBBS students. The acquisition of data was contingent upon the utilization of students' scores obtained from internal assessments and final examinations in the field of Physiology.

Weekly continuous assessment and periodic examinations were conducted to evaluate the progress and performance. All assessments were objectively evaluated and documented. The practical assessment encompassed the daily evaluation of the students' practical record books. Two periodic internal assessment examinations were conducted.

The cohort of students classified as Category A underwent regular evaluations in the form of weekly assessments. These assessments encompassed written examinations conducted every Saturday, spanning from Months. Each examination lasted for one hour and carried a weightage of 20 marks. The interrogatives were methodically formulated and devised by esteemed members of the faculty. The subjects were divulged seven days prior to the examinations. The papers underwent correction by a panel consisting of faculty members and residents, employing a randomized allocation method for assigning examiners. The provision of model answers was facilitated, followed by a comprehensive discussion among educators pertaining to the deficiencies observed in students' performance.

Category A students were subjected to two semester examinations as well as regular tutorial sessions. The academic staff sustained ongoing engagement with the student body throughout the duration of the year.

The students classified as Category B did not undergo regular weekly assessments. Both categories were subjected to two semester examinations and regular tutorial sessions. The present study sought to evaluate and compare the outcomes of semester examinations across two distinct categories.

The statistical analysis was conducted using the SPSS version 16.

Result

The present investigation was carried out over a duration of twenty-four months, encompassing a cohort of 240 individuals enrolled as students. The

study population consisted of two distinct groups, namely Category A and Category B, both comprising first-year MBBS students. Learner satisfaction was found to be significantly high, as indicated by an overall score of 4.7 on a 5-point Likert scale in Category A. Conversely, in Category B, learner satisfaction was comparatively lower, with a score of 3.8. In the documented remarks, the students conveyed that the implementation of recurrent internal evaluations, accompanied by weekly feedback sessions, conducted in small increments and facilitated by faculty members, fostered a secure milieu for knowledge acquisition. The proponents observed that the implementation of a weekly internal

assessment yielded superior efficacy compared to conventional modes of assessment. The faculty members observed that the students exhibited sustained levels of engagement and demonstrated a commendable degree of self-regulation, necessitating only minimal supervision. In semester I, Category A achieved a percentage of marks of 64.26, while Category B obtained a percentage of marks of 57.69. In semester II, Category A achieved a percentage of marks of 75.24, while Category B attained a percentage of marks of 64.3. The findings of the study indicate that Category A exhibited a statistically significant superior performance in both the semester examinations when compared to Category B.

Table 1: Shows comparison of marks of Category A and Category B in both semesters

Parameters	Category A	Category B
Semester I	64.26	57.69
Semester II	75.24	64.3

Discussion

The present evaluation system for the MBBS program necessitates a comprehensive reassessment due to its failure to encompass all essential facets within a single assessment. The perception of Internal Assessment (IA) as being unreliable frequently arises from a conflation of the concepts of 'objectivity' and 'reliability.' The concept of objectivity in this study pertains to the consistent evaluation performed by various examiners. On the other hand, reliability refers to the level of confidence we place in their judgments. Both aspects, objectivity and reliability, were meticulously taken into account during the course of this investigation. Despite the inherent subjectivity, medical educators place utmost importance on ensuring reliability [7].

The utilization of internal assessment possesses the capacity to effectively mitigate the constraints associated with year-end examinations, including [8, 9]:

1. The individual's ability to progress in the course is constrained by the course's termination, necessitating a reliance on chance.
2. Facilitating the manipulation of examiners by intellectually astute individuals.
3. The failure to discern between diligent students and last-minute crammers is observed.
4. The inability to assess practical skills is attributed to temporal and logistical limitations.
5. Failure to conduct a comprehensive evaluation of attitudes, communication abilities, ethical considerations, and interpersonal aptitude.

The robustness of this study was enhanced through the implementation of weekly feedback sessions for the participants, facilitating open dialogues with examiners, and encouraging self-assessment. The

utilization of feedback as a potent instrument for the acquisition of knowledge and skills is widely acknowledged in the medical field.

The assessment process not only serves to evaluate outcomes, but also offers a systematic framework for facilitating learning [10]. The assessment aspects in this study were effectively managed by senior faculty members. The validity of the study is contingent upon the comprehensive assessment of the intended competencies. However, it is noteworthy that this particular study solely focused on the evaluation of knowledge.

In a prior investigation conducted by Santra R in 2014 [11], the association between performance in IA and the ultimate summative evaluation was examined among second-year students pursuing a MBBS degree with a focus on Pharmacology. The identified association implies that additional factors exerted an impact on the ultimate outcome.

Medical educators place significant emphasis on the pivotal role of assessment in facilitating the process of learning, with the ultimate goal of enhancing the quality of learning outcomes and optimizing the overall student experience [12]. Although the implementation of this assessment model may necessitate increased dedication from faculty members, it has the potential to facilitate improved allocation of student assessment responsibilities and provide valuable training opportunities for tutors and senior residents in the realm of assessment methodologies. The assessment process holds equal importance to that of research and teaching, necessitating meticulous planning and diligent effort.

Conclusion

The current investigation unveiled a clear superiority in the academic performance of medical students in the internal assessment and final summative examination of the First MBBS Physiology examination when weekly regular examinations and feedback were implemented. Attention should also be directed towards the evaluation of attitudes, communication abilities, ethical conduct, and interpersonal aptitude to enhance the standard of achievement in ongoing evaluations as well as in the ultimate assessments of undergraduate medical students.

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