e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(8); 1641-1643

Original Research Article

A Study to Assess the Effects of Continuous Weekly Assessment along with Providing Feedback on the Final Performance in Examination of First MBBS Students in Physiology Department

Babita Garhwal[1], Varsha Butolia[2], Sumitra Kumari[3]

[1]Assistant Professor, Department of Physiology, Pacific Institute of Medical Sciences, Umarda, Udaipur, Rajasthan, India

[2]Associate Professor, Department of Physiology, Arya Medical College & Hospital, Jaipur, Rajasthan India

[3]Associate Professor, Department of Physiology, Pacific Institute of Medical Sciences, Umarda, Udaipur, Rajasthan, India

Received: 27-06-2025 / Revised: 25-07-2025 / Accepted: 27-08-2025

Corresponding Author: Dr. Sumitra Kumari

Conflict of interest: Nil

Abstract:

Background: Formative assessment with structured feedback is recognized as an effective educational tool, yet its impact in Indian medical colleges remains underexplored.

Objectives: To evaluate the effect of continuous weekly assessments with feedback on the final Physiology examination performance of first-year MBBS students.

Methods: This retrospective study was conducted in the Department of Physiology, PIMS Udaipur, from June to September 2024. Academic records of 100 first-year MBBS students were analyzed. Exposure to weekly assessments and feedback was quantified through an Exposure Index (0–100) and categorized into High (≥75), Moderate (50–74), and Low (<50) exposure groups. Final Physiology exam scores served as the primary outcome. Secondary outcomes included internal assessment (IA) scores, OSPE performance, and pass rates.

Results: Of 100 students, 38 had High exposure, 34 Moderate, and 28 Low. Mean final exam scores were significantly higher in the High exposure group (69.8 ± 7.8%) compared to Moderate (63.4 ± 8.5%) and Low (58.2 ± 9.1%). Each 10-point increase in Exposure Index correlated with a 2.1% increase in final exam marks (95% CI: 1.2–3.1). Pass rates were 97% in High, 85% in Moderate, and 68% in Low exposure groups.

Conclusion: Continuous weekly assessments coupled with structured feedback significantly enhanced student performance in Physiology. Such strategies should be integrated into MBBS curricula to optimize learning outcomes.

Keywords: Formative Assessment, Feedback, Medical Education, MBBS Students, Physiology.

Introduction

Medical education is shifting globally towards competency-based approaches, where continuous assessment and timely feedback form an integral part of the teaching–learning process [1, 2]. Formative assessments, when combined with structured feedback, have been shown to improve knowledge retention, problem-solving, and self-directed learning [3, 4]. Feedback is considered the single most powerful influence on student achievement, as it allows learners to identify performance gaps and correct errors [4].

In India, the introduction of the Competency-Based Medical Education (CBME) curriculum by the National Medical Commission has emphasized formative assessment and feedback as essential components of undergraduate training [5]. However, published evidence on the actual impact of such interventions in early MBBS years, particularly in Physiology, remains limited. This study was therefore conducted to assess the effect of continuous weekly assessments with structured feedback on the final performance of first-year MBBS students in Physiology at PIMS, Udaipur.

Objectives

1. To determine the association between weekly assessment with feedback and final Physiology exam scores.
2. To evaluate the impact on internal assessment (IA) and OSPE performance.
3. To compare pass rates across levels of exposure to weekly assessments with feedback.

Study Design and Setting: This was a retrospective observational study conducted in the Department of

Physiology, Pacific Institute of Medical Sciences (PIMS), Umarda, Udaipur, covering the period June to September 2024.

Participants: All first-year MBBS students enrolled in Physiology during the study period (n=100) were included. Students with incomplete records were excluded.

Materials and Methods

Exposure Assessment

- Weekly assessment attendance (%).
- Feedback received (%).
- **Exposure Index (0–100):** calculated as the average of attendance and feedback percentages.

Students were categorized as High (≥75), Moderate (50–74), or Low (<50) exposure.

Outcome Measures

- **Primary outcome:** Final Physiology examination score (%).
- **Secondary outcomes:** IA scores, OSPE performance, and pass/fail status.

Data Collection: Data were extracted from departmental records and anonymized prior to analysis.

Statistical Analysis: Descriptive statistics were applied. ANOVA compared outcomes across groups. Linear regression assessed the relationship between Exposure Index and exam performance, adjusting for attendance, gender, and baseline academic performance. Logistic regression estimated odds of passing. Significance was set at $p<0.05$.

Results

Baseline Characteristics: Of 100 students, mean age was 18.7 ± 0.9 years and 46% were female. Thirty-eight students had High exposure, 34 Moderate, and 28 Low. Overall attendance was significantly higher in the High group (85.2 ± 6.7%) compared to Low (73.0 ± 11.2%).

Table 1: Comparison of Academic Outcomes Across Exposure Groups

Outcome	High Exposure (n=38)	Moderate Exposure (n=34)	Low Exposure (n=28)	p-value
Final Exam (%)	69.8 ± 7.8	63.4 ± 8.5	58.2 ± 9.1	<0.001
Internal Assessment (%)	71.4 ± 8.2	65.0 ± 8.9	59.3 ± 9.7	<0.001
OSPE (%)	73.1 ± 7.6	67.5 ± 8.1	62.2 ± 9.0	<0.001
Pass Rate (%)	97	85	68	0.001

Academic Outcomes

- **Final examination:** High 69.8 ± 7.8%, Moderate 63.4 ± 8.5%, Low 58.2 ± 9.1 ($p<0.001$).
- **IA scores:** High 71.4 ± 8.2%, Moderate 65.0 ± 8.9%, Low 59.3 ± 9.7 ($p<0.001$).
- **OSPE scores:** High 73.1 ± 7.6%, Moderate 67.5 ± 8.1%, Low 62.2 ± 9.0 ($p<0.001$).
- **Pass rate:** 97% (High), 85% (Moderate), 68% (Low), $p=0.001$.

Regression Analysis

- **Linear regression:** Each 10-point increase in Exposure Index = +2.1% in final score (95% CI: 1.2–3.1, $p<0.001$).
- **Logistic regression:** Odds of passing increased 1.65-fold per 10-point Exposure Index (95% CI: 1.18–2.36, $p=0.004$).

Discussion

Our study demonstrates that structured weekly assessments, when coupled with individualized feedback, significantly improved students' performance in both formative and summative examinations. These findings are consistent with earlier research, which highlighted that repeated low-stakes testing promotes retrieval practice and long-term retention [6]. Moreover, timely and constructive feedback has been shown to enhance students' self-regulation, motivation, and academic achievement [7].

Comparable studies in medical education have reported similar benefits of formative assessment interventions, such as improved exam performance, reduced failure rates, and better clinical reasoning skills [8, 9]. Our findings reinforce the educational principle that "assessment drives learning," particularly when assessments are frequent and feedback-oriented.

Strengths of this study include whole-batch inclusion and objective quantification of feedback exposure. However, limitations include its retrospective design, single-center setting, and the possibility of unmeasured confounders such as intrinsic motivation and self-study habits, which other authors have also noted in similar settings [10].

Future multi-center prospective studies should assess not only academic outcomes but also long-term competencies, such as clinical reasoning and application of physiological concepts in patient care.

Conclusion

In this retrospective study of first-year MBBS students, continuous weekly assessments combined with structured feedback were associated with significantly higher performance in final examinations, internal assessments, and OSPE, as well as improved pass rates compared with lower exposure groups. These findings support the integration of regular formative assessments with feedback into undergraduate Physiology curricula as an effective strategy to enhance learning outcomes, although further multicenter prospective studies are needed to confirm generalizability and long-term impact.

References

1. Norcini J, Anderson B, Bollela V, Burch V, Costa MJ, Duvivier R, et al. Criteria for good assessment: consensus statement and recommendations from the Ottawa 2010 Conference. Medical teacher. 2011;33(3):206-14.
2. Schuwirth LW, Van der Vleuten CP. Programmatic assessment: from assessment of learning to assessment for learning. Medical teacher. 2011;33(6):478-85.
3. Black P, Wiliam D. Assessment and classroom learning. Assessment in Education: principles, policy & practice. 1998;5(1):7-74.
4. Wisniewski B, Zierer K, Hattie J. The power of feedback revisited: A meta-analysis of educational feedback research. Frontiers in psychology. 2020;10:487662.
5. Sahadevan S, Kurian N, Mani AM, Kishor MR, Menon V. Implementing competency-based medical education curriculum in undergraduate psychiatric training in India: Opportunities and challenges. Asia-Pacific Psychiatry. 2021; 13(4): e12491.
6. Roediger III HL, Karpicke JD. Test-enhanced learning: Taking memory tests improves long-term retention. Psychological science. 2006; 17(3): 249-55.
7. Shute VJ. Focus on formative feedback. Review of educational research. 2008;78(1):153-89.
8. Velan GM, Jones P, McNeil HP, Kumar RK. Integrated online formative assessments in the biomedical sciences for medical students: benefits for learning. BMC Medical Education. 2008; 8(1):52.
9. Cilliers FJ, Schuwirth LW, Herman N, Adendorff HJ, Van der Vleuten CP. A model of the pre-assessment learning effects of summative assessment in medical education. Advances in Health Sciences Education. 2012; 17(1): 39-53.
10. Watling CJ, Lingard L. Toward meaningful evaluation of medical trainees: the influence of participants' perceptions of the process. Advances in health sciences education. 2012; 17(2): 183-94.