



# A Cross-Sectional Study On Medical Students' Feedback On Competency-Based Formative Assessment

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ARTICLE INFO	ABSTRACT
<b>Received:</b> 25 Mar 2024	<b>Background and objectives:</b> Formative assessment (FA) is an essential component of the new competency-based medical education curriculum, aimed at improving learning outcomes. Student feedback plays a crucial role in optimizing future FA practices, guiding content development and application. Thus, this study aimed to evaluate first year medical students' feedback regarding FAs. <b>Methods:</b> The study objectives were to assess the emotional impact of FA on students and analyze their suggestions for improving FA practices. A structured and pre-validated questionnaire was administered to consenting students who had undergone FA. Responses were collected and statistically analyzed. <b>Results:</b> Out of 200 students, 178 participated in all FAs, and 145 of them completed the questionnaire, yielding an 81.46% response rate. Regarding emotional impact, majority of students did not perceive FA as burdensome, and reported increased motivation to study. In terms of suggestions, all of students preferred to be informed in advance about upcoming FAs. Additionally, 88.28% preferred written assessments, while 75.17% favored multiple-choice questions (MCQs) exclusively, and 70.34% preferred a combination of MCQs and essay-type questions. Moreover, majority of students advocated for FAs in practical settings, although only few preferred them to be included in the same paper as theory-based FAs. <b>Conclusion:</b> FA serves as an effective tool for enhancing learning without imposing undue stress on students, acting as a positive motivator for improved study habits. Students prefer informed, written assessments primarily comprising MCQs, preferably separated from essay-type questions.
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## INTRODUCTION

Assessments are integral tools that serve both as aids in improving instruction and learning processes and as means to evaluate students' performance, determining their success or failure. Formative assessment (FA) stands out as a crucial tool that enhances the learning journey by helping learners pinpoint knowledge gaps, identify misconceptions, and recognize challenging areas within a subject. This enables them to focus on improving these aspects through ongoing guidance from teachers [1-3]. FA also assists teachers in identifying areas where learners require support, allowing for the creation of tailored and structured teaching plans. Consequently, FA is defined as information conveyed to learners with the intent of modifying their thinking or behavior to enhance learning. Due to these reasons, FA has been incorporated into the assessment framework of the new competency-based medical education (CBME) curriculum [4-6].

Effective FA should inspire students to enhance their learning and understanding [7-9]. Its effectiveness relies on the extent to which students are engaged in creating and receiving FA [10-12]. Regularly obtaining feedback from students regarding their perceptions and suggestions is an essential aspect of the FA process. Incorporating these suggestions can optimize the content and application of FA [13]. Therefore, gathering feedback and suggestions from students not only improves the FA process but also makes it a more acceptable and effective learning tool for students.

In theory, assessment-related stress and anxiety should promote learning and enhance students' academic performance while building coping mechanisms for future professional stress in medical students. However, while some students may find assessment-related stress motivating, it can cause distress for others, leading to detrimental effects on their professional development, medical school retention rates, and personal well-being [14]. Considering this, adding FAs to existing summative assessments (SAs) may increase emotional burden on students, necessitating an analysis of the emotional impact of these FAs on students.

While numerous studies have analyzed the impact of FA on students' performance in SAs, demonstrating the utility of FA, there is a gap in our understanding regarding the emotional impact of these FAs on students and obtaining suggestions for future FAs from students in our specific population. Therefore, this study was conducted with the objective of analyzing the emotional impact of FA and gathering suggestions from first-year medical students regarding the CBME-prescribed FAs.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Indian medical college. The study enrolled 200 first-year medical students who had undergone formative assessment (FA). The study procedure involved preparing a well-designed, structured questionnaire to gather feedback from the study subjects. This questionnaire was validated by distributing it to professors from the first year departments and 10 students (5 boys and 5 girls) from the 3rd year who had previously undergone FA. Their feedback indicated that the questions were clear and did not pose any problems, confusion, or offense. The questionnaire consisted of twenty questions in a 'YES' or 'NO' format, with five questions assessing the emotional impact of FA and fifteen questions regarding suggestions for future FAs.

The questionnaire was distributed to the students after explaining the study and obtaining their informed consent. Once the questionnaires were filled, the responses were collected, compiled in an Excel sheet, and subjected to statistical analysis.

## RESULTS

Out of 200 students, 178 participated in all FAs, and 145 of them completed the questionnaire, yielding an 81.46% response rate. The study included 145 respondents, comprising 42% males and 58% females. A small proportion, only 4.83%, were unaware that Formative Assessments (FAs) are part of the new Competency-Based Medical Education (CBME) curriculum.

Regarding the emotional impact (Table 1), the majority (64.14%) of students did not perceive FAs as burdensome, with 80.69% reporting increased motivation to study. A significant percentage (70.34%) expressed a desire for more such assessments. Furthermore, 88.28% mentioned that FAs helped them identify difficult topics.

Regarding future suggestions (Table 2), all students preferred to be informed about assessments beforehand, while a small fraction (4.14%) were open to surprise tests. In terms of question formats, 75.17% favored multiple-choice questions (MCQs) exclusively, and 70.34% preferred a combination of MCQs and essay-type questions. Only 84.83% did not prefer essay-type questions alone. In practical settings, 64.83% wanted similar assessments, but only 35.86% preferred them to be part of the same paper as theory-based FAs. Regarding exam conditions, 44.14% preferred open-book assessments, while 57.24% preferred closed-book formats. Additionally, 88.28% favored written assessments, and 20% were open to Viva-Voce assessments.

**Table 1: Emotional Impact of FAs on first year MBBS students**

Question	Yes		No	
	n	%	n	%
Were you aware that FA is included in the new competency-based medical education curriculum?	138	95.17	7	4.83
Do you consider these FAs to be burdensome?	52	35.86	93	64.14
Did this assessment inspire you to study more effectively?	117	80.69	28	19.31
Are you eager for more assessments of this kind?	102	70.34	43	29.66
Did this assessment assist you in identifying challenging topics?	128	88.28	17	11.72

**Table 2: Students' suggestions for future FAs**

Question	Yes		No	
	n	%	n	%
Do you prefer a combination of both MCQs and essay-type questions in the next assessment?	102	70.34	43	29.66
Do you prefer an assessment just before your final exams?	96	66.21	49	33.79
Do you prefer assessments after each chapter?	91	62.76	54	37.24
Do you prefer assessments in a closed-book format, answering questions from memory in normal time?	83	57.24	62	42.76
Do you prefer assessments in an open-book format, where you answer while looking in books but in a very short time?	64	44.14	81	55.86
Do you prefer assessments just before internal assessments, covering only relevant portions?	107	73.79	38	26.21
Do you prefer only essay-type questions in the next assessment?	22	15.17	123	84.83
Do you prefer only multiple-choice questions in the next assessment?	109	75.17	36	24.83
Do you prefer questions from both theory and practical in the same paper?	52	35.86	93	64.14
Do you prefer similar assessments for practical separately?	94	64.83	51	35.17
Do you prefer similar questions and answers sessions at the start of each class as part of set induction?	100	68.97	45	31.03
Do you prefer these FAs to be pre-informed tests?	145	100.00	0	0.00
Do you prefer these FAs to be surprise tests?	6	4.14	139	95.86
Do you prefer viva-voce format assessments?	29	20.00	116	80.00
Do you prefer written format assessments?	128	88.28	17	11.72

## DISCUSSION

FA serves as a valuable tool in evaluating students' learning progress, providing feedback to rectify misconceptions, and enhancing the curriculum. However, any form of assessment can add to the already substantial workload and emotional pressure experienced by MBBS students. This increased burden may lead to emotional breakdowns, making it imperative to assess the emotional impact of FA.

Our study, focusing on the emotional impact of FA on students, discovered that students generally view FA as a beneficial tool for enhancing learning, aligning with findings from studies by Lim [15]. Interestingly, students in our study did not perceive these assessments as burdensome, possibly due to their familiarity with FA in their school education. The majority of students expressed motivation to study better in the future, consistent with findings from studies by Arja et al. [16] and corroborating with findings from Labarca et al. [17] and Kesavan and Palappallil [18], where FA assisted students in identifying challenging topics and guiding their preparation for assessments. Consequently, most students in our study expressed a desire for more FA assessments in the future, echoing sentiments from Cong et al. [19], where students preferred continued use of FA alongside summative assessments (SA) in their coursework.

Regarding suggestions for future FAs, our study revealed that students preferred being informed in advance about assessments, with only a few accepting surprise assessments. This preference indicates that regular assessments can motivate students to study effectively, aiding their performance in final exams. Students also favored written formats over viva voce and closed book formats over open book formats, likely due to the similarity to final exams. The preference for multiple-choice questions (MCQs) over essay-type questions may stem from preparation for competitive exams post-MBBS, avoidance of evaluator bias, and alignment with findings from previous studies [20-21].

Students desired assessments at the start of each class, after every chapter, and before internal and final exams, indicating a willingness to increase assessment frequency. They also advocated for FA in practical but separately from theory, possibly avoiding overwhelming assessment volumes.

While our study's questionnaire was validated and focused on students' feedback regarding emotional impact and suggestions for FA, it had limitations. It was a cross-sectional study without follow-up, limiting insight into long-term perceptions. Additionally, it was confined to first year MBBS students, suggesting a need for broader studies encompassing all MBBS years and subjects to generalize findings across medical education. Improving questionnaire design for clarity and exclusivity could enhance future studies in this area.

## CONCLUSION

Students have embraced FAs positively, viewing them as valuable training tools for the future. Contrary to being burdensome, students eagerly anticipate more of these assessments. Their preference is for pre-informed, closed book, written assessments featuring MCQs. They also desire FAs to be conducted in practical

settings but not in conjunction with theory-based FAs. Implementing these suggestions from the study can enhance the student-centered nature of FAs, thereby improving their grasp of the subject matter, performance in future FAs, and ultimately, their overall performance in SA.

## REFERENCES

1. Evans DJ, Zeun P, Stanier RA. Motivating student learning using a formative assessment journey. *J Anat.* 2014;224:296-303.
2. Van de Watering G, Gijbels D, Dochy F, Van der Rijt J. Students' assessment preferences, perceptions of assessment and their relationships to study results. *High Educ.* 2008;56:645-58.
3. Epstein RM. Assessment in medical education. *N Engl J Med.* 2007;356:387-96.
4. Medical Council of India. Assessment Module for Undergraduate Medical Education Training Program. New Delhi: Medical Council of India; 2019. p. 1-29.
5. Archer JC. State of the science in health professional education: Effective feedback. *Med Educ.* 2010;44:101-8.
6. Shute VJ. Focus on formative feedback. *Rev Educ Res.* 2008;78:153-89.
7. Black P, William D. Assessment for learning in the classroom. In: Gardner J, editor. *Assessment and Learning*. 2nd ed. London: SAGE Publications Ltd.; 2012. p. 11-32.
8. Cizek GJ. An introduction to formative assessment: History, characteristics, and challenges. In: Andrade H, Cizek G, editors. *Handbook of Formative Assessment*. New York: Taylor and Francis; 2010. p. 3-17.
9. Hattie J, Timperley H. The power of feedback. *Rev Educ Res.* 2007;77:81-112.
10. Dorman JP, Knightley WM. Development and validation of an instrument to assess secondary school students' perceptions of assessment tasks. *Educ Stud.* 2006;32:47-58.
11. Romanoski J, Cavanagh R, Fisher D, Waldrip B, Dorman J. Measuring student perceptions of classroom assessment. In: *AARE 2005 International Education Research Conference-Creative Dissent: Constructive Solutions*. United States: AARE Inc.; 2005. p. 2-12.
12. Struyven K, Dochy F, Janssens S. Students' perceptions about evaluation and assessment in higher education: A review. *Assess Eval High Educ.* 2005;30:331-47.
13. Rauf A, Shamim MS, Aly SM, Chundrigar T, Alam SN. Formative assessment in undergraduate medical education: Concept, implementation and hurdles. *J Pak Med Assoc.* 2014;64:72-5.
14. Hahn H, Kropp P, Kirschstein T, Rücker G, Müller-Hilke B. Test anxiety in medical school is unrelated to academic performance but correlates with an effort/reward imbalance. *PLoS One.* 2017;12:e0171220.
15. Lim YS. Students' perception of formative assessment as an instructional tool in medical education. *Med Sci Educ.* 2019;29:255-63.
16. Arja S, Acharya Y, Alezaireg S, Ilavarasan V, Ala S, Arja SB. Implementation of formative assessment and its effectiveness in undergraduate medical education: An experience at a Caribbean medical school. *MedEdPublish.* 2018;7:131.
17. Labarca J, Figueroa C, Huidobro B, Wright AC, Riquelme A, Moreno R. Perception of medical students about formative assessments during clinical courses. *Rev Med Chil.* 2014;142:1193-9.
18. Kesavan KP, Palappallil DS. Effectiveness of formative assessment in motivating and improving the outcome of summative assessment in pharmacology for medical undergraduates. *J Clin of Diagn Res.* 2018;12:FC08-11.
19. Cong X, Zhang Y, Xu H, Liu LM, Zheng M, Xiang RL, et al. The effectiveness of formative assessment in pathophysiology education from students' perspective: A questionnaire study. *Adv Physiol Educ.* 2020;44:726-33.
20. Chethan B, Priyanka S. A cross-sectional, questionnaire study to assess the feedback from second-year medical students regarding competency-based medical education prescribed formative assessment in pharmacology. *Natl J Physiol Pharm Pharmacol.* 2023;13(05):991-995.
21. Kumari S, Panda TK, Pradhan T, Subba SH. Modified formative assessment and its impact of undergraduate medical learning. *Int J Health Sci Res.* 2017;7:86-91.