

Perception and Feedback of Medical Students about Formative Assessment in a Medical College in Uttar Pradesh: A Cross-sectional Study

Arun Singh¹, Anand Kumar², Archana Singh³

¹Department of Community, Autonomous State Medical College, Pilibhit, U.P., India. ²Department of Anatomy, Autonomous State Medical College, Sonebhadra, U. P., India. ³Department of Anatomy, Autonomous State Medical College, Pilibhit, U.P., India.

Abstract

Background: Formative assessment (FA) plays a vital role in competency-based medical education by facilitating continuous learning and feedback. The aim is to assess medical students' perceptions of formative assessment and the quality of feedback received. **Material and Methods:** A cross-sectional study was conducted among Phase I and Phase II and Phase III part I MBBS students at a private medical college in Uttar Pradesh. A pre-validated questionnaire (Cronbach's alpha = 0.82) adapted from Lim YS (2019) was used. Data were analyzed using descriptive statistics. **Results:** A total of 131 students participated. Majority showed positive perception in domains of congruence (85.5%), authenticity (77.99%), consultation (74.42%), and transparency (76.38%). Accommodation had comparatively lower positive perception (62.77%). 70.7% students reported overall positive perception toward FA and feedback. **Conclusion:** Formative assessment is well perceived by students and enhances learning; however, flexibility and student involvement need improvement.

Keywords: Formative assessment, feedback, medical education, CBME, perception.

Received: 22 June 2026

Revised: 07 July 2026

Accepted: 28 July 2026

Published: 06 August 2026

INTRODUCTION

Assessment is a fundamental component of medical education, serving not only to quantify student achievement but also to enhance learning and guide instructional strategies. It has been known to be a major factor in learning behaviors and academic achievement.^[1,2] Formative Assessment is a systematic process that involves monitoring learning and giving feedback to enhance it.

Formative assessment is continuous evaluation with the main purpose of guiding students' learning by providing feedback and identifying gaps in learning that must be resolved, as soon as possible. The process involves feedback, which is called the "lifeblood of learning" that will improve the learner's performance, facilitate self-regulated learning, and facilitate the development of academic achievement.^[3-5]

Worldwide, research findings indicate that 70–90% of undergraduate medical students have positive attitudes towards formative assessment, especially when it is timely and constructive.^[6,7] Yet, delayed feedback, low quality feedback, and an absence of systematic implementation issues still remain.^[8,9] There is recent evidence showing that formative assessment can have a positive impact in student performance as well as their autonomy and feedback literacy, which are crucial within the CBME.^[4,10]

The notion of feedback literacy and an evaluative judgement has emerged in recent years, which highlights the active part played by students in interpreting and making use of feedback effectively.^[4,11,12]

Competency Based Medical Education (CBME) introduced

by the National Medical Commission (NMC) in India has placed a strong focus on providing formative assessment as an essential means for advancing competency in cognitive, psychomotor and affective domains.^[13,14] In India, it was found that medical students' academic performance, study habits, and learning outcomes were positively influenced by the use of formative assessment.^[15,16]

There is little data that has been collected at a regional level in Uttar Pradesh, especially from government medical colleges, and this despite the increasing evidence. Moreover, recent studies have pointed out that the role of formative assessment is not only in enhancing the autonomy in learning but also on improving the emotions of learners in learning, which has a broader influence on education.^[10]

Aim: To assess medical students' perceptions of formative assessment and the quality of feedback received in a medical college in Uttar Pradesh.

Objectives: To assess students' perceptions regarding the quality of formative assessment and to evaluate the receipt and

Address for correspondence: Dr Archana Singh

Department of Anatomy
Autonomous State Medical College, Pilibhit, U.P., India.
Email- drarchana279@gmail.com

DOI:

10.21276/amit.2026.v13.i2.911

How to cite this article: Singh A, Kumar A, Singh A. Perception and Feedback of Medical Students about Formative Assessment in a Government Medical College in Uttar Pradesh: A Cross-sectional Study. Acta Med Int. 2026;13(2):1538-1542.

usefulness of feedback following formative assessments.

MATERIALS AND METHODS

Study Design and Setting: A cross-sectional study was conducted at a private medical college in Uttar Pradesh with an annual intake of approximately 150 MBBS students. The study was conducted over a period of 4 months (May–August 2024).

Study Population: Participants included undergraduate medical students from Phase I, Phase II and Phase III Part I. Students were asked to provide perceptions based on their recent experience of formative assessments conducted during their current phase of study.

Sample Size and Sampling Technique: A universal sampling approach was used. All eligible students from the selected phases were invited to participate. Out of approximately 180 eligible students, 131 responded (response rate $\approx 72.7\%$).

Ethical Approval: Approval was taken by Institutional Ethics Committee. (IEC No.: IEC/RMCH/139/2024/APR)

Questionnaire Development and Validation: A structured questionnaire was used, adapted from previously validated tools, particularly the framework by Lim YS (2019).^[17]

Validation of questionnaire was done which includes-

- Content validity assessed by 3 medical education experts
- Pilot testing on 20 students (excluded from final analysis)
- Reliability testing showed Cronbach's $\alpha = 0.82$

Questionnaire Structure: The questionnaire consisted of three sections:

Section I: Informed consent and demographic details

Section II: Perception of formative assessment across five domains:

- Congruence (5 items)
- Authenticity (6 items)
- Consultation (4 items)
- Transparency (5 items)
- Accommodation (4 items)

Section III: Open-ended questions exploring: Suggestions for improvement, Positive effects and Negative effects
Responses were recorded using a 5-point Likert scale. (Annexure I)

Measurement of Feedback: Specific questionnaire items assessed:

- Whether feedback was received
- Timeliness of feedback
- Perceived usefulness of feedback in improving learning

Data Collection Procedure: Students were sensitized through a 15-minute briefing session then Questionnaire distributed via Google Forms, Participation was voluntary and anonymous.

Statistical Analysis: Data analysed by using IBM SPSS v22. Likert responses treated as ordinal data. Descriptive statistics (percentages, mean, median) used and Responses categorized as:

- Positive: Strongly agree + Agree
- Neutral: Not sure
- Negative: Disagree + Strongly disagree

No inferential statistics were applied, as the study aimed at descriptive perception analysis.

Qualitative Analysis: Open-ended responses were analyzed using thematic content analysis: Coding was done independently by two researchers and themes were finalized through consensus.

RESULTS

A total of 131 undergraduate medical students participated in the study. Among the participants, 59.5% were females and 40.5% were males. The age of the respondents ranged from 19 to 25 years. With respect to the phase of study, 54 students (41%) belonged to Phase I, 55 students (42%) were from Phase II, and 22 students (17%) were from Phase III Part I. [Table 1]

Perception of Formative Assessment: Congruence: refers to the alignment between formative assessment tasks and instructional objectives and content. Overall, 85.50% of students expressed positive perceptions, while 12.36% were neutral and only 2.16% expressed negative perceptions. Most students agreed that formative assessments tested what they knew, reflected course content, and aligned with coursework activities. [Table 2]

Authenticity: assesses how closely formative assessment tasks relate to real-life medical practice and students' learning context. 77.99% of students demonstrated positive perceptions, 15.65% were neutral, and 6.43% reported negative perceptions.

A majority of students felt that formative assessments helped them apply knowledge to real-life situations and prepared them for their future role as physicians. [Table 3]

Consultation: reflects students' involvement and clarity regarding assessment criteria.

Overall, 74.42% reported positive perceptions, 18.88% were neutral, and 6.7% expressed negative perceptions. While most students were aware of the types of formative assessments and marking criteria, fewer students felt that they had a say in how they were assessed. [Table 4]

Transparency: refers to clarity of expectations and assessment procedures. 76.38% of students showed positive perceptions, 17.38% were neutral, and 6.26% were negative. Most students reported that they were informed in advance about formative assessments and understood faculty expectations. [Table 5]

Accommodation: evaluates whether all students have equal opportunity during formative assessments. 62.77% showed positive perceptions, 22.33% were neutral, and 14.88% expressed negative perceptions, indicating comparatively lower satisfaction in this domain. [Table 6]

Supplemental Preferences and Feedback: Overall, 70.7% of students expressed positive perceptions towards formative assessment and feedback. The majority of students indicated improved performance, learning, deeper learning approaches and identification of areas for improvement with the use of formative assessment. A significant percentage of people, however, saw formative assessment as time consuming and stressful. [Table 7]

Qualitative Feedback (Open-ended responses): Pupils recommended that formative assessment could be enhanced through the use of greater detail in pre-assessment discussions, revision of formative assessments more frequently, and also through an increase in the amount of practical and clinical aspects. A few students indicated that they were unsure about enhancing.

The positive outcomes that were reported were knowledge,

revision and understanding. The negative impact noted included stress, fear of failure, time burden, over emphasis

on theory, pressure in front of frequent assessments and demotivation after low performance.

Table 1: Demographic distribution of participants (n = 131)

Variable	Category	n (%)
Gender	Female	78 (59.5)
	Male	53 (40.5)
MBBS Phase	Phase I	54 (41)
	Phase II	55 (42)
	Phase III Part I	22 (17)

Table 2: Student perceptions regarding congruence of formative assessment

Item	Strongly Agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
FA tests what I know	26.0 (34)	63.4 (83)	9.9 (13)	–	0.8 (1)
FA examines coursework learning	23.7 (31)	67.2 (88)	8.4 (11)	0.8 (1)	–
FA reflects classroom learning	20.6 (27)	66.4 (87)	10.7 (14)	2.3 (3)	–
Assessment similar to coursework	14.5 (19)	61.1 (80)	20.6 (27)	3.8 (5)	–
FA covers coursework content	16.8 (22)	67.9 (89)	12.2 (16)	3.1 (4)	–

Table 3: Student perceptions regarding authenticity of formative assessment

Item	Strongly Agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
Apply learning to real-life situations	19.8 (26)	56.5 (78)	16.0 (21)	6.9 (9)	0.8 (1)
Useful for future medical practice	22.1 (29)	58.0 (76)	13.0 (17)	6.9 (9)	–
Relevant to physician's role	19.8 (26)	57.3 (75)	14.5 (19)	6.9 (9)	1.5 (2)
Apply knowledge to real problems	16.0 (21)	63.4 (83)	13.0 (17)	6.9 (9)	0.8 (1)
Answer everyday questions	19.1 (25)	56.5 (74)	20.6 (27)	3.8 (5)	–
Demonstrate professional learning	20.6 (27)	58.8 (77)	16.8 (22)	3.1 (4)	0.8 (1)

Table 4: Student perceptions regarding consultation in formative assessment

Item	Strongly Agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
Clear about types of FA	14.1 (25)	57.3 (75)	21.4 (28)	2.3 (3)	–
Aware of marking scheme	16.8 (22)	58.8 (77)	18.3 (24)	5.3 (7)	0.8 (1)
Faculty explained FA use	19.8 (26)	59.5 (78)	16.0 (21)	3.8 (5)	0.8 (1)
Student involvement in FA	14.5 (19)	51.9 (68)	19.8 (26)	10.7 (14)	3.1 (4)

Table 5: Student perceptions regarding transparency of formative assessment

Item	Strongly Agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
Know how to complete FA	17.6 (23)	58.8 (77)	19.1 (25)	3.1 (4)	1.5 (2)
Informed in advance (time)	19.1 (25)	67.2 (88)	7.6 (10)	5.3 (7)	0.8 (1)
Informed in advance (content)	17.6 (23)	58.8 (77)	18.3 (24)	3.8 (5)	1.5 (2)
Clear faculty expectations	10.7 (14)	63.4 (83)	19.8 (26)	5.3 (7)	0.8 (1)
Aware of marking method	12.2 (16)	56.5 (74)	22.1 (29)	8.4 (11)	0.8 (1)

Table 6: Student perceptions regarding accommodation in formative assessment

Item	Strongly Agree % (n)	Agree % (n)	Neutral % (n)	Disagree % (n)	Strongly Disagree % (n)
Complete FA at own speed	13.7 (18)	62.6 (82)	13.0 (17)	9.2 (12)	1.5 (2)
Choice of FA tasks	12.2 (16)	44.3 (58)	26.7 (35)	14.5 (19)	2.3 (3)
FA suits ability	12.2 (16)	45.0 (59)	25.2 (33)	16.0 (22)	1.5 (2)
Alternative response options	9.2 (12)	51.9 (68)	24.4 (32)	13.0 (17)	1.5 (2)

Table 7: Student preferences regarding formative assessment and feedback

Statement	Positive %	Neutral %	Negative %
Improves performance	82.5	15.3	2.3
Promotes active learning	78.7	13.0	8.4
Boring	39.0	27.5	33.6
Time-consuming	48.9	25.2	26.0
Feedback enhances learning	78.6	13.7	7.6
Encourages deeper learning	82.5	13.0	4.6
Emotional discomfort on mistakes	63.4	27.5	9.2
Feedback useful in daily learning	75.5	17.6	6.9
Identifies areas for improvement	84.7	12.2	3.1
Likes discussion of mistakes	73.3	20.6	6.1

DISCUSSION

The present study indicated that in general, the presence of

students' perception of formative assessment is positive, including aspects related to congruence and transparency. High

congruence was observed in the tasks used for the assessment and the curricular goals, possibly due to the structured implementation of the CBME framework.^[13] This high level of transparency perception could be due to clear communication of Assessment schedules and expectations. It is well established that transparency decreases uncertainty and increases student confidence in assessment system.^[9]

Students also revealed positive perceptions on authenticity, as formative assessments were deemed to be pertinent to clinical practice and future professional roles. This is in line with current educational philosophy where authentic assessment has been introduced for meaningful learning.^[18] This somewhat lower perception in the domain of accommodation can be attributed to the restricted use of flexibility in the assessment formats and to the large classes sizes, that limit the possibilities of individual assessment. This is similar to what has been seen in other institutional contexts that do not allow for adaptation due to resource limitations.^[19] Consultation scores were not all that high but students had only limited involvement in assessment design. This is indicative of the traditionally teacher-dominated paradigm, that is now moving towards student-centred learning in the context of CBME.^[20]

Feedback Interpretation: Pupils understood that feedback was essential to aid their learning, to highlight any areas of weakness and to improve their efforts. This aligns with recent literature which noted that feedback is an important element of learning systems.^[2,4] But qualitative answers showed that the quality of the feedback and the timeliness of the feedback were not uniform, which means there is a need for proper and standardized feedback systems.

In recent years, further signs also emerged of the critical role of the effective use of feedback for fostering feedback literacy and evaluative judgement, which allows students to fully engage and apply feedback.^[4,12]

Comparison with Literature: The results are also supported by the works of Atwa et al. and Wang et al,^[18,10] which showed that secondary students' performance, learning autonomy, and engagement in learning were enhanced by formative assessment. In a similar fashion, the Indian studies have found that formative assessment leads to regular studies and better learning outcomes.^[15]

The variations in the accommodation scores from other studies might be explained by the institutional conditions of the studies such as classroom sizes and the less customisable assessment design. The traditional assessment practices and cultural factors could also affect the students' perceptions.^[20] Practical Implications: The findings suggest that there is need for:

- Faculty development programs focusing on effective feedback delivery
- Increased student participation in assessment design
- Introduction of flexible and diversified assessment formats
- Structured and timely feedback mechanisms.

CONCLUSION

The study shows that the use of formative assessment can be

useful and positively perceived by medical students in improving their learning and performance. Domains like quality of accommodation and feedback are in need of improvement, however. To improve the effectiveness of formative assessment, institutions should focus on augmenting flexibility, encouraging student engagement, and ensuring effective and timely feedback. In CBME formative assessment is a good instrument of good learning. There is a need for flexibility and pupils' participation.

Limitations: Single-center, cross-sectional, self-reported study.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Hassan, N., El Araby, S., El Fouly, A., El Alfy, S. Exploring the Perception of the Formative Assessment Feedback among Third-Year Medical Students at the Faculty of Medicine, Suez Canal University. Suez Canal University Medical Journal, 2024; 27(5): 0-0. doi: 10.21608/scumj.2024.386939
2. Hattie J, Timperley H. The power of feedback revisited: recent developments in educational research. Rev Educ Res. 2021;91(5):635–669.
3. Sohrabi Z, Hosseinzadeh Z, Kavarizadeh F. The Impact of Formative Assessment on Medical Students' Learning: A Scoping Review. jbrms 2025; 12 (2) :59-70
4. Panadero E, Andrade H. A review of self-regulated learning and formative assessment in higher education. Educ Psychol Rev. 2022;34(1):1–29.
5. Carless D, Boud D. The development of student feedback literacy: enabling uptake of feedback. Assess Eval High Educ. 2020;45(2):215–227.
6. Sarma A, Dhok A, Barman B, Barman E. Perception Regarding Formative Assessment among Indian Undergraduate MBBS Students – A Strategic Initiative towards Competency based Education. J. Clin. Res. App. Med. [Internet]. 2022 Nov. 17 [cited 2026 Jan. 6];2(2):41-6. Available from: <https://jcramonline.com/index.php/jcram/article/view/39>
7. Mondal H, Sahoo MR, Samantaray R, Mondal S. Medical students' perception on the usefulness of online formative assessment: A single-center, mixed-method, pilot study. J Educ Health Promot. 2021 Jul 30;10:243. doi: 10.4103/jehp.jehp_1198_20. PMID: 34485540; PMCID: PMC8395873
8. Ma, T., Li, Y., Yuan, H. et al. Reflection on the teaching of student-centred formative assessment in medical curricula: an investigation from the perspective of medical students. BMC Med Educ 23, 141 (2023). <https://doi.org/10.1186/s12909-023-04110-w>.
9. Henderson M, Phillips M, Ryan T, et al. Conditions that enable effective feedback in higher education. Assess Eval High Educ. 2021;46(6):1–15.
10. Wang J, Zhou G, Guo J, Sun X, Sun L. Influence of formative assessment on learning autonomy and academic emotions among medical students. Front Public Health. 2024;12:1435432.
11. Ajjawi R, Tai J, Dawson P, Boud D. Conceptualising evaluative judgement for sustainable assessment. High Educ. 2020;79(2):1–17.
12. Tai J, Ajjawi R, Boud D, Dawson P, Panadero E. Developing evaluative judgement: enabling students to make decisions about quality of work. High Educ. 2020;80(1):1–15.
13. National Medical Commission. Competency Based Undergraduate Curriculum for the Indian Medical Graduate. New Delhi: NMC; 2019.

14. Modi JN, Gupta P, Singh T. Competency-based medical education, entrustment and assessment. *Indian Pediatr.* 2020;57(1):47–52.
15. Sharma S, Jain S, Gupta P. Role of formative assessment in improving academic performance among MBBS students under CBME curriculum. *Natl Med J India.* 2022;35(4):210–214.
16. Srivastava TK, Mishra P, Waghmare L. Formative assessment and feedback practices in Indian medical colleges: a review. *J Educ Health Promot.* 2021;10:354.
17. Lim YS. Students' Perception of Formative Assessment as an Instructional Tool in Medical Education. *Med Sci Educ.* 2019 Jan 14;29(1):255-263. doi: 10.1007/s40670-018-00687-w. PMID: 34457475; PMCID: PMC8368904
18. Atwa HS, Potu BK, Fadel RA, et al. Implementing formative assessment in anatomy education: impact on student learning outcomes. *BMC Med Educ.* 2024;24:112.
19. Kanady JD, McNabney DR, Roof A, Stanescu CI. Practical strategies for teaching large enrollment anatomy and physiology courses. *Current Opinion in Physiology.* 2026;100955.
20. Singh T, Gupta P, Singh D. Principles of assessment in competency-based medical education. *Indian Pediatr.* 2021;58(7):657–662