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

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

International Journal of Current Pharmaceutical Review and Research 2026; 18(1); 437-441

Original Research Article

Teaching beyond Physiology: Assessing Aetcom Learning in First-Year MBBS Students

Nachane M.[1], Rajput U.[2], Gavali Y.[3]

[1]Associate Professor, Department of Physiology, BJ GMC & SGH Pune, Maharashtra, India
[2]Professor, Department of Paediatric, BJ GMC & SGH Pune, Maharashtra, India
[3]Professor, Department of Anaesthesiology, BJ GMC & SGH Pune, Maharashtra, India

Received: 01-10-2025 / Revised: 15-11-2025 / Accepted: 21-12-2025
Corresponding author: Dr. Nachane M.
Conflict of interest: Nil

Abstract

Background: The Competency-Based Medical Education (CBME) curriculum introduced by the National Medical Commission emphasizes the AETCOM (Attitude, Ethics, and Communication) module to foster humanistic qualities in medical students. Integrating AETCOM into preclinical subjects like Physiology may enhance students' ethical sensitivity, empathy, and communication skills, which are not effectively assessed through traditional examinations.

Objectives: To integrate selected AETCOM modules into the first-year MBBS Physiology curriculum and evaluate their impact on students knowledge, communication skills, attitudes, and perceptions.

Methods: A cross-sectional mixed-methods study was conducted among 100 first-year MBBS students at a tertiary medical college (June–December 2024). Two, AETCOM modules—what does it mean to be a patient? & Doctor–Patient Relationship—were integrated with relevant Physiology topics. Sessions employed small-group discussions, role plays, simulated encounters, and reflective journaling. Assessment included pre-/post-tests, OSCEs with a 3-point rubric, reflective writing evaluated by a 5-criteria rubric, and structured feedback on a 5-point Likert scale. Quantitative data were analyzed descriptively; qualitative reflections underwent thematic analysis.

Results: Mean knowledge scores improved significantly from 61.3 ± 9.2 to 79.6 ± 7.8 ($p < 0.001$). In OSCEs, 68% of students performed satisfactorily and 22% exemplarily in communication and empathy skills. Reflective writings showed 54% analytical and 28% critical reflections, highlighting themes of enhanced empathy, ethical sensitivity, and professional identity formation. Student feedback indicated high satisfaction: 94% reported increased empathy, 91% improved communication skills, and 96% recommended broader AETCOM integration.

Conclusion: Embedding AETCOM modules within Physiology effectively enhanced cognitive learning while strengthening empathy, ethical understanding, and communication skills. This integrative model is feasible, well-received, and supports early professional identity development in line with CBME goals. Broader implementation across preclinical subjects is recommended.

Keywords: AETCOM, CBME, Medical Education, Empathy, Communication Skills.

DOI: 10.25258/ijcpr.18.1.71

Introduction

The introduction of the Competency-Based Medical Education (CBME) curriculum by the National Medical Commission (NMC) in 2019 marked a significant shift in Indian medical education [1]. Central to this change is the AETCOM module—Attitude, Ethics, and Communication—which focuses on nurturing empathy, ethical understanding, and communication skills among future doctors [2].

In the traditional preclinical curriculum, especially in subjects like Physiology, the emphasis has largely been on understanding organ systems and physiological mechanisms, often disconnected from the humanistic elements of patient care. Incorporating AETCOM principles into Physiology teaching can help bridge this gap by providing students with a more holistic understanding of healthcare that includes ethical and emotional considerations [3].

Evaluating growth in the affective domain poses challenges, as values, attitudes, and professional behaviours are not easily accessed through standard

written exams. Instead, alternative methods such as reflective writing, Objective Structured Clinical Examinations (OSCEs), and structured feedback tools have been recognized as more effective in assessing these competencies [4,5].

This study aims to embed selected AETCOM modules into the Physiology curriculum for first-year MBBS students and evaluate their impact on the development of empathy, ethical sensitivity, and communication skills. By doing so, it seeks to promote a more integrated and patient-centred approach to medical education from the earliest stages of training.

Materials and Methods

Study Design and Setting: This was a cross-sectional, mixed-methods study conducted in the Department of Physiology at a tertiary care medical college in India, between June and December 2024. This was a project done under ACME (Advance Course in Medical Education) .The study was designed to evaluate the impact of integrating selected AETCOM (Attitude, Ethics, and Communication) modules into the first-year MBBS Physiology curriculum.

Ethical approval was obtained from the Institutional Ethics Committee (Ref No: BJGMC /IEC/Pharmac /Physio-AETCOM- 0240-031 dated 05/03/2023).

Participants: The study population comprised 100 first-year MBBS students (aged 18–20 years), enrolled in the 2024–2025 academic session. Five faculty members trained in AETCOM facilitation and medical education methodologies participated in the delivery and evaluation of the modules. Written informed consent was obtained from all student and faculty participants prior to commencement.

Intervention Strategy: Two AETCOM modules were selected based on their thematic relevance to core physiology topics:

1. **What does it mean to be a patient?** – integrated with General Physiology to instill respect for human dignity and the role of patient in medical learning.
2. **Doctor–Patient Relationship** – linked with Neurophysiology, highlighting the role of communication and trust in neurological patient care.

Each module was conducted over one to two instructional sessions, using active learning strategies such as:

- **Small-group discussions** to facilitate peer interaction and shared reflection,
- **Role plays and simulated patient encounters** to develop communication and ethical reasoning skills,
- **Faculty-led debriefing sessions** for guided reflection, and
- **Reflective journaling**, where students documented their thoughts, emotions, and learning experiences after each session.

Modules followed a standardized delivery format:

- **Pre-session briefing** (10–15 minutes) outlining learning objectives,
- **Interactive core session** (60–90 minutes) including discussions and activities,
- **Post-session reflection** submitted within 48 hours.

Faculty received module-specific orientation to ensure consistency in delivery and assessment.

Assessment and Evaluation: A combination of quantitative and qualitative tools was employed to assess outcomes across four domains: knowledge, communication skills, attitudes, and perceptions.

Table 1: Assessment and Evaluation Tools

Domain	Tool Used	Assessment Details
Knowledge	Pre- and post-tests (20-item MCQ)	Assessed cognitive gains related to module content; scores analyzed as mean percentages.
Communication	Objective Structured Clinical Examination (OSCE)	Conducted using three standardized stations simulating clinical interactions; performance rated using a 3-point rubric: Needs Improvement, Satisfactory, and Exemplary.
Attitudes	Reflective writing assignments	Evaluated using a structured 5-criteria rubric (Description, Analysis, Empathy, Learning, and Action), each scored from 1 to 5.
Perception	Structured feedback form	Collected post-intervention using a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), capturing students' satisfaction and perceived relevance.

Reflective writings were anonymized and assessed independently by two trained faculty members to enhance objectivity. Descriptive statistics were used for quantitative analysis, and thematic analysis was applied to qualitative reflections to explore deeper insights into students' affective learning.

Results

A) Knowledge Scores: The integration of AETCOM modules into the Physiology curriculum resulted in a statistically significant improvement in student knowledge. The mean pre-test score was 61.3 ± 9.2, which increased to 79.6 ± 7.8 in the post-test ($p < 0.001$), indicating enhanced conceptual understanding when ethical and humanistic dimensions were linked with physiological content.

B) OSCE Performance: Student communication and empathy were evaluated through Objective Structured Clinical Examinations (OSCEs) comprising three stations simulating clinical scenarios. Based on the 3-point rubric, performance distribution was as follows:

Performance Level	Percentage of Students
Needs Improvement	10%
Satisfactory	68%
Exemplary	22%

These results reflect a generally high level of competency in communication and interpersonal skills following the intervention.

Reflective Writing Analysis: Evaluation of student reflections using a five-point rubric revealed progressive depth in critical thinking and affective engagement. Of the total submissions:

- 18% were categorized as descriptive,
- 54% as analytical, and
- 28% as critical.

Qualitative thematic analysis of reflections identified the following recurring themes:

- Enhanced respect and empathy toward patients,
- Increased ethical sensitivity, particularly in relation to cadaver handling,
- Growing awareness of professional identity and responsibilities as future physicians.

C) Student and Faculty Feedback

Feedback collected through structured questionnaires demonstrated strong student support for the intervention:

- 94% agreed that the sessions increased their empathy,
- 91% reported improved confidence in communicating with patients,
- 96% recommended incorporating AETCOM modules into other preclinical subjects.

Preliminary faculty feedback also indicated that the sessions were well-received and considered valuable in sensitizing students to the humanistic aspects of medicine. Faculty highlighted improved classroom engagement and meaningful reflection among students as key outcomes.

Results

Knowledge Scores: The integration of AETCOM modules into the Physiology curriculum resulted in a statistically significant improvement in student knowledge. The mean pre-test score was 61.3 ± 9.2, which increased to 79.6 ± 7.8 in the post-test ($p < 0.001$), indicating enhanced conceptual understanding when ethical and humanistic dimensions were linked with physiological content.

OSCE Performance: Student communication and empathy were evaluated through Objective Structured Clinical Examinations (OSCEs) comprising three stations simulating clinical scenarios. Based on the 3-point rubric, performance distribution was as follows:

Table 2: Percentage of OSCE Performance by students

Performance Level	Percentage of Students
Needs Improvement	10%
Satisfactory	68%
Exemplary	22%

These results reflect a generally high level of competency in communication and interpersonal skills following the intervention.

Reflective Writing Analysis: Evaluation of student reflections using a five-point rubric revealed progressive depth in critical thinking and affective engagement. Of the total submissions:

- 18% were categorized as descriptive,
- 54% as analytical, and
- 28% as critical.

Qualitative thematic analysis of reflections identified the following recurring themes:

- Enhanced respect and empathy toward patients,
- Increased ethical sensitivity, particularly in relation to cadaver handling,
- Growing awareness of professional identity and responsibilities as future physicians.

Student and Faculty Feedback: Feedback

collected through structured questionnaires demonstrated strong student support for the intervention:

- 94% agreed that the sessions increased their empathy,
- 91% reported improved confidence in communicating with patients,
- 96% recommended incorporating AETCOM modules into other preclinical subjects.

Preliminary faculty feedback also indicated that the sessions were well-received and considered valuable in sensitizing students to the humanistic aspects of medicine. Faculty highlighted improved classroom engagement and meaningful reflection among students as key outcomes.

Discussion

The present study aimed to integrate selected AETCOM modules into the Physiology curriculum for first-year MBBS students and assess their impact on knowledge acquisition, communication skills, ethical sensitivity, and professional attitudes.

The results demonstrate that such integration not only enhances cognitive learning but also fosters the development of core competencies in the affective domain—an essential goal of the Competency-Based Medical Education (CBME) framework introduced by the National Medical Commission [1]. The significant improvement in post-test knowledge scores ($p < 0.001$) supports the hypothesis that contextualizing physiology within real-world ethical and humanistic scenarios enhances conceptual understanding.

This aligns with prior studies that have shown active and integrated learning approaches lead to better retention and application of basic science concepts [6,7]. By linking ethical discussions and patient narratives to physiological mechanisms, students appeared more engaged and motivated to learn, which echoes findings from similar interventions in early clinical exposure and integrated teaching models [8].

The OSCE results showed that 90% of students performed at satisfactory or exemplary levels in communication and empathy, reinforcing the effectiveness of experiential learning strategies such as role play and simulated scenarios.

This finding is supported by literature suggesting that early and structured exposure to patient communication improves clinical readiness and professional behaviour [9,10].

Reflective writing analysis revealed a progression from descriptive to critical reflections in many students, suggesting a deepening of self-awareness and ethical reasoning. The emergence of themes such as empathy, respect for cadavers, and professional identity indicates successful internalization of the AETCOM objectives. Reflective practices have been widely acknowledged as powerful tools in developing insight into personal values and attitudes among medical students [11,12]. Student feedback further validated the intervention, with over 90% of participants recognizing improvements in empathy and communication skills and strongly recommending the expansion of AETCOM teaching to other preclinical subjects. This supports previous findings that students value early exposure to the humanistic side of medicine when delivered through structured, participatory formats (13). Faculty responses also noted increased student engagement and reflective depth, suggesting feasibility and acceptability of implementing such modules within existing curriculum constraints.

Despite these encouraging results, the study has limitations. Being a single-institution study with a limited sample size, generalizability is restricted. Additionally, the assessment of affective outcomes—though carefully rubric-based—still involves subjective interpretation. Long-term follow-up was not conducted to assess sustained impact on clinical behaviour in later years. Future research could include multi-institutional studies with longitudinal designs to evaluate long-term effects of AETCOM integration on professional conduct and patient care outcomes.

Conclusion

The integration of selected AETCOM modules into the first-year Physiology curriculum was found to be effective in enhancing not only knowledge but also empathy, ethical awareness, and communication skills among undergraduate medical students. The use of interactive teaching methods, reflective writing, and structured assessment tools provided a comprehensive approach to addressing the affective domain, often overlooked in preclinical training.

Given the positive student and faculty feedback, and the demonstrated improvement across multiple learning domains, this model presents a viable strategy for early inculcation of professional values in medical education. Expansion of such integrative modules to other basic science subjects may further reinforce the holistic vision of the CBME framework.

Recommendations

- Introduce reflection-based assessment in all AETCOM modules.
- Train faculty in rubric-based evaluation and feedback delivery.
- Incorporate longitudinal portfolios for continuous tracking.
- Share best practices interdepartmentally.

Limitations

- Single-institution study with small sample size.
- Subjectivity in evaluating reflections and attitudes.
- Short-term impact assessment; long-term follow-up needed.

Acknowledgement:

The authors gratefully acknowledge the contribution of the students and faculty members involved in this medical education project. Their participation, dedication, and collaborative efforts played a vital role in the successful execution of the project. The guidance and academic expertise provided by the faculty, along with the active engagement of the students, were key to meeting the objectives of this study.

References

1. National Medical Commission. Competency Based Undergraduate Curriculum for the Indian Medical Graduate. New Delhi: NMC; 2019.
2. Medical Council of India. Attitude, Ethics and Communication (AETCOM) Competencies for the Indian Medical Graduate. New Delhi: MCI; 2018.
3. Kumar A, Gupta P. Integrating humanities in medical education: The road ahead. Indian J Med Ethics. 2019;4(2):101–104.
4. Wald HS, Borkan JM, Taylor JS, Anthony D, Reis SP. Fostering and evaluating reflective capacity in medical education: Developing the REFLECT rubric for assessing reflective writing. Acad Med. 2012;87(1):41–50.
5. Shapiro J, Rucker L. Can poetry make better doctors? Teaching the humanities and arts to medical students and residents at UCLA. Acad Med. 2003;78(10):953–957.
6. Kulasegaram KM, et al. Cognition before curriculum: Rethinking the integration of basic science and clinical learning. Acad Med. 2013; 88(10):1578–1585.
7. Wijnen-Meijer M, et al. The impact of longitudinal early patient contact on medical students' career choices and professional identity. Med Educ. 2015;49(8):803–813.
8. Vora MB, Shah CJ. Impact of early clinical exposure in learning respiratory physiology among the first year medical students. Int J Basic Appl Physiol. 2015;4(1):125–129.
9. Kurtz S, Silverman J, Draper J. Teaching and Learning Communication Skills in Medicine. 2nd ed. Oxford: Radcliffe Publishing; 2005.
10. Rider EA, Nawotniak RH, Giess ML. Interpersonal and communication skills: Evaluating verbal and non-verbal behaviors in the medical encounter. Med Teach. 2006; 28(3): e29–e32.
11. Sandars J. The use of reflection in medical education: AMEE Guide No. 44. Med Teach. 2009; 31(8):685–695.
12. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: A systematic review. Adv Health Sci Educ. 2009;14(4):595–621.
13. DasGupta S, Charon R. Personal illness narratives: Using reflective writing to teach empathy. Acad Med. 2004;79(4):351–356.