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REVIEW ARTICLE

Effectiveness of AETCOM-oriented pharmacology training in improving ethical clinical decision-making among MBBS students

Madhulika Tiwari[1], Fagni Garg[2], Fatima Rani[1], Rahul Kumar Soni[1], Pooja Awasthi[1], Shoebul Haque[3]

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ABSTRACT

Introduction: Competency-Based Medical Education has introduced the Attitude, Ethics, and Communication (AETCOM) curriculum in India to strengthen ethical reasoning, professionalism, and communication skills among undergraduate medical students. It emphasises the development of attitudes, ethics, and effective communication skills necessary for competent, compassionate healthcare professionals.

Objective: This study is done to assess the impact of AETCOM training on attitude, ethical awareness and communication skills among MBBS students

Importance of AETCOM: Available evidence suggests that AETCOM-oriented teaching improves all the above-stated domains, especially when learner-centred and experiential methods such as case-based discussions, role play, simulated patients, and reflective writing are used. Objective assessments show gains in ethical reasoning and communication skills during the second phase of MBBS training.

Conclusion: However, most studies rely on short-term and perception-based outcomes, with limited evaluation of real-world ethical decision-making. Integrating AETCOM principles into pharmacology teaching may support ethically sound prescribing practices, though further longitudinal and discipline-specific research is needed.

KEYWORDS: *AETCOM, competency-based medical education, ethical clinical decision-making, communication skills, pharmacology education*

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INTRODUCTION

Medical education has evolved from a knowledge-based model to a competency-based \framework that emphasises professional values, ethical practice, and effective communication alongside clinical competence. In India, the National Medical Commission's implementation of Competency-Based Medical Education (CBME) aimed to produce socially responsible, patient-centred, and ethically grounded medical graduates.[1] The Attitude, Ethics, and Communication (AETCOM) curriculum was introduced to ensure the structured and longitudinal development of professional attitudes, ethical reasoning, and communication skills throughout the undergraduate medical programme.[2] The AETCOM curriculum comprises 27 modules integrated across different phases of the MBBS course, with an emphasis on the affective domain and the assessment of attitudes, ethical principles, and communication competencies alongside clinical skills.[3]

The competency-based design of the NMC curriculum aligns closely with Miller's Pyramid of Clinical Competence, which conceptualises learning as a progression from knowledge acquisition ("knows") and application ("knows how") to demonstration ("shows how") and real-world performance ("does").[2] AETCOM competencies mainly address the higher levels of the pyramid and emphasise the demonstration and application of ethical behaviour and communication skills in simulated and clinical settings. Through early and ongoing instruction, these fields foster professional behaviour. This supports discipline-specific learning, including pharmacology, where ethical judgment and rational decision-making are essential for safe and effective patient care.[4]

[1]King George's Medical University, Lucknow, UP, India - 226003
[2]Mahatma Vidur Government Medical College, Bijnor, UP, India - 246731
[3]Era's Lucknow Medical College and Hospital, Era University, Lucknow, UP, India - 226003
Corresponding Author: Madhulika Tiwari
Email: drmadhulikakgmu@gmail.com
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Positive Student Perceptions of AETCOM

Positive student perceptions of the AETCOM curriculum have been seen from medical colleges across India, finding

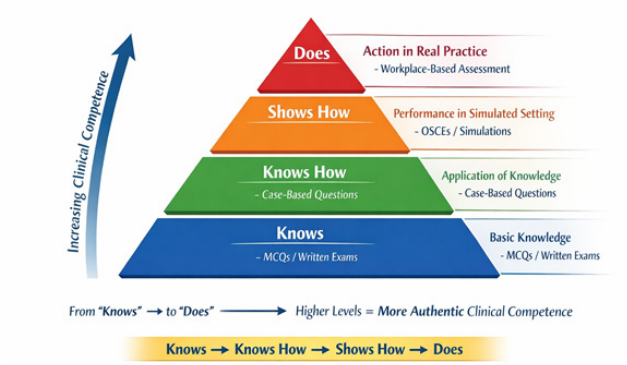

Figure 1: Miller's pyramid of medical competence.

it relevant for ethical practice and communication skills. In a questionnaire-based cross-sectional study of second- and third-phase MBBS students, most participants considered the AETCOM module essential for future clinical practice. Many also reported improved communication skills and better doctor–patient relationships after completing the module.[5] Similar findings have been reported among first-year MBBS students.

In a study evaluating an empathy-focused AETCOM module, nearly all participants expressed the belief that the training would positively influence their future interactions with patients and contribute to the development of professional and empathetic attitudes.[6] Evidence shows that innovative teaching methods in AETCOM sessions improve students' perceived learning. Quasi-experimental studies of AETCOM Module 1.4 found that video-based teaching and role-play were effective. These methods led to significant gains in key communication skills, such as initiating conversations and eliciting patient information. Most students also recognised the importance of effective communication in clinical practice.[7]

Overall, studies show that students value AETCOM training for enhancing ethical awareness, empathy, and communication skills. Even though most of the evidence is mainly perception-based, consistent student positive feedback shows the importance of affective domain learning in preparing undergraduates for ethical clinical challenges.

Teaching Methods and Learning in the Affective Domain

AETCOM focuses on learner-centred strategies rather than traditional lectures. This is because affective competencies, such as empathy, ethical reasoning, attitudes, and interpersonal communication, cannot be effectively developed through passive learning alone. Some engaging methods like case vignettes, video clips, role plays, standardised patients, reflective exercises, and patient or caregiver narratives actively involve students and bring learning into real-world clinical contexts.[8] Reflective writing and reflection sessions after experiential activities are especially emphasised in AETCOM literature as critical tools to nurturing moral development and deepen ethical understanding, by prompting learners to consider *what happened*, *why it matters*, and how they would act in future situations.[9] Reflective practice has been shown in broader medical education to help learners better understand themselves, others, and context, thereby strengthening the communication and ethical reasoning skills that are essential for ethical clinical decision-making.[10]

Teaching is directed by structured methodologies like as the S-I-R (Sensitization–Immersion–Reflective writing) framework, which begins with concept sensitisation, moves on to real or simulated clinical encounters, and ends with guided reflection to reinforce learning.[11] Useful techniques including role-playing, simulation, and case-based learning have also been extensively researched. Interactive role plays and patient narratives, for instance, help students become more competent and confident in handling challenging communication situations. Instead of just watching, students act out actual clinical responsibilities, which improves empathy and communication skills.[12]

According to the larger body of research on communication training, medical students' communication skills are much enhanced by structured role-play, particularly when the sessions are well-planned, level-appropriate, and followed by structured feedback.[13]

These teaching strategies collectively underscore a pedagogical focus on experiential, reflective, and interactive learning to effectively cultivate affective competencies that are essential for communication and foundational to ethical clinical decision-making.

Collectively, these teaching strategies reflect a pedagogical emphasis on experiential, reflective, and interactive learning to effectively develop affective competencies that are not only valuable in communication but also foundational to ethical clinical decision-making. Such methods help bridge the gap between theoretical knowledge of ethics and communication and practical, real-world application in clinical settings.

Assessment of Teaching Effectiveness

Assessment of teaching effectiveness within the AETCOM framework is particularly important during the second year (Phase II) of the MBBS programme, as students begin to transition from preclinical learning to sustained clinical exposure. It focuses on competencies such as doctor–patient communication, informed consent, confidentiality, professional conduct, and ethical decision-making, all of which are essential for safe and patient-centred clinical practice. The success of AETCOM instruction sheds light on how well-prepared students are to apply communication skills and ethical concepts in real-world clinical situations.[14,15]

AETCOM-based instruction has been shown to significantly

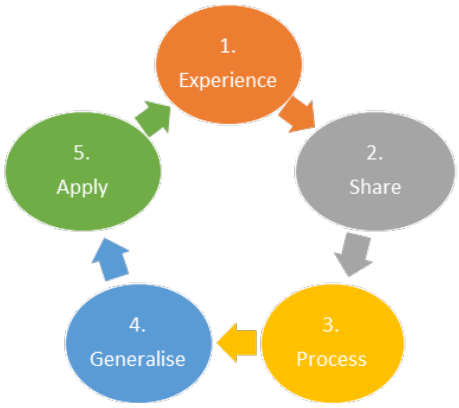

Figure 2: Experiential learning model.

Figure 3: Conceptual framework highlighting underutilized teaching methods to strengthen AETCOM outcomes.

improve educational outcomes in phase II interventional research. Students' comprehension of ethical principles and their practical application in clinical settings is improved by structured instructional approaches such as case-based discussions, role-playing exercises, and problem-oriented learning. Objective exams, such as MCQs, case analyses, and OSCEs, demonstrate a significant improvement in medicolegal awareness, ethical reasoning, and communication skills after AETCOM training.[16]

Teaching effectiveness was positively impacted by the use of innovative teaching techniques that were in line with Phase II learning requirements. Reflective writing exercises, simulated patient contacts, and video-assisted learning have all been linked to better student performance on communicative and ethical competency tests as compared to traditional lecture-based instruction. These techniques enable students to exhibit abilities at Miller's Pyramid's "knows how" and "shows how" levels, which are especially pertinent for second-year students who are gaining practical clinical competency.[17]

It appears that teaching AETCOM to second-year MBBS students can significantly aid in the development of the abilities required to make morally sound decisions in a clinical context. Students might gain greater confidence in their capacity to make difficult decisions when teachers employ effective teaching and assessment strategies. Teachers may ensure that their students are prepared for the problems they will encounter in their future clinical training by routinely assessing how well they are mastering these skills. This is crucial because it gives students the tools they need to make wise judgments and communicate clearly in a real-world situation.[18]

Evidence from Ethics Education and Its Relevance to AETCOM

Numerous studies in the realm of medical education demonstrate the significant impact that systematic ethics instruction can have. It can help medical students think more critically about ethical issues, become more conscious of them, and adopt a more professional mindset. According to the research, students who receive interactive, case-based, and reflective instruction outperform those who merely attend lectures. The AETCOM module, which emphasises practical learning and the application of ethical ideas in real-world situations, really employs this strategy.[17,18]

Nevertheless, this research has certain drawbacks. Many of the studies don't usually examine how students really make decisions or behave over time, instead focusing on what they say about their own experiences. According to the literature on ethics education, teaching ethics gradually and incorporating, it into many courses is crucial. Students can strengthen their professional identities and improve their moral reasoning abilities as a result. We can assist students in becoming more capable of making difficult judgments in their future employment by continually exposing them to ethical challenges in various circumstances.[18,19]

Teaching ethics in the classroom is only one aspect of it; another is assisting students in acquiring the abilities and routines necessary to make moral decisions in everyday life. Rather than being a one-time lecture or workshop, this is something that needs continuous effort and attention. We can contribute to the development of a new generation of medical professionals who are not just learned and competent but also kind, considerate, and dedicated to acting morally by adopting a more thorough and integrated approach to ethics education.[20]

AETCOM and Communication-Based Outcomes

The foundation of ethical clinical treatment is effective communication. It fosters shared decision-making, helps patients make educated decisions, and increases doctor-patient trust. The AETCOM module was included to the CBME curriculum in India as it was discovered that traditional medical training frequently lacked systematic education in communication. This program provides a more structured and ongoing method for enhancing communication skills during medical school. Using well-known frameworks like the SPIKES procedure and the Kalamazoo checklist, research assessing AETCOM has demonstrated significant gains in students' communication skills.[21,22] These abilities

Table 1: Some Teaching–Learning Methods in AETCOM Curriculum.[28]

Teaching Methods	Description	AETCOM Competencies Addressed	Learning Domain
Didactic lectures	Introduce concepts of ethics, attitude, and communication	Ethical awareness, professionalism	Cognitive
Case scenarios	Discussion of real or hypothetical ethical dilemmas	Ethical reasoning, decision-making	Cognitive + Affective
Role play	Students enact doctor–patient or interprofessional interactions	Communication skills, empathy, professionalism	Affective + Psychomotor
Debates	Structured discussion on controversial ethical issues	Moral reasoning, respect for diverse views	Affective
Simulated/ standardized patients	Controlled practice of sensitive communication and consent	Patient-centred communication, applied ethics	Affective + Psychomotor
Reflective writing	Written reflection on experiences and ethical challenges	Self-awareness, empathy, moral development	Affective

are essential in situations that are ethically delicate, such as managing end-of-life conversations, communicating unpleasant drug reactions, and outlining dangers.

Feedback from students supports these conclusions even more. After completing AETCOM training, many report feeling more assured in their contacts, more sympathetic toward patients, and better prepared to use a patient-centered approach.[23,24] Additionally, they report a better capacity to manage ethical dilemmas in clinical situations, respect individual patient preferences, and explain treatment options. Notably, these beneficial effects are more pronounced when instructional strategies go beyond traditional lectures. Role-playing, simulated patient interactions, video demonstrations, and reflective writing are examples of interactive tactics that seem to enhance the significance of learning and facilitate the application of knowledge.[25]

Despite these encouraging findings, the majority of research that is currently accessible concentrates on short-term or immediate results. The need for more reliable, long-term evaluation techniques is highlighted by the lack of solid information regarding whether these communication skills are regularly employed in real-world clinical practice or are retained over time.

Ineffective and Underutilised Teaching Methods in AETCOM

Although AETCOM promotes interactive, learner-centred teaching, several effective methods remain underused. Narrative medicine and patient storytelling build empathy and emotional intelligence, which are key to professional identity formation. Exposure to real or mock ethics committee meetings helps students understand ethical deliberation and interdisciplinary decision-making in real-world settings.[26] Peer teaching and peer feedback enhance reflective learning and reinforce professional norms through observation and self-assessment.

Structured bedside ethics teaching and faculty role modelling allow students to observe ethical behaviour in real clinical settings. This supports learning at the "does" level of competence. Longitudinal reflective portfolios, rather than isolated reflections, encourage sustained attitudinal and ethical development. Systematic inclusion of these methods in AETCOM could strengthen affective-domain learning and improve the application of ethical principles in clinical practice.[27]

Traditional methods such as didactic lectures and unstructured clinical exposure have been the mainstay for teaching ethics and professionalism. While they help introduce core concepts, they largely promote passive learning and focus mainly on the cognitive domain. Opportunities for students to actively practise ethical decision-making, communication, and reflective thinking are limited, making it difficult to translate theoretical knowledge into real-life clinical behaviour.[29]

However, with an expanding role expectation from a medical graduate, there is a need to move beyond these traditional methods. AETCOM aims to shift the focus to interactive and experiential learning methods such as case discussion, role play, simulated patients and reflective writing. They focus on active engagement of learners with skill sets that promote introspection, empathy and ethical deliberation. Learners can practice communicating within safe spaces to tackle ethical dilemmas that they will eventually face in their clinical practice.

CONCLUSION

One of the most significant milestones in formalising Ethics, Attitude and Communication training in undergraduate medical education in India has been the introduction of AETCOM as part of CBME. There is evidence that interventional AETCOM initiatives lead to improved communication skills, ethical sensitivity, empathy and professional attitudes. These have been demonstrated across perception-based and objective measures, though communication skills appear to be the domain with the most consistent improvements. Furthermore, these improved outcomes have been shown to translate to more ethical clinical decision making with regards to informed consent, counselling and risk disclosure - aspects that are relevant to rational prescribing of pharmacological agents. However, there are limitations with respect to heterogeneity across the available data, short-term follow-up of outcomes after training interventions, and reliance on self-reported outcomes. Specific to individual disciplines like Pharmacology, there is limited research looking at the impact of targeted AETCOM interventions on routine clinical decision-making. Improved research efforts should evaluate longitudinal outcomes following targeted interventions, as well as strategies for integration of AETCOM into undergraduate pharmacology curricula.

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Orcid ID:

Madhulika Tiwari - https://orcid.org/0009-0002-7398-9051

Fagni Garg - https://orcid.org/0000-0002-0738-3820

Fatima Rani - https://orcid.org/0009-0008-5375-8620

Rahul Kumar Soni - https://orcid.org/0009-0000-9653-2826

Pooja Awasthi - https://orcid.org/0009-0000-5287-661

Shoebul Haque - https://orcid.org/0000-0002-5882-861X