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Evaluating the Impact of Online Medical Ethics Education on Medical Students: Insights from Student Perceptions and Feedback

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Abstract

Since 2019, medical ethics education, along with training in attitude and communication skills, has been integrated into the standard MBBS curriculum in India to foster a more empathetic and communicative approach among doctors toward patients. To optimise this educational module for future learners, it is essential to evaluate its effectiveness through real-world case-based learning. We chose three clinical cases and organised online debates in small groups of second-year MBBS students. Following discussion of each case, students submitted written narratives and personal reflections, and later provided overall feedback on the activity. The results showed that students gained a deeper appreciation of the complexity involved in resolving ethical dilemmas and valued the chance to express and debate contrasting viewpoints. The online format proved effective and could be adopted in the future as a practical tool for seamlessly incorporating medical ethics discussions into routine clinical training.

Keywords: Medical education, Medical ethics, Online learning, Student debate

Introduction

In recent decades, the public's view of doctors in India has shifted from one of admiration to increasing distrust and hostility. Incidents of violence, legal actions against doctors, and a rising number of physician suicides have become alarming [1–5]. Contributing factors include challenging work environments, excessive working hours due to limited staffing and resources, negative societal perceptions, and suboptimal communication by healthcare professionals [5]. Moreover, media reports of corruption and unauthorized dual practice among doctors have further eroded public confidence [6, 7]. Such trends threaten the fundamental trust in the doctor-patient relationship, which can only be restored when

professional expertise is paired with strong ethical standards and social accountability [8]. Strengthening ethics education and communication skills has been suggested as a key measure to address these challenges and reduce disillusionment among both doctors and patients [5, 6].

Globally, formal medical ethics training has been part of medical education in the USA and Europe since the 1970s [9] and is now recognized as a priority in most countries [10, 11]. While ethical principles were historically conveyed through the informal "hidden curriculum," there is broad consensus that structured training within the formal curriculum is essential. In response, the Medical Council of India (MCI), now the National Medical Commission (NMC), introduced competency-based medical education along with Attitude, Ethics, and Communication (AETCOM) training [12] for undergraduate students starting in 2019. The AETCOM program [12] is structured into multiple modules delivered throughout medical training, aiming to instill ethical reasoning and communication skills early in students' clinical exposure. Despite these efforts,

no universally accepted method exists for teaching or assessing ethics, and even countries with long-standing programs continue to face concerns about insufficient coverage [13–16]. Therefore, identifying effective ways for students to engage with ethical dilemmas and practice patient-centered communication remains a pressing need, with AETCOM offering a potential solution. Understanding students' experiences and attitudes while participating in the module is crucial for optimizing its effectiveness.

To explore this, we conducted a study with second-year MBBS students, using case-based discussions to examine their engagement with the AETCOM curriculum. Due to the Covid-19 pandemic and the resulting lockdown, traditional face-to-face discussions were not possible, necessitating the use of an online platform. This approach also allowed us to evaluate the effectiveness of virtual small-group discussions for in-depth ethical dialogue. The study aimed to assess both the impact of AETCOM training on students' learning and the satisfaction of students and faculty with conducting these discussions online.

Materials and Methods

Study design
The study employed a cross-sectional design and included the full cohort of 99 second-year MBBS students.

Ethical considerations
The Institutional Review Board (IRB) of Christian Medical College, Vellore, reviewed and approved the study. As the exercise was embedded within the routine academic curriculum and did not involve collecting identifiable personal data, the IRB waived the requirement for informed consent.

Cases and preparation
The study preparations began with a faculty meeting to select three case scenarios from the MCI AETCOM module [12]. The first case dealt with an ethical dilemma where a husband requested the doctor to withhold a lymphoma diagnosis from his wife, instead informing her that she had tuberculosis. The second scenario involved a clinical error in a busy outpatient department, where a doctor administered an injection to a child, believing it to be a vaccine, which had actually been loaded with gentamicin for another patient by mistake. The third case

described a situation in which a pharmaceutical company offered a doctor and his family an all-expenses-paid trip to Singapore to attend a seminar promoting a newly launched drug.

To ensure every student actively participated, faculty developed additional sub-questions derived from the module's content **(Figure 1)**. These questions were presented in a debate format, allowing students to explore and argue different perspectives. All case materials, sub-questions, group assignments, and relevant resources, including the Medical Council of India Regulations, 2002, and the Uniform Code of Pharmaceuticals Marketing Practices (UCPMP), were shared with students five days prior to the discussion. This approach provided students with sufficient time to review the materials and critically reflect on the cases before engaging in the online debates [17, 18].
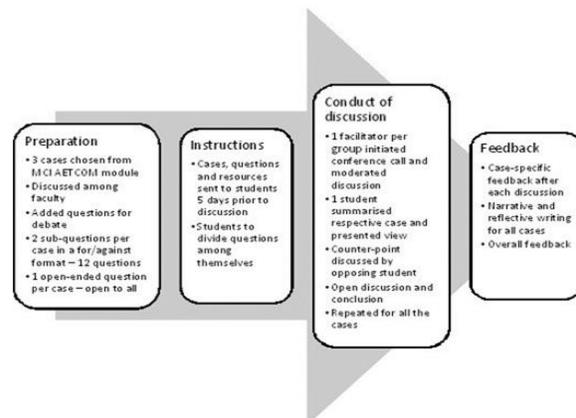

Figure 1. Flowchart on methodology of online discussion

Implementation and data collection
The exercise was conducted online over a three-hour period, with the students divided into nine groups of 11, each guided by a faculty moderator. After the discussion of each case, students provided feedback through a case-specific evaluation. At the conclusion of the session, overall feedback was collected from both students and faculty using online forms, which included Likert-scale questions as well as two open-ended questions. Additionally, students were asked to submit a written narrative addressing all three cases, including their personal reflections on the discussions.

Compilation of feedback and analysis
All feedback provided by students and faculty was compiled into an MS Excel spreadsheet. Case-specific

evaluations submitted after each discussion were reported as proportions. For the end-of-session feedback, Likert-scale responses were also expressed as proportions for each category, and median scores were calculated. The forms additionally included open-ended questions asking participants to comment on "what was good about the session" and "what could be improved." These qualitative responses were analyzed manually, with similar responses grouped together based on their underlying meaning. Each group was labeled according to the most frequently occurring phrases, and summarized as proportions. Representative student comments highlighting key points were presented verbatim in a separate table.

Beyond the structured feedback, students submitted reflective narratives on the cases electronically to their assigned moderators. Moderators manually reviewed and graded these submissions, and narratives with substantial insights were forwarded to the investigators. When reflections provided additional clarity on students' understanding of the cases or illustrated how the exercise shaped their perspectives, relevant quotes were incorporated into the results and discussion sections.

Results and Discussion

The three-hour session engaged 99 students alongside 9 faculty members. All students submitted their reflections and feedback on the discussions, either electronically or as scanned handwritten documents. Completion rates for the case-based evaluations varied slightly, with full participation for the first case, 96% for the second, and just under 89% for the third **(Figure 2)**. The findings are presented as a detailed summary of student narratives and reflections for each case, followed by an analysis of the targeted feedback. The report concludes with an assessment of the practicality and effectiveness of this online, discussion-based teaching method.
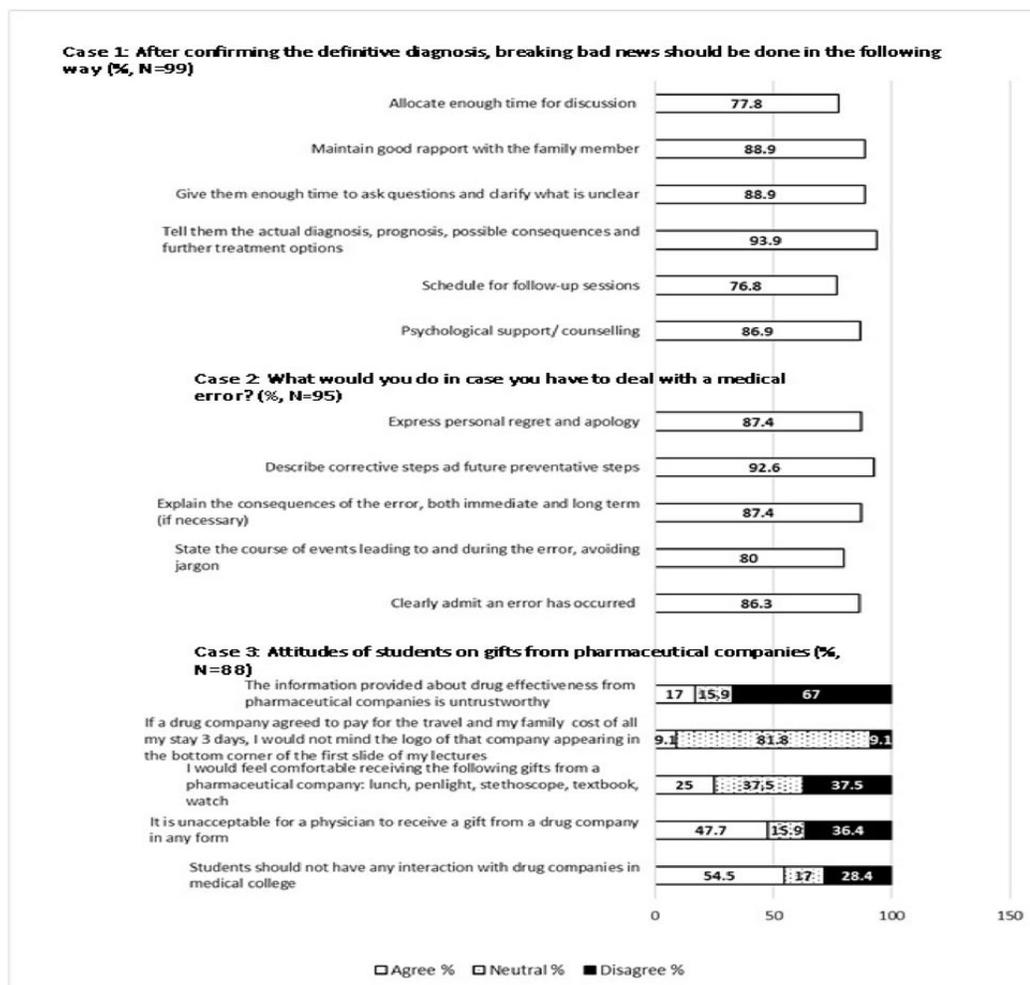

Figure 2. End of discussion evaluation for cases

Reflective writing: Evaluating second-year MBBS students' engagement with medical ethics

The second year of MBBS presents an ideal stage for introducing medical ethics, as students begin to gain hands-on exposure at the bedside and interact with a variety of healthcare professionals, clinical cases, and patients from different social backgrounds [11]. This is also typically when students first witness doctor-patient interactions directly, experiences that can leave lasting impressions and influence their future professional behavior. Using case-based discussions provides a practical and accessible way to embed ethics education within the standard curriculum.

Case 1

The first case focused on the ethical principle of full disclosure, emphasizing a patient's right to be completely informed about their illness. Students largely agreed that patients with normal cognitive function should have full autonomy. Seventy-seven students (77.8%) strongly endorsed discussing the diagnosis directly with the patient, while 93 students (93.9%) supported providing full information to enable the patient to make an informed decision **(Figure 2)**. The opposing viewpoint was also considered:

"Initially, I believed it was wrong to withhold information and that patients should be fully informed of their diagnosis. However, when I was assigned to argue the opposite perspective and conducted research, I realized that exceptions do exist."

Students recognized the nuanced nature of such decisions—balancing respect for a spouse's concern for the patient's emotional well-being against the patient's right to know. The discussion also brought attention to concepts such as therapeutic privilege and non-maleficence in relation to psychological health. Some students reflected on personal observations in similar scenarios:

"I understood that sometimes it may be acceptable not to burden an 85-year-old with a distressing diagnosis, allowing her to spend her remaining days in relative peace and ignorance."

An additional question explored whether disease information could be withheld from family members, with consensus emphasizing that the patient's preferences should take precedence. In the Indian context, where families often play a central role in patient care, the discussion highlighted the importance of preventing stigma while maintaining strong emotional, physical, and financial support. The significance of full disclosure of diagnosis and treatment details when obtaining informed consent was also emphasized.

Revealing life-altering diagnoses such as cancer is inherently sensitive for both doctors and patients. Determining how, when, and how much information to share remains an ethical dilemma without a universally accepted solution [19]. While it is widely regarded as ethically appropriate for patients to know their complete diagnosis, the issue is not always straightforward. Ghoshal *et al*. conducted a survey in a tertiary cancer hospital in India and found contrasting attitudes between patients and their families regarding full disclosure [20]. Similarly, Kazdaglis *et al*. examined cultural differences and observed that oncologists in countries like the USA, England, Canada, and Finland typically disclose all diagnostic details to patients, whereas those in Japan, Greece, or Middle Eastern countries may consult the family and respect their preferences regarding disclosure [19]. This underscores the importance of a personalized approach, guided by the recognition that a diagnosis can profoundly impact a patient's life [21].

Case 2

The second case focused on the disclosure of medical errors, which students found to be "more relatable." Among the 95 students who responded, 82 (86.3%) expressed that they would clearly acknowledge and apologize if an error occurred during patient care **(Figure 2)**. Students emphasized that honesty is fundamental to building trust in the doctor-patient relationship, and failing to admit a mistake constitutes a breach of that trust. They also recognized the courage and mental resilience required to report errors, noting that their initial instinct might be to avoid disclosure, even though they understood it was ethically correct. The importance of formally reporting errors was highlighted.

"Regardless of the severity of the mistake, it is essential to inform the appropriate authorities who can assist and ensure that similar incidents are prevented in the future."

Students also considered the legal and practical aspects of error reporting:

"Every incident should be reported because a reputable hospital will support its doctors if the patient decides to take legal action."

The reflections consistently underscored preventive strategies, such as proper labeling of medications, cross-checking at all stages of patient care, accurate communication, and thorough documentation. Discussions also addressed medical negligence, with students noting that an accidental error, as illustrated in this case, does not necessarily constitute negligence [22].

Students' attitudes toward reporting errors revealed an awareness of both potential legal consequences and the practical reality that hospitals may not always provide full support to doctors who make mistakes. Currently, there is no specific law governing medical errors, and hospitals typically encourage reporting as part of quality assurance programs [23]. Hébert *et al*., in a series of bioethics publications, dedicate a chapter to the disclosure of medical errors [23], discussing the necessity of admission, the challenges involved, and strategies for handling such situations. Given that not all errors are preventable, it is crucial for students and doctors to learn early that human imperfection is inevitable, regardless of the standards they uphold [23].

Case 3
This case explored the ethical challenges surrounding professional integrity, particularly in relation to accepting gifts from pharmaceutical companies in exchange for promoting their products. Allegations of collusion between doctors and the pharmaceutical industry are widespread [24]. The scenario presented involved a doctor being offered an all-expenses-paid trip to Singapore with family to attend a product launch, framed as "a way of saying thank you for past support and for helping make this new drug a success."

Students reviewed relevant guidelines, including the Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations, 2002 [17] and the Uniform Code of Pharmaceutical Marketing Practices, Government of India, 2014 [18], before expressing their perspectives. A majority, 72 students (82%), stated that they would not compromise their ethical standards by displaying a company logo on slides in exchange for gifts **(Figure 2)**. Narratives highlighted potential conflicts of interest:

"Accepting such gifts might create an obligation to prescribe that particular drug, even if it is not the most appropriate treatment choice."

The consensus from discussions emphasized that medication decisions must be guided by scientific evidence and patient welfare. Students also noted that any benefits received by doctors ultimately impact patients financially. The handling of free samples and the applicable regulations were discussed in detail [17, 18]. Despite this, reflections showed some uncertainty among students: of 88 responses, only 42 (47.7%) rejected all gifts unequivocally, while 22 (25%) admitted they might accept smaller items **(Figure 2)**. These differing opinions point to areas in the curriculum and professional training that could be strengthened to better prepare students for real-world ethical dilemmas. Clarifying the boundaries of doctor-industry interactions is essential to ensure future clinical decisions remain objective [17].

An additional discussion question addressed whether pharmaceutical companies should conduct clinical trials, revealing that students were largely unaware that most trials are industry-sponsored. The session highlighted the importance of informed consent, voluntary participation, and regulatory oversight:

"We concluded that while drug trials are expensive, it is ethically acceptable for pharmaceutical companies to sponsor them, provided they are approved and monitored by an independent ethics committee."

The exercise revealed gaps in student knowledge about potential industry influence, underscoring the importance of structured discussions. Lanier, in an editorial for Mayo Clinic Proceedings [25], contrasts historical pharmacological advances—such as cortisone, cimetidine, propranolol, and azathioprine achieved through collaboration between doctors and industry—with contemporary concerns over industry-driven research. Students should be exposed to both the advantages and risks of industry collaboration and trained to maintain impartiality in research [26]. Awareness of conflicts of interest when appraising medical literature is equally critical [26]. AETCOM sessions offer a valuable platform to explore the ethical dimensions of doctor-industry relationships, and such discussions should be revisited as students gain direct exposure to the pharmaceutical sector.
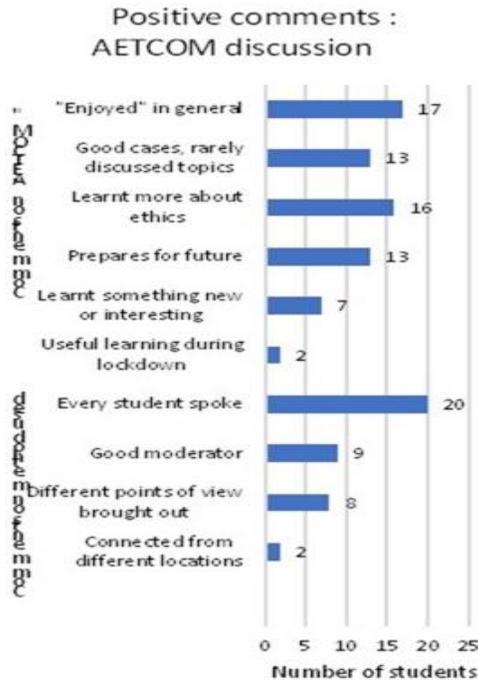
Summary of feedback about the exercise
The evaluations collected at the conclusion of the three case discussions are shown in **Figure 2**. A large majority of students—over 85%—felt that the sessions improved their understanding of patient perspectives, strengthened empathy, and could help mitigate hostility toward doctors. Students also endorsed the inclusion of structured ethics and communication training in the curriculum (**(Figure 3)**, available online only). While only 25 students (25.0%) had previously considered nearly all of the issues raised, 70 students (70.7%) were familiar with more than half of the topics covered. Group-level distributions of free-text feedback are illustrated in **Figures 3a and 3b**.
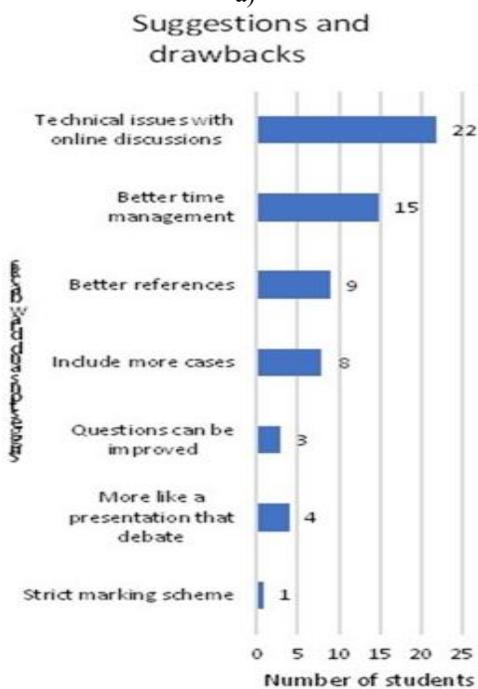
Faculty members observed that students engaged thoughtfully with ethical dilemmas and were respectful

of differing opinions. The overall experience was reported as both enjoyable and professionally rewarding, fostering a sense of shared learning. Nearly half of the faculty (4 out of 9; 44.4%) indicated that they would be eager to participate in similar sessions again.

a)

b)

Figure 3. Overview of open-ended feedback: (a) Positive remarks from students (N = 99, 100%) (b) Suggestions for improvement and noted limitations (N = 62, 62.6%)**Some students contributed more than one positive remark, while a portion of the students did not provide any suggestions

Teaching-learning methods for training in ethics
Knowledge does not automatically translate into practice, particularly in ethics, where understanding ethical principles does not necessarily guarantee ethical behavior [27]. While both educators and students recognize the importance of integrating medical ethics into the core curriculum, attendance and active engagement in ethics discussions remain relatively low. Liu *et al*. highlight the gap between the perceived value of ethics education and the limited student participation in ethics courses, emphasizing the challenges involved in designing and effectively implementing such curricula [14]. Various teaching-learning strategies have been proposed for ethics education, including large and small group discussions, case-based learning, reflective writing, brainstorming exercises, video case analysis, and role modeling [9, 11, 14, 28]. In India, first-year medical students have participated in lectures supplemented with role-plays and video demonstrations, with reported positive outcomes [29, 30]. Other programs have demonstrated effectiveness when facilitated by senior students acting as "near-peer facilitators" [31, 32]. Standardized patients have also been used successfully to introduce and debate ethical issues [11, 33].

Small group settings have consistently been supported in studies on ethics training [10, 11, 14, 15]. Saltzburg [11] further emphasizes the value of reflecting on real-life clinical experiences and integrating ethics into practice rather than relying solely on structured classroom instruction, as this approach promotes both psychological and moral development [11]. Small group discussions provide a forum for continuous dialogue, allowing students to debate differing viewpoints and consider multiple approaches to a situation. Our method followed a similar structure to that described by Tysinger *et al*. [34], but incorporated a debate format, with students submitting individual narratives and reflections on each case. This approach ensured that every student participated actively, demonstrated their understanding of the discussion, and explored two opposing perspectives for each scenario. Students valued the inclusive nature of the discussion and the exposure to diverse viewpoints, which is critical for ethical deliberation. Faculty feedback was also positive, noting

that students conducted themselves respectfully and demonstrated awareness of ethical principles during the discussions.

The importance of faculty training in ethics education is underscored by the MCI [35]. In their open-ended feedback, 9 students (9.1%) highlighted the pivotal role of the moderator in guiding discussions. Teaching applied ethics involves more than imparting theoretical knowledge; it requires creating an environment that reinforces students' innate moral qualities [27]. Additionally, ethics education should emphasize everyday ethical challenges in doctor-patient interactions rather than focusing solely on high-profile or sensational cases [27]. Therefore, ethics can be taught by a range of instructors, including medico-legal experts, bioethicists, or clinical teachers, as discussed by Glick [27]. Some argue that the goal of ethics education should be to equip future physicians with the skills to navigate ethical dilemmas, rather than to mold them into inherently moral individuals [16]. Nevertheless, our students expressed that guidance and mentorship remain essential for effectively learning and engaging with ethical issues.

Online platforms for small group discussions: do they work?

Due to the lockdown, conventional classroom teaching was not possible, necessitating a fully online discussion. Analysis of student feedback and submitted narratives indicated that the session was productive and well-received **Figures 2, 3a and 3b**. Technical difficulties affected 22 students (22.2%), and a few participants noted a preference for in-person discussions. Conversely, 2% of students specifically highlighted their appreciation for being able to engage in a comprehensive discussion remotely, despite being located across the country **(Figures 3a and 3b)**. While there are no studies describing entirely online ethics discussions, Lipman *et al.* [36] examined the potential benefits of supplementing classroom ethics teaching with internet-based discussions among second-year medical students. Their findings showed that students who participated in the online component performed significantly better on external assessments. This suggests that internet-based platforms and remote communication can be effective tools for ethics education and could be integrated into regular training when in-person interaction is limited by distance.

Limitations

This exercise was conducted solely with second-year medical students and did not include any follow-up. A future study could be designed to assess the impact of ethics training on students' clinical decision-making after they have had direct exposure to ethical dilemmas in patient care. Incorporating a pre-session questionnaire would also allow for evaluation of changes in students' attitudes toward learning medical ethics before and after the intervention.

Conclusion

Growing dissatisfaction among doctors and rising incidents of violence against healthcare professionals in India may partly stem from deficiencies in attitude, ethical conduct, and communication within the doctor-patient relationship. Addressing the affective domain of medical professionals through structured teaching of applied ethics—such as the module described here—is therefore crucial to preserve professional values, sustain job satisfaction, nurture empathy, and strengthen meaningful patient and community interactions [37].

Our web-based discussion-cum-debate activity, built around the Attitude, Ethics and Communication (AETCOM) module framed by the Medical Council of India (now NMC), witnessed enthusiastic participation from both second-year MBBS students and faculty. Feedback clearly indicated that small-group discussions remained highly effective even when conducted through an interactive online platform. Students unanimously supported the permanent integration of ethics and communication training into the regular MBBS curriculum through dedicated AETCOM modules. Despite the remote format, participants effectively highlighted key concepts such as patient autonomy, the necessity of full disclosure of diagnoses and medical errors, and the multifaceted ethical dimensions of doctor–pharmaceutical industry relationships.

Both students and faculty expressed high satisfaction with the conduct of the sessions and voiced strong willingness to engage in similar activities again.

Consequently, even after physical classrooms fully reopen, online/hybrid sessions can continue to play a valuable role by enabling medical students from different batches or locations to come together and discuss real-time ethical and communication challenges encountered on the wards without the constraint of physical presence. Such virtual exercises allow immediate reflection on incidents while they are still fresh in memory, thereby

facilitating seamless integration of ethics into routine clinical teaching and fostering the habitual practice of ethical decision-making among future physicians.

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