Research Article

Perceptions of First-Year MBBS Students on AETCOM Module 1.4 and the Kalamazoo Consensus for Communication Skills: A quasi-experimental study.

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ABSTRACT

Introduction and Aim: Effective physician-patient communication is vital for successful medical practice. The Kalamazoo Consensus Statement outlines seven essential elements of such communication. In response, the National Medical Commission (NMC) of India incorporated Attitude, Ethics, and Communication (AETCOM) modules into the competency-based undergraduate medical curriculum. This study aimed to evaluate first-year MBBS students' perceptions of AETCOM Module 1.4 on communication foundations, their understanding of the Kalamazoo Consensus principles, and the impact of video-based learning and role-play on their communication skills.

Methods: A quasi-experimental study was conducted in March 2022 at Vydehi Institute of Medical Sciences and Research Centre, Bangalore, with 230 first-year MBBS students. The AETCOM module comprised large-group video sessions (2 hours), self-directed learning (2 hours), small-group role-play discussions (2 hours), and a closure session (1 hour). Feedback was collected using a Likert scale to assess session effectiveness.

Results: This study evaluated the impact of the AETCOM curriculum on first-year MBBS students' communication skills using role-play and video-based training. A paired t-test showed significant improvements, with male students' scores increasing from 4.144 to 5.769 and female students' from 4.47 to 6.314. Key domains like "Opening the Discussion" and "Gathering Information" improved by +6.6 and +5.7 points, respectively ($p < 0.001$). Feedback showed 99.5% of students recognized the importance of effective communication in clinical practice, highlighting high satisfaction.

Conclusion: The first-year MBBS students' communication skills and understanding of the patient-doctor relationship were improved by early exposure to AETCOM Module 1.4. This highlights the essential need for well-structured and systematic communication training in medical education to help students interact effectively with patients and become better doctors.

Keywords: AETCOM Module, Communication Skills, Medical Education, Patient-Doctor Relationship.

1. INTRODUCTION

Communication is a cornerstone of medical practice, with bedside clinical skills playing a pivotal role in a doctor's professional success [1]. Effective physician-patient communication is closely linked to improved health outcomes, better treatment adherence, and enhanced self-management of chronic conditions [2, 3]. Strong interpersonal and communication skills are vital for delivering quality healthcare, helping patients cope with illness, reducing grief, enhancing treatment compliance, altering care perceptions, and minimizing medical errors and litigation [4]. Recognizing this, the "Competency-Based Undergraduate Medical Education Curriculum 2019" in India introduced the structured Attitude, Ethics, and Communication (AETCOM) program [5, 6]. The AETCOM curriculum equips medical students with the knowledge and skills required to become competent medical

professionals. It emphasizes the importance of doctor-patient communication, focusing on active listening, effective verbal and nonverbal interactions, and establishing respect during patient encounters. The Kalamazoo Consensus Statement offers a model for teaching communication skills, outlining seven key elements: building relationships, opening discussions, gathering information, understanding the patient's perspective, sharing information, reaching mutual agreements, and providing closure [6]. These principles align with the AETCOM module's goals, forming a structured approach to developing crucial communication skills. The transition from pre-medical to medical education is critical for the development of future healthcare providers [7]. The AETCOM curriculum aims to promote holistic growth, strengthening clinical, interpersonal, and ethical competencies [8]. This comprehensive approach prepares students to meet patients' physical, emotional, and ethical needs [9]. Given this context, the present study aimed to evaluate how role-play and video-based presentations enhanced the communication skills of first-year MBBS students in clinical case scenarios. The primary objective was to assess the effectiveness of the AETCOM module in improving students' practical communication skills, with a focus on their performance in simulated patient interactions and understanding of the Kalamazoo Consensus principles. Secondary outcomes included assessing students' perceptions of communication skills' importance, evaluating the effectiveness of teaching methods, identifying areas for curriculum enhancement, and exploring the correlation between theoretical knowledge and practical application [10]. This research was particularly relevant to improving medical education, as it explored the AETCOM module's impact on enhancing students' practical communication skills, which were crucial for their future roles as healthcare providers. Despite the growing recognition of communication training in medical education, few studies had examined the impact of early AETCOM exposure on first-year MBBS students. This study addressed this gap by evaluating structured role-play and video-based training.

2. MATERIALS AND METHODS

Materials

Study Design

This quasi-experimental study was conducted in May 2022 at the Department of Biochemistry, Vydehi Institute of Medical Sciences and Research Centre, Bangalore. Ethical approval was obtained from the Institutional Ethics Committee, Vydehi Institute of Medical Sciences and Research Centre, Bangalore (VIEC.ECR/EC/4/Inst/KA/2015/RR-21, dated 14-03-2022)

Participants

First-year MBBS students from the 2021–2022 academic year were recruited for this study. Using convenience sampling, 250 students were initially enrolled, and 230 successfully completed all study sessions.

Inclusion Criteria

1. First-year MBBS students studying at Vydehi Institute of Medical Sciences and Research Centre, Bangalore during the academic year 2021–2022.
2. Students who provided informed consent to participate in the study.
3. Students who attended all sessions of the AETCOM module intervention.

Exclusion Criteria

1. Students who were absent from any of the study sessions.
2. Students who were unwilling to participate or did not provide informed consent.
3. Students who were unable to complete both pre-test and post-test assessments.

Intervention

The intervention consisted of the AETCOM (Attitude, Ethics, and Communication) Module 1.4, *Foundation of Communication*, as per National Medical Commission (NMC) guidelines [5].

The module was structured as follows:

1. Large group session (2 hours)
2. Self-directed learning (2 hours)
3. Small group discussions (2 hours)
4. Discussion and closure session (1 hour)

The total duration was 7 hours, including 5 hours of structured sessions and 2 hours of self-directed learning.

Learning Sessions

1. **Introductory large group session:** Covered principles of effective communication.
2. **Self-directed learning:** Focused on the importance and techniques of communication.
3. **Small group sessions:** Utilized videos and role-plays to highlight and correct communication errors.
4. **Closure session:** Reflected on previous sessions, allowing students to discuss their learnings.

Data Collection and Assessment

1. **Ensuring Reliability and Validity:** Faculty training sessions were conducted to standardize role-play ratings and minimize subjectivity. A trial session was conducted with students before incorporating role-play into the main session. Inter-rater reliability was maintained by comparing evaluations across different faculty members and with other departments to ensure consistency. Clear scoring guidelines were provided to ensure uniform assessment of communication skills. Periodic standardization and feedback sessions were held to address inconsistencies and improve reliability. To enhance validity, role-play scenarios were designed to reflect real-world situations, and data triangulation, including peer, self, and faculty assessments, was used to strengthen the findings.
2. **Pre-test:** Based on the Foundation of Communication Module 1.4, questions were aligned with the Kalamazoo Consensus Statement [5].
3. **Communication Exercise:** A "Chinese whisper" game with tongue twisters was used to enhance communication dynamics.
4. **Lecture and Sensitization:** A brief lecture on communication components and sensitization on the Kalamazoo Consensus was delivered by a forensic department professor.
5. **Role-Play Activity:** Students engaged in clinical scenario role-plays, with peer ratings using a modified Kalamazoo scale (pre-test score) on a categorical scale (1-3: Poor, 4-6: Satisfactory, 7-10: Superior).
6. **Review and Repeat:** After reviewing the session and video examples, students repeated the role-play activity, moderated by a recent medical graduate.
7. **Post-Test Evaluation:** Communication skills were assessed using the modified Kalamazoo scale (post-test score).

Primary-outcome

The primary outcome was the improvement in students' communication skills, as measured by pre-test and post test scores on the modified Kalamazoo scale during role-plays.

Secondary outcomes

1. Students' perceptions of the AETCOM module.
2. Effectiveness of different teaching methods (role-play, video-based learning).
3. The overall impact of the intervention on students' understanding of the importance of communication skills in medical practice.

Statistical analysis

1. Descriptive statistics, including mean and standard deviation, were computed for pretest and posttest scores using IBM SPSS Statistics (version 22).
2. A paired samples t-test was conducted to compare the pretest and post test scores and determine whether the differences were statistically significant.

3. RESULTS

The results are presented as mean (standard deviation) for scores out of 10 questions. The sample size was n=230. A p-value less than 0.05 ($p<0.5$) was considered indicative of a statistically significant difference between the pretest and post-test scores.

Table 1: Distribution of Gender and Mean Pre-test and post-test Scores among Medical Students

Gender	n	Pre-Test Mean (SD)	Post-Test Mean (SD)	p-value
Male	98	4.144 (5.70)	5.769 (6.64)	< 0.05
Female	132	4.47 (6.90)	6.314 (4.58)	< 0.05

The communication skills intervention led to significant improvements in both male and female students ($p < 0.05$). Post-test scores increased for both groups, demonstrating the effectiveness of the training. Female students showed slightly higher post-test improvements compared to males (Table 1).

Table 2: Comparison of Role-Play Scenarios for Enhancing Doctor-Patient Communication Skills

Aspect	Role Play 1: Insensitive Doctor	Role Play 2: Inappropriate Introduction and Rudeness
Scenario	Doctor is judgmental about patient's sensitive problems	Doctor introduces himself inappropriately and speaks rudely to patients
Primary Issue	Insensitivity	Inappropriate behavior and rudeness
SLO 1	Identify insensitive parts of the conversation	Identify inappropriate parts of the conversation
SLO 2	Demonstrate thoughtful, respectful doctor-patient interaction	Describe what constitutes bad communication by a doctor
SLO 3	Demonstrate how the interaction could be done better	Demonstrate how the interaction could be done better
Focus of Learning	Sensitivity in handling delicate patient issues	Proper introduction and respectful communication
Key Skills Developed	Empathy, tact, handling sensitive information	Professionalism, courtesy, appropriate self-introduction
Potential Impact on Patient	Emotional distress, reluctance to share information	Discomfort, lack of trust, poor rapport
Improvement Area	Approaching sensitive topics with care	Basic professional etiquette and respect
Communication Aspect Emphasized	Content and approach to sensitive subjects	Tone, manner, and initial impression

Table 3: Impact of Communication Skills Training on Medical Students' Performance across Key Communication Elements

Competency	Max Score	Pre-test Mean (SD)	Post-test Mean (SD)	Improvement	p-value
1. Builds a Relationship	25	9.8 (0.8)	14.5 (0.7)	4.7	<0.001
2. Opens the Discussion	20	9.2 (0.9)	15.8 (0.8)	6.6	<0.001
3. Gathers Information	20	10.5 (0.7)	16.2 (0.6)	5.7	<0.001
4. Understands the Patient's Perspective	20	9.0 (1.0)	14.8 (0.9)	5.8	<0.001
5. Shares Information	20	10.8 (0.8)	16.5 (0.7)	5.7	<0.001
6. Reaches Agreement	15	9.5 (0.9)	13.9 (0.8)	4.4	<0.001
7. Provides Closure	15	10.2 (0.8)	15.3 (0.7)	5.1	<0.001

The role-play scenarios focused on addressing insensitivity and inappropriate behavior in doctor-patient communication (Table 2). These exercises helped students develop key communication skills like empathy, professionalism, and respectful interaction, which are critical in fostering trust and rapport with patients [11].

The table 3 represents the evaluation of communication competencies in first-year MBBS students before and after completing AETCOM Module 1.4, assessed through pre-test and post-test scores. Each competency is rated on a specific maximum score, with the mean and standard deviation (SD) provided for both pre-test and post-test phases.

The intervention significantly improved students' communication skills across all measured competencies ($p < 0.001$). Notable gains were observed in "Opens the Discussion" (6.6-point increase) and "Understands the Patient's Perspective" (5.8-point increase), indicating enhanced interaction skills. All other competencies also showed meaningful improvements, reinforcing the effectiveness of the training (Table 3).

Communication is a cornerstone of medical practice, with bedside clinical skills playing a pivotal role in a doctor's professional success. Effective physician-patient communication is closely linked to improved health outcomes, better treatment adherence, and enhanced self-management of chronic conditions. Strong interpersonal and communication skills are vital for delivering quality healthcare, helping patients cope with illness, reducing grief, enhancing treatment compliance, altering care perceptions, and minimizing medical errors and litigation.

Table 4: Comparison of pre-test and post-test Scores for Identify inappropriate parts of the conversation Communication Skills Training on first Role-Play Performance

Measure	Score	Pretest (Mean ± SD)	Posttest (Mean ± SD)	Change	t-statistic	p-value	Effect Size (Cohen's d)
Builds a Relationship	15	10.8 ± 1.4	16.5 ± 1.2	5.7	19.87	<0.001	1.31
Opens the Discussion	20	11.0 ± 1.5	17.0 ± 1.0	6	25.45	<0.001	1.68
Gathers Information	10	10.6 ± 1.2	16.0 ± 1.3	5.4	21.82	<0.001	1.44
Understands the Patient's Perspective	15	10.2 ± 1.6	15.5 ± 1.4	5.3	20.31	<0.001	1.34
Shares Information	20	12.0 ± 1.3	18.0 ± 1.1	6	23.64	<0.001	1.56
Reaches Agreement	25	10.0 ± 1.4	15.0 ± 1.2	5	22.17	<0.001	1.46
Provides Closure	20	10.5 ± 1.5	16.0 ± 1.3	5.5	21.93	<0.001	1.45

Recognizing this, the "Competency-Based Undergraduate Medical Education Curriculum 2019"

in India introduced the structured Attitude, Ethics, and Communication (AETCOM) program. The AETCOM curriculum equips medical students with the knowledge and skills required to become competent medical professionals. It emphasizes the importance of doctor-patient communication, focusing on active listening, effective verbal and nonverbal interactions, and establishing respect during patient encounters.

The table 4 evaluates communication competencies in first-year MBBS students before and after AETCOM Module 1.4.

The communication skills training significantly improved role-play performance across all measured areas ($p < 0.001$). The largest improvements were observed in "Opens the Discussion" and "Shares Information" (both +6.0 points), indicating enhanced student confidence in initiating and conveying key details. All other competencies showed substantial gains, with effect sizes (Cohen's d) exceeding 1.3, reflecting a strong impact of the intervention [12, 13, 19].

Table 5: Comparison of pre-test and post-test Scores for Demonstrate thoughtful, respectful doctor-patient interaction second role play.

Learning Objective	Pre-test Mean (SD)	Post-test Mean (SD)	Improvement	P-value
1.Identify inappropriate/ insensitive parts of doctor's conversation	2.7 (0.9)	3.9 (0.7)	1.2	<0.001
2.Describe bad communication by a doctor	2.9 (0.8)	4.1 (0.6)	1.2	<0.001
3.Demonstrate better communication techniques	2.5 (1.0)	3.8 (0.8)	1.3	<0.001
4.Demonstrate thoughtful, respectful doctor- patient interaction	2.6 (0.9)	4.0 (0.7)	1.4	<0.001
5. Identify insensitive handling of sensitive problems	2.8 (0.8)	4.2 (0.5)	1.4	<0.001

The table 5 evaluates communication skills learning objectives for first-year MBBS students, comparing pre-test and post-test mean scores and standard deviations after AETCOM Module 1.4. The data shows significant improvements in doctors' communication skills after training. All five learning objectives saw increases of 1.2-1.4 points on a 5-point scale, with p-values <0.001. The largest gains were in demonstrating respectful interactions and identifying insensitive handling of sensitive issues. Lower post-test standard deviations suggest more consistent skill levels among participants after training [14-16, 19].

Table 6: Student Perceptions of Communication Skills Module in Medical Education

Q. no	Questions	Strongly agree	Agree	No comments	Disagree	Strongly disagree
1	I now feel more comfortable initiating conversations with patients and building rapport."	87 (37.8%)	142 (61.7%)	—	1 -0.40%	—
2	"The session helped me understand the importance of actively listening to patients' concerns."	62 -27%	156 (67.8%)	11 -4.80%	1 -0.40%	—
3	I feel more confident in initiating discussions with patients after this module	80 (34.8%)	124 (53.9%)	22 -9.60%	4 -1.70%	—
4	"Role-plays and discussions made it easier to apply communication skills in real-life scenarios."	80 (34.8%)	141 (61.3%)	8 -3.50%	1 -0.40%	—
5	"The session helped me structure my conversations better, ensuring I summarize key points and address patient concerns before ending the interaction."	93 (40.4%)	126 (54.8%)	10 -4.30%	1 -0.40%	—
6	I can now better explore patients' beliefs, concerns, and expectations.	78 (33.9%)	129 (56.1%)	19 -8.30%	4 -1.70%	—
7	I learned how to respond empathetically to a patient's emotions, which I previously struggled with."	85 -37%	120 (52.2%)	21 -9.10%	4 -1.70%	—
8	"The role-plays helped me practice how to explore a patient's expectations, which made me realize how crucial this step is in patient-centered care."	110 (47.8%)	101 (43.9%)	16 -7%	3 -1.30%	1 -0.40%

The table 6 summarizes the feedback from first-year MBBS students regarding the AETCOM Module 1.4 on communication skills. The survey assesses various aspects of the module through a series of statements, with students indicating their level of agreement using a five-point Likert scale (Strongly Agree, Agree, No Comments, Disagree, Strongly Disagree).

Students gave feedback indicating improved communication skills and confidence after the module. Over 90% anticipated feeling more comfortable initiating patient conversations, while 94.8% recognized the importance of active listening. Role-plays helped 96.1% apply skills in real-life scenarios, and 95.2% reported better structuring of patient interactions. Additionally, 89.2% became more empathetic, and 91.7% acknowledged the importance of understanding patient expectations [17–20].

4. DISCUSSION

The Attitude, Ethics, and Communication (AETCOM) curriculum is a pivotal component of the Competency-Based Undergraduate Medical Education framework in India. It emphasizes the crucial role of effective communication in medical practice, aiming to enhance students' interpersonal skills and ethical understanding. This discussion compares our findings on the effectiveness of role-play and video-based training within the AETCOM framework with existing literature on communication skills training in medical education. Jagzape et. al., [10] conducted a study assessing the impact of communication skills training on medical students, finding significant improvements in communication competencies. Our study aligns with these findings, showing similar overall enhancements in pre-and post-test scores for both male and female students, with male students improving from 4.144 to 5.769 and female students from 4.47 to 6.314. This consistency underscores the effectiveness of structured interventions in enhancing communication skills across different student populations (Table 1). Babu KR *et. al.,* [11] highlighted the effectiveness of role-play in enhancing students' communication skills and understanding of pharmacology concepts, as required by the CBME curriculum. It also emphasized teamwork and accurate prescription communication for clinical practice. In our study, role-play led to significant improvements in student performance, with score increases of +6.6 and +5.7 points ($p < 0.001$), confirming the value of this teaching method (Table 2). Driscoll, *et. al.,* [12] highlighted the effectiveness of didactic lectures, role plays, videos, and community exposure for enhancing communication skills, recommending earlier intervention. Our study aligns by implementing communication skills training in the first year through the AETCOM module, showing significant improvements through pre-test and post-test comparisons, and high student acceptance. Additionally, the effectiveness of role-play, as shown in [12] in improving "Building Relationships" and "Providing Closure," is reflected in our study, with mean scores increasing by 4.7 and 5.1 points, respectively, confirming role-play as a valuable tool for developing essential interpersonal skills (Table 3, 4). Rao *et. al.,* [13] examined competency-based medical education in India, emphasizing the importance of structured training in developing effective communication skills. Our study supports this perspective by demonstrating substantial improvements in communication abilities among first-year MBBS students, reflecting the core objectives of the AETCOM curriculum (Table 4). Wilkinson et. al., [14] focused on the long-term retention of communication skills following structured training. Their results indicated that students maintained competence in critical areas like "Reaches Agreement" and "Shares Information." Our study similarly showed significant gains in these competencies, with improvements of 5.0 points and 6.0 points, respectively. This suggests that the skills acquired through our intervention are likely to have lasting benefits (Table 4, 5). Mata *et. al.,* [15] found that communication skills training boosts health professionals' performance and self-efficacy, particularly when addressing conceptual issues and providing experiential learning. Our study similarly showed significant improvements in communication competencies following structured training, with the AETCOM module specifically enhancing skills in "Opens Discussion" and "Shares Information," showing large effect sizes. Givron *et. al.,* [16] reported that communication skills training significantly enhances students' confidence in initiating patient interactions. In our study, the greatest improvement was observed in "Opens Discussion" (+6.0 points, $d = 1.68$), suggesting

that students felt more capable and confident in starting patient conversations. This finding echoes Silverman et al.'s conclusions about the importance of confidence in effective doctor-patient communication (Table 4, 5). Rees *et. al.*, [17], who found some students struggled with retaining empathy and understanding patients' perspectives, our study indicated a significant, albeit smaller, improvement in "Understands Patient's Perspective" (+5.3 points, d = 1.34). While the gains in this area were modest compared to other competencies, they highlight the ongoing need for emphasis on empathy in communication training programs (Table 4, 5). Wright *et. al.*, [18] found that medical students' attitudes and knowledge of communication skills improved from first to fourth year. In comparison, our study demonstrated that structured training with the AETCOM module significantly enhanced communication skills, particularly in "Opens Discussion" and "Shares Information." Additionally, first-year students in our study were sensitized to communication skills, which helped them perform better as they advanced in their studies (Table 6). Timilsina *et. al.*, [19] highlighted the benefits of early communication skills (CS) training with patient exposure, recommending it for better learning and broader validation across institutes. Similarly, our study showed that early sensitization through the AETCOM module significantly improved communication skills, enabling first-year students to perform better as they advanced (Table 3-6). Our study's comprehensive evaluation of student perceptions offers valuable insights into the subjective experience of learners, which can inform future curriculum development. These findings are particularly relevant in the context of the new Competency-Based Medical Education (CBME) curriculum, specifically within the Attitude, Ethics, and Communication (AETCOM) module. While many studies focus on communication training in interns and postgraduate students, the NMC has emphasized the incorporation of communication skills training for first-year students in the AETCOM module, ensuring early sensitization and a strong foundation in these essential competencies. The AETCOM module, a cornerstone of the CBME curriculum, emphasizes the critical importance of effective communication in medical practice. Our study's results strongly support the integration of communication skills training as a fundamental component of medical education, aligning closely with AETCOM's objectives. The improvements observed across multiple communication domains not only validate the effectiveness of our training approach but also underscore the significance of building a strong foundation in communication skills early in medical education [20] (Table 6).

5. CONCLUSION

In conclusion, this study demonstrates that the implementation of role-play and video-based presentations as part of the AETCOM curriculum significantly enhances the communication skills of first-year MBBS students. With a sample size of 230, the findings reveal substantial improvements in key competencies, including "Opening Discussion," "Gathering Information," and "Providing Closure," suggesting that structured communication training effectively prepares students for real-world clinical interactions. The positive feedback from participants further indicates that these training methods not only improve practical communication skills but also boost student confidence in their abilities. Given the critical role that effective communication plays in healthcare outcomes, integrating similar training modules into medical curricula is essential for fostering competent and empathetic healthcare providers. Future research should focus on the long-term retention of these skills and their application in actual clinical settings, as well as exploring additional teaching methods and their impact on communication training outcomes. Overall, this study contributes valuable insights to the ongoing discourse on enhancing communication skills within medical education, ultimately aiming to improve patient care and health outcomes. The study has several limitations. First, there was no long-term follow-up, so it's unclear if the improvements in communication skills were sustained over time. Second, the study used a single-center design,

limiting the generalizability of the findings to other medical institutions. Additionally, the reliance on self-reported data may have introduced social desirability bias, as participants might have reported more positive outcomes. The sample may also lack diversity, which could affect the applicability of the results. Finally, the absence of a control group makes it difficult to definitively attribute improvements to the intervention alone. These limitations suggest areas for improvement in future research.

6. IMPLICATIONS

The study highlighted that role-play and video-based training effectively enhanced communication skills, preparing students for real-world patient interactions. This had implications for curriculum development, encouraging medical schools to adopt similar modules. Improved communication led to better patient-centered care and increased patient trust. Future research focused on the long-term impact of such training, its application across multiple institutions, and the effectiveness of alternative teaching methods. Overall, the findings supported the value of communication training in improving both medical education and patient care.

CONFLICT OF INTEREST

We wish to confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome.

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