
ORIGINAL ARTICLE**Structured communication skills workshops for medical students: A five-year retrospective analysis**

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Abstract

Background: Effective doctor–patient communication enhances patient satisfaction, treatment adherence, and overall health outcomes. Despite formal recognition by the National Medical Commission (NMC) through the Attitude, Ethics and Communication module, communication skills training in Indian undergraduate medical education remains variably implemented and inconsistently evaluated. **Aim and Objectives:** The present study evaluated the cumulative effectiveness of structured, protocol-based communication skills workshops conducted over five years (2018–2023) for undergraduate medical students and to compare the outcomes with findings reported by previous national and international studies. **Material & Methods:** A retrospective analysis of five annual structured workshops was conducted. The workshops, designed for first-year MBBS students, utilized didactic lectures, role-plays, video demonstrations, and empathy drills based on the SPIKES protocol and Kalamazoo Consensus Checklist. A total of 434 students participated. Knowledge was assessed using validated pre-test and post-test questionnaires (5 MCQs), with paired t-tests used to compare mean scores. **Results:** Data from 434 participants were analyzed. The cumulative mean pre-test score was 58.2% (SD $\pm$ 12.1), which improved significantly to 85.6% (SD $\pm$ 9.4) in the post-test ($p < 0.001$). Domain-specific analysis showed consistent improvement ($> 25\%$) in breaking bad news and empathy across all five cohorts. **Conclusion:** Over five years, structured communication skills workshops consistently improved students' knowledge and perceived competence, demonstrating their effectiveness and reliability.

Keywords: Communication Skills, SPIKES Protocol, Medical Education, AETCOM, Retrospective Cohort-Series Analysis, India

Introduction

The doctor–patient relationship is fundamentally built on communication. Effective communication enables accurate history-taking, enhances diagnostic precision, fosters trust, and improves adherence to treatment plans, whereas poor communication is a major contributor to patient dissatisfaction, medico-legal disputes, and professional burnout among healthcare providers [1,2]. Historically, communication skills were viewed as innate attributes acquired informally through observation.

However, contemporary medical education recognizes communication as a teachable and assessable competency [3,4]. Global frameworks such as the Calgary–Cambridge Guide, SPIKES protocol, and Kalamazoo Consensus Statement have emphasized structured and evidence-based approaches to communication training [5–7]. In India, the National Medical Commission (formerly Medical Council of India) operationalized these competencies through the Attitude, Ethics and Communication

(AETCOM) module, mandating structured communication training for the Indian Medical Graduate [8,9]. Despite these policy-level initiatives, implementation remains inconsistent due to curricular overload, faculty constraints, and lack of standardized assessment tools [10,11].

Recent Indian studies indicate that graduating medical students often feel inadequately prepared for emotionally challenging encounters such as breaking bad news and obtaining informed consent, highlighting a persistent gap between curricular intent and learner confidence [11,12].

The present study addressed these gaps by evaluating structured communication skills workshops delivered over five consecutive cohorts from 2018 to 2023, providing a cohort-series perspective rarely reported in Indian medical education literature. By analyzing data across multiple academic years, the study aimed to assess whether workshop outcomes are reproducible and stable across time, independent of cohort characteristics or instructor variations. The inclusion of both quantitative knowledge assessments and qualitative student feedback provides a comprehensive evaluation of workshop effectiveness.

The specific objectives of the study were to assess the immediate educational impact of structured communication skills workshops by comparing pre-test and post-test knowledge scores across five successive cohorts of first-year MBBS students (2018–2023); to evaluate the consistency and reproducibility of workshop outcomes by analyzing year-wise performance trends across the five cohorts, including mean score improvements and standard deviations; to identify domain-specific learning gains in key communication competencies including empathy, breaking bad news using the SPIKES protocol, non-verbal communication, doctor-patient relationship

building, and team communication; to analyze student perceptions of the workshop through thematic categorization of open-ended feedback, identifying perceived strengths, areas for improvement, and suggestions for curricular integration.

Material and Methods

Study design and setting

A retrospective cohort-series analysis was conducted using data from five structured communication skills workshops held between 2018 and 2023 at Dayanand Medical College & Hospital. These workshops were conducted annually for first-year MBBS students.

Participants

The sample size was determined by the total number of students enrolled in the first-year MBBS program during the study period (operational /convenience sample). No formal a priori power analysis was conducted, as the study utilized complete enumeration of all eligible students across the five cohorts. The final pooled sample (N = 434) represents the entire population of first-year MBBS students who participated during the study period, rather than a statistically estimated subsample.

Inclusion criteria: First-year MBBS students who consented to participate and completed both pre- and post-workshop assessments.

Exclusion criteria: Students with prior formal communication training or incomplete assessment data.

Workshop Structure (Table 1)

Each one-day workshop was developed using adult learning theory and experiential learning principles, with emphasis on active engagement, reflection, and structured feedback [13,14]. A range of teaching methods such as interactive lectures, role-play exercises, video demonstrations, and facilitated debriefing sessions were used. The curriculum

was based on the SPIKES protocol [6] and Kalamazoo Consensus Checklist [7], both widely validated frameworks in communication training. Qualitative responses were analyzed thematically using standard approaches in medical education research [15].

Communication frameworks used

SPIKES Protocol: For breaking bad news (Setting, Perception, Invitation, Knowledge, Empathy, Strategy/Summary).

Kalamazoo Consensus Checklist: Emphasizing building relationships, information sharing, and understanding patient perspective.

Data analysis

Pre-test and post-test scores were analyzed using paired t-tests to compare mean scores. Descriptive statistics (mean, standard deviation) were calculated for each cohort and for the pooled sample. All statistical analyses were performed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA) and Microsoft Excel 2019 (Microsoft Corp., Redmond, WA, USA) for data management. Statistical significance was set at $p < 0.05$. Effect sizes were calculated using Cohen's d for the pooled analysis.

Results

Demographics and participation

Data from 434 students were included in the final analysis. Participation rates remained high ($> 95\%$) across all five years. The cohort-wise distribution of participants is presented in Table 2.

Year-wise outcomes (Table 3)

A year-wise analysis of the five structured communication skills workshops demonstrated consistent learning outcomes across all cohorts. Despite being conducted across different academic years, the workshops produced a uniform improvement in knowledge scores, with mean gains ranging from

27.2% to 27.8%. The baseline pre-test scores were comparable across all cohorts, ranging from 56.9% to 59.5%, suggesting similar entry-level competencies among first-year MBBS students. Notably, post-test scores exceeded 84% in all five workshops, indicating a robust immediate educational impact. Domain-specific analysis revealed that empathy, breaking bad news using the SPIKES protocol, and doctor-patient relationship building showed the greatest improvements consistently across years.

Score comparison (Table 4)

The pooled analysis revealed a statistically significant improvement in knowledge scores. The cumulative mean pre-test score was 58.2% ($SD \pm 12.1$), which improved to 85.6% ($SD \pm 9.4$) in the post-test, with a mean improvement of +27.4%. The paired t-test showed that this improvement was statistically significant ($p < 0.001$), indicating a strong immediate educational impact.

Student feedback (Table 5)

Student responses to open-ended feedback questions were reviewed and thematically categorized. Thematic categorization revealed five major domains: (1) content relevance and quality, (2) facilitator effectiveness, (3) interaction and engagement, (4) logistics and learning environment, and (5) actionable takeaways and suggested improvements.

Content relevance and quality: Students consistently reported that the workshop content was highly relevant to real-life clinical scenarios, particularly in early patient interactions. The SPIKES protocol was perceived as actionable and easy to remember, especially for emotionally challenging situations such as breaking bad news. Several students noted that the content was appropriately pitched for medical students, neither excessively basic nor overly advanced. A minority

of participants felt that certain introductory concepts (e.g., basic listening skills) were somewhat repetitive, suggesting prior informal exposure. Students expressed appreciation for clear linkage between theory and practice, especially when concepts were immediately followed by role-play or video demonstrations.

"The SPIKES protocol is very practical—I can actually see myself using it when I have to break bad news to a patient's family."

Facilitator effectiveness: Facilitators were widely described as knowledgeable, well-prepared, and clinically experienced, lending credibility to the sessions. Students highlighted the facilitators' clarity of explanation, especially while demonstrating structured frameworks like SPIKES and Kalamazoo. The interactive facilitation style was perceived as non-judgmental and encouraging,

which promoted open participation. Effective time management was noted, particularly the smooth transition between lectures, activities, and debriefing sessions. Constructive feedback provided during role-plays was frequently cited as a key strength of the workshop.

"Our facilitators were experienced clinicians who shared real cases. That made the learning much more meaningful."

Interaction and engagement: Role-plays and small-group discussions were consistently rated as the most engaging components of the workshop. Students valued opportunities for peer learning, observing different communication styles during simulations. The balance between didactic lectures and experiential activities was perceived as optimal, preventing cognitive overload. Participants repor-

Table 1: Structure of the communication skills workshop

Module	Content focus	Teaching-learning method
Module 1	Active listening & empathy	Interactive lecture, pair exercises
Module 2	Non-verbal communication	Video analysis, group discussion
Module 3	Breaking bad news	SPIKES-based role play
Module 4	Doctor-patient relationship	Case scenarios, reflection
Module 5	Team communication	Group tasks, debriefing

Table 2: Characteristics of the five communication skills workshops

Workshop	Academic Year	Month/Year	Number of students	Duration	Teaching frameworks used
1	2018-19	Nov 2018	86	1 day	SPIKES, Kalamazoo
2	2019-20	Nov 2019	90	1 day	SPIKES, Kalamazoo
3	2020-21	Nov 2020	82	1 day	SPIKES, Kalamazoo
4	2021-22	Nov 2021	88	1 day	SPIKES, Kalamazoo
5	2022-23	Nov 2022	88	1 day	SPIKES, Kalamazoo
Total			434		

Table 3: Year-wise outcomes of structured communication skills workshops

Year	Number of students (n)	Pre-test score (%)	Post-test score (%)	Improvement (%)	Key domains with maximum gain
2018	86	57.6 ± 12.4	84.9 ± 9.6	+27.3	Empathy, active listening
2019	90	58.1 ± 11.8	85.4 ± 9.2	+27.3	Breaking bad news (SPIKES)
2020	82	56.9 ± 12.9	84.7 ± 9.8	+27.8	Non-verbal communication
2021	88	59.0 ± 11.5	86.2 ± 8.9	+27.2	Doctor–patient relationship
2022–2023	88	59.5 ± 11.9	86.8 ± 8.7	+27.3	Empathy and team communication
Total/ Mean	434	58.2 ± 12.1	85.6 ± 9.4	+27.4	Consistent across domains

Table 4: Comparison of pre-test and post-test scores (N = 434)

Parameter	Pre-test	Post-test	Difference	<i>p</i>
Mean ± Standard Deviation Score (%)	58.2 ± 12.1	85.6 ± 9.4	+ 27.4	< 0.001

Table 5: Frequency Distribution of Emergent Themes from Participants' Feedback

Theme	Frequency (Percentage)
Content relevance and quality	382 (88.0%)
Facilitator effectiveness	365 (84.1%)
Interaction and engagement	401 (92.4%)
Logistics and learning environment	312 (71.9%)
Actionable takeaways and suggested improvements	289 (66.6%)

ted improved confidence in speaking and expressing empathy due to repeated practice in a safe learning environment. Informal peer interaction during group tasks facilitated collaboration and mutual learning, even among large batches.

"Role-plays were the best part. You can't learn communication just by listening to lectures—you have to practice it."

Logistics and learning environment: The physical venue was generally described as comfortable and conducive to interaction, with adequate space for group activities. Students appreciated the one-day format, finding it intensive yet manageable within academic schedules. Some participants suggested that the sessions felt slightly time-constrained, particularly during role-play debrief-

fings. Audio-visual aids and video demonstrations were considered clear and effective, enhancing comprehension. A few students recommended short breaks between modules to sustain attention during longer sessions.

"The one-day format was intense but manageable. I would have liked a few more breaks between modules."

Actionable takeaways and suggested improvements: Increased awareness of empathy, non-verbal cues, and patient perspective was a commonly cited personal takeaway. Many participants suggested repeat or reinforcement workshops during clinical years to strengthen skill retention. Students expressed interest in discipline-specific scenarios (e.g., surgery, pediatrics, obstetrics) in future sessions. Students recommended incorporating Objective Structured Clinical Examination (OSCE) style assessments or simulated patients for more authentic evaluation. Longitudinal integration of communication training program was suggested.

"We need more sessions like this during clinical postings. One day is not enough to truly master communication."

Thematic analysis of qualitative student feedback revealed that the most frequently cited theme was Interaction & Engagement (92.4%), highlighting the value of experiential learning methods. Overall feedback was overwhelmingly positive, with students emphasizing the practical relevance of the content, high facilitator competence, and the value of experiential learning methods such as role-play. Recurrent suggestions included the need for longitudinal reinforcement and greater use of clinical case-based simulations.

Discussion

The present study, analyzing data from 434 students over five years, demonstrates that structured communication skills workshops produce a robust and statistically significant improvement in medical students' knowledge. The consistency of the results across all five cohorts suggests that the workshop model is stable and effective regardless of the specific academic year. The year-wise analysis provides important insights into the reproducibility of structured communication skills training. Across five consecutive cohorts, the workshops demonstrated consistent educational gains, with comparable improvement in knowledge scores each year. This finding suggests that the effectiveness of the intervention was not cohort-dependent, instructor-dependent, or time-bound. Unlike many single-cohort studies reported in the literature, the present analysis confirms that a standardized, protocol-based communication skills workshop can yield uniform outcomes across multiple academic years [16,17]. This consistency strengthens the external validity of the intervention and supports its scalability within competency-based medical education frameworks such as AETCOM.

The persistent improvement in sensitive domains such as empathy and breaking bad news aligns with the work of Baile *et al.* (2000) [6] and Rosenbaum *et al.* (2004) [18], who emphasized the ability of teaching emotionally complex communication skills when structured frameworks like SPIKES are used. Furthermore, the lack of inter-year variability in outcomes contrasts favorably with concerns raised by Laidlaw *et al.* (2002) [19] regarding inconsistency in short-term interventions, suggesting that careful instruc-

tional design and experiential learning can mitigate such limitations. From a curricular perspective, the year-wise data underscore an important implication: even within constrained curricular schedules, well-designed one-day workshops can reliably achieve cognitive and attitudinal gains. However, as highlighted by van Dalen *et al.* (2002) [20], while knowledge acquisition is immediate and consistent, reinforcement through longitudinal exposure remains essential for sustained behavioral competence.

Comparison with previous studies

Our findings align with recent national and international literature. Table 6 compares our results with key benchmarks in the field. The high acceptance and perceived usefulness of SPIKES in the present study (93% positive feedback) closely mirrors the findings of Baile *et al.* (2000) [6], confirming its relevance across cultural and educational contexts. However, Laidlaw *et al.* (2002) [19] and van Dalen *et al.* (2002) [20] emphasize that short-term interventions must be part of a larger continuum. While our study confirms that a one-day workshop is effective for *knowledge* acquisition (mean gain +27.4%), the transition to *behavioral* competence requires the longitudinal practice advocated by these authors. The persistent gains in empathy and breaking bad news mirror findings by Baile *et al.* (2000), who established the SPIKES protocol as an effective framework for teaching emotionally complex communication [6]. Similarly, Rosenbaum *et al.* (2004) highlighted the importance of structured strategies combined with guided practice for delivering bad news [18].

Furthermore, active learning strategies such as role play and video demonstrations were rated as the most effective components in our feedback. This

supports the conclusions of Rees *et al.* (2004) [12] and Hurtubise *et al.* (2013) [14] who demonstrated that experiential learning leads to superior communication outcomes compared to didactic teaching alone. The large sample size of 434 students in the current study adds weight to the argument that these active learning methods are scalable and consistently effective in the Indian context.

An important strength of the present study is the inclusion of a substantially larger sample size compared to most previously published Indian studies. By conducting five standardized workshops with a cumulative sample of 435 students, the study provides stronger evidence for the reproducibility and scalability of short-term communication skills training within the Indian undergraduate medical education context. Unlike single-cohort studies, the present longitudinal analysis confirms the reproducibility and stability of short-term interventions when instructional design and faculty training are standardized. While longitudinal curricula demonstrate superior long-term behavioral outcomes [19], they require substantial curricular restructuring. In contrast, our findings suggest that well-designed one-day workshops aligned with AETCOM competencies can yield meaningful educational benefits even within existing curricular constraints [9,11]. The high student acceptance of role play and SPIKES-based simulations underscores the importance of experiential learning in communication skills acquisition. These findings reinforce the feasibility of integrating periodic reinforcement workshops throughout the MBBS curriculum to bridge the gap between theoretical instruction and real-world clinical communication.

The qualitative feedback further supports prior evidence that experiential learning, facilitator engagement, and real-world relevance are critical

determinants of learner acceptance and perceived competence [14,16,21]. The strong emphasis on experiential learning, facilitator feedback, and real-world applicability mirrors findings from previous studies and reinforces the role of structured workshops as an effective entry point for communication skills training within competency-based curricula.

This study has several limitations, including the lack of a control group, single-institution setting, reliance on knowledge-based assessment rather than behavioral observation, and absence of long-term follow-up. To address these limitations, we recommend repetition of communication skills workshops during clinical years, multi-center pooled studies to establish generalizability, integration of formative OSCE stations for behavioral assessment, and future randomized controlled trials to strengthen causal inference.

Conclusion

A structured, protocol-based communication skills workshop significantly improves undergraduate medical students' immediate knowledge and perceived competence. The analysis of 434 students over five successive cohorts confirms that this improvement is consistent and replicable across academic years. However, further research is needed to evaluate long-term skill retention and behavioral outcomes in clinical practice. Future studies with longitudinal designs and behavioral assessments would strengthen the evidence base for communication skills training in Indian medical education.

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