

Implementation And Impact Of A Medical Soft Skills Orientation Program Among Undergraduate Medical Students: A Multi-Institutional Nodal Centre Study From Tamil Nadu, India

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Abstract

Background

Soft skills such as communication, professionalism, ethics, teamwork, emotional intelligence, and reflective practice are essential competencies in modern medical education. Despite their importance within the Competency-Based Medical Education (CBME) and Attitude, Ethics and Communication (AETCOM) frameworks, structured implementation in undergraduate training remains limited in many institutions.

Objective

To evaluate the effectiveness, learner satisfaction, and scalability of a structured Medical Soft Skills Orientation Program conducted among undergraduate medical students across multiple medical institutions in Tamil Nadu.

Methodology

A mixed-methods interventional study was conducted among 674 second-year undergraduate medical students from four medical colleges participating under the nodal center model at Madras Medical College between April 6 and April 13, 2026. Quantitative evaluation included pre–post assessments (n=606) and structured participant feedback surveys (n=585). Learning effectiveness was assessed using Hake's normalized learning gain formula. Statistical analysis was performed to compare pre-test and post-test scores, and qualitative thematic analysis was used to evaluate open-ended responses.

Results

A total of 674 undergraduate medical students participated in the program, of whom 606 completed the pre–post assessment and 585 completed the structured feedback survey. Significant improvement was observed across all assessed soft skill domains following the intervention. Pre-test scores ranged from 41.16% to 63.30%, whereas post-test scores increased substantially to 87.95%-92.24%. Mean percentage improvement ranged from 28.94% to 49.24%, with all domains demonstrating high normalized learning gains ($g = 0.73–0.85$). The greatest improvement was observed in Team Communication ($g = 0.85$), followed by Reflection and Practical Application ($g = 0.81$ each). All improvements were highly statistically significant ($p < 0.001$), with narrow 95% confidence intervals indicating strong reliability of the outcomes. Participant satisfaction was exceptionally high, with positive feedback exceeding 93% across all evaluated parameters. Overall satisfaction with the program was reported by 93.84% of participants, while 97.1% perceived the training as clinically relevant. Qualitative feedback further highlighted the effectiveness of role-play sessions, reflective learning, small-group discussions, and experiential teaching approaches in improving communication, professionalism, teamwork, and emotional intelligence.

Conclusion

The Medical Soft Skills Orientation Program demonstrated strong educational effectiveness, excellent learner acceptance, and substantial scalability potential. Early integration of structured soft skills training within undergraduate medical education may significantly enhance communication, professionalism, ethical practice, and preparedness for clinical environments.

Keywords: Medical education; Soft skills; AETCOM; CBME; Communication skills; Undergraduate medical students; Professionalism; Emotional intelligence; Experiential learning; Medical curriculum

Introduction

The increasing complexity of healthcare delivery requires physicians to possess not only strong clinical competence but also effective communication, professionalism, teamwork, ethical reasoning, emotional intelligence, and reflective practice. Deficiencies in interpersonal and professional competencies have been associated with poor doctor–patient relationships, medical errors, reduced patient satisfaction, and compromised healthcare quality. Consequently, soft skills have emerged as a critical component of contemporary medical education. [1, 2, 3, 4]

The National Medical Commission introduced the Competency-Based Medical Education (CBME) curriculum to ensure holistic development of medical graduates through integration of knowledge, skills, attitudes, values, and professionalism. [5] An important element of CBME is the Attitude, Ethics and Communication (AETCOM) module, which emphasizes the development of communication skills, professional behavior, ethical reasoning, empathy, and patient-centred care among undergraduate medical students. [6]

Several studies have highlighted the growing importance of soft skills within healthcare education. Kadu emphasized that soft skills have become a fundamental requirement within the health sciences curriculum in India. [7] Similarly, Sancho-Cantus et al. reported that competencies such as communication, emotional intelligence, teamwork, and professionalism are essential for healthcare professionals but remain inadequately addressed in conventional medical curricula. [8]

Research also suggests that experiential learning methods are particularly effective in developing communication and professional competencies. Hake demonstrated the educational effectiveness of interactive learning strategies using normalized learning gain models. [9] Additionally, Alessandri et al. highlighted the value of structured pre- and post-educational interventions in evaluating learning outcomes and behavioral improvements. [10] Yardley et al. further emphasized that experiential learning approaches significantly improve reflective capacity and professional development among healthcare learners. [11]

Although the importance of soft skills is well recognized, structured implementation during the early undergraduate phase remains inconsistent across medical institutions. Many students enter clinical training without adequate preparation in communication, professionalism, teamwork, and emotional regulation. Early-stage orientation programs may therefore provide an important foundation for later clinical competence and professional behavior. [12, 13, 14, 15]

In this article, the Tamil Nadu Dr. M.G.R. Medical University, in collaboration with Medisoft Skills Academy, implemented a structured Medical Soft Skills Orientation Program under a nodal center model. The present study aimed to evaluate the effectiveness,

learner satisfaction, and scalability of this intervention among undergraduate medical students across multiple institutions in Tamil Nadu.

Objectives

Primary Objective

To evaluate the effectiveness of a structured Medical Soft Skills Orientation Program among undergraduate medical students.

Secondary Objectives

1. To assess changes in self-reported confidence across soft skill domains.
2. To evaluate participant satisfaction regarding the program.
3. To identify learner perceptions regarding effective teaching methods.
4. To assess the feasibility and scalability of the nodal-center implementation model.

Methodology

This mixed-methods interventional study was conducted to evaluate the effectiveness of a structured Medical Soft Skills Orientation Program implemented under the nodal center model of The Tamil Nadu Dr. M.G.R. Medical University at Madras Medical College. The program was conducted between April 6 and April 13, 2026, involving second-year undergraduate medical students from four participating institutions: Madras Medical College, Stanley Medical College, Kilpauk Medical College, and Government Omandurar Medical College. A total of 674 students participated in the orientation program, of whom 606 completed the pre–post assessment and 585 completed the structured feedback survey.

The intervention was designed as an introductory orientation to Attitude, Ethics and Communication (AETCOM) competencies within the Competency-Based Medical Education (CBME) framework. [2, 12] The curriculum focused on essential soft skills, including communication, professionalism, medical ethics, teamwork, reflection, emotional intelligence, stress management, time management, feedback mechanisms, and practical clinical application. The program utilized a learner-centered, multimodal teaching approach comprising didactic lectures, small-group discussions, role-play simulations, reflective practice exercises, experiential learning activities, and self-assessment. [11] A structured training manual containing all learning materials was distributed to participants to facilitate reinforcement and future application of learned competencies. Sessions were conducted by two international faculty members and one local faculty member to ensure integration of global educational practices with the local context.

Data collection involved both quantitative and qualitative approaches. The quantitative evaluation included pre–post questionnaires designed to assess self-reported confidence levels across various soft

skill domains. Participant perceptions regarding program quality, relevance, engagement, and faculty effectiveness were assessed using a structured feedback survey. Qualitative data were collected from open-ended feedback responses and analyzed using thematic analysis through systematic coding, categorization, and synthesis of recurring themes. [9]

Statistical analysis was performed using descriptive and inferential statistical methods. Continuous variables were expressed as percentages and normalized learning gains. Learning effectiveness was calculated using Hake's normalized learning gain formula: [9]

$$g = \frac{\{(Post-Pre)\}}{\{(100-Pre)\}}$$

Normalized learning gains were interpreted according to Hake's criteria as low (<0.30), medium (0.30–0.69), and high (≥0.70). [9] Differences between pre-test and post-test scores were evaluated using paired comparative analysis to determine statistical significance. Feedback responses were categorized into positive, neutral, and negative groups and summarized using frequencies and percentages. A p-value of less than 0.05 was considered statistically

significant. All assessed domains demonstrated highly significant improvement following the intervention (p<0.001).

Results

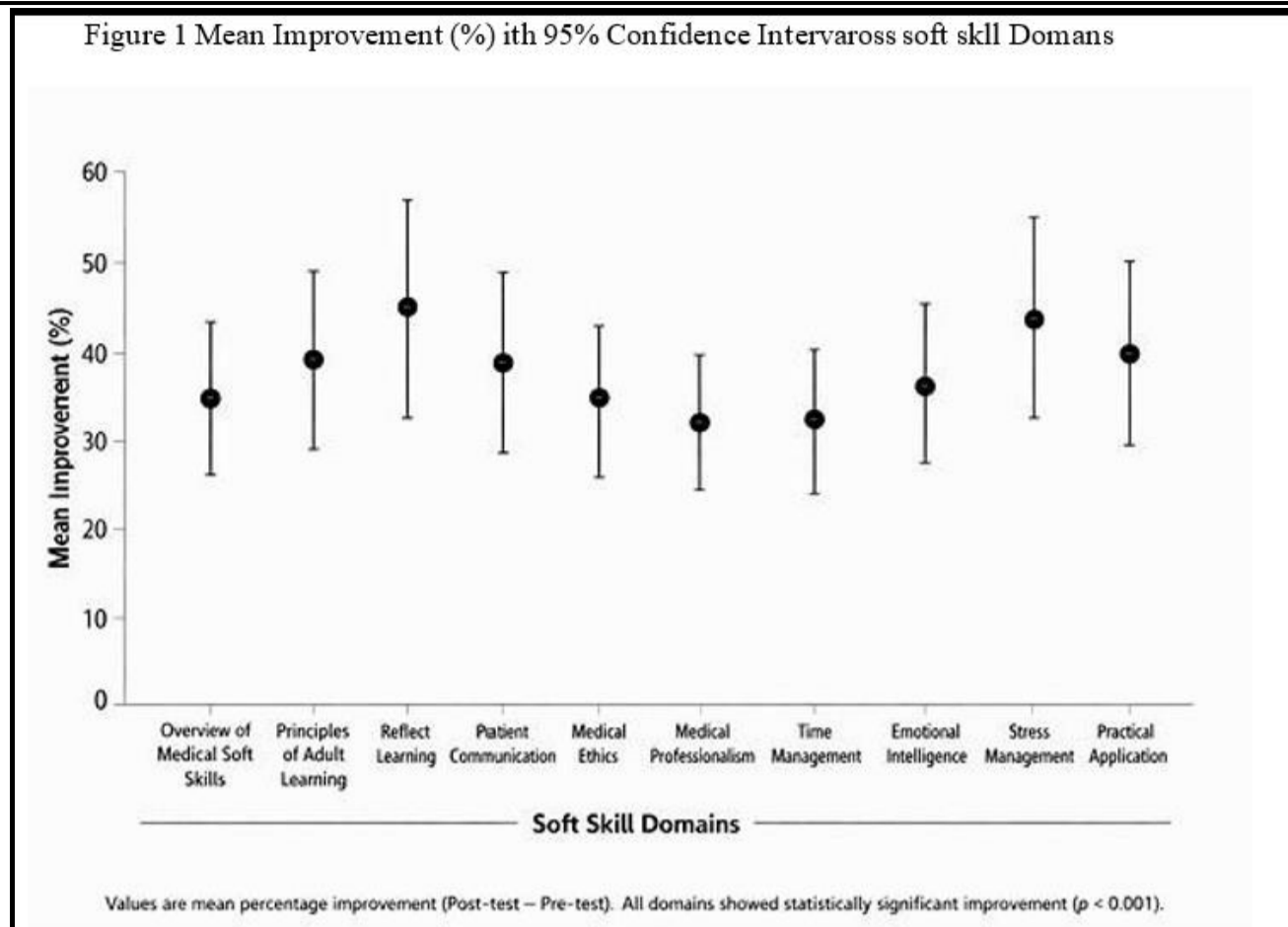
A total of 674 undergraduate medical students participated in the Medical Soft Skills Orientation Program conducted across four medical colleges under the nodal center model at Madras Medical College. Among these participants, 606 students completed the pre-post assessment and 585 responded to the structured feedback survey. The demographic characteristics of the study participants are summarized in **Table 1**. Female students accounted for a slightly higher proportion of participants (53.7%) than male students (46.3%). All participants were second-year undergraduate medical students. The distribution of participants across the four institutions was relatively balanced, with Madras Medical College contributing 27.0%, followed by Stanley Medical College (24.9%), Government Omandurar Medical College (24.2%), and Kilpauk Medical College (23.9%). The pre-post assessment completion rate was 89.9%, whereas 86.8% of participants completed the structured feedback survey.

Table 1: Demographic Details of Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	312	46.3
	Female	362	53.7
Academic Year	Second-Year MBBS	674	100.0
Participating Institution	Madras Medical College	182	27.0
	Stanley Medical College	168	24.9
	Kilpauk Medical College	161	23.9
	Government Omandurar Medical College	163	24.2
Participation Status	Completed Pre-Post Assessment	606	89.9
	Completed Feedback Survey	585	86.8

The quantitative findings demonstrated substantial improvement in students' self-reported confidence across all assessed soft skill domains following the intervention. As shown in **Table 2**, pre-test scores ranged from 41.16% to 63.30%, whereas post-test scores increased considerably, ranging from 87.95% to 92.24% across the assessed domains. Mean percentage improvement ranged from 28.94% to 49.24%. All domains demonstrated high normalized learning gains according to Hake's classification, with gain values ranging from 0.73 to 0.85. The highest normalized learning gain was observed in Team Communication (g = 0.85), followed by Reflection, Practical Application, and Overview of Medical Soft Skills (g = 0.81 each). Other domains, including Emotional Intelligence, Professionalism, Feedback, Medical Ethics, Stress Management, and

Patient Communication also demonstrated consistently high gains. Statistical analysis confirmed that improvements across all domains were highly significant (p < 0.001). Furthermore, the 95% confidence intervals for all mean differences did not cross zero, indicating strong statistical reliability and consistency of the intervention outcomes. The comparative distribution of mean improvement scores with corresponding 95% confidence intervals is illustrated in **Figure 1**. The error plot demonstrates consistently great improvement across all domains, with Team Communication showing the greatest mean improvement (49.24%; 95% CI: 45.38–53.10), followed by Reflection (47.78%; 95% CI: 44.15–51.41) and Emotional Intelligence (42.31%; 95% CI: 39.12–45.50).



Improvement was comparatively lower in Professionalism and Medical Ethics; however, these domains also demonstrated statistically significant educational gains. The relatively narrow

confidence intervals across domains suggest high precision and uniform effectiveness of the program.

Table 2: Comparison of Pre-Test and Post-Test Scores

Domain	Pre-test (%)	Post-test (%)	Mean Difference (%)	95% Confidence Interval	Learning Gain (g)	Gain Level	p-value
Overview of Medical Soft Skills	55.69	91.37	35.68	33.12 – 38.24	0.81	High	<0.001
Principles of Adult Learning	48.23	89.13	40.90	37.84 – 43.96	0.79	High	<0.001
Reflection	41.16	88.94	47.78	44.15 – 51.41	0.81	High	<0.001
Patient Communication	56.77	89.80	33.03	30.48 – 35.58	0.76	High	<0.001
Feedback	52.61	89.67	37.06	34.22 – 39.90	0.78	High	<0.001
Medical Ethics	61.32	91.19	29.87	27.54 – 32.20	0.77	High	<0.001
Medical Professionalism	63.30	92.24	28.94	26.61 – 31.27	0.79	High	<0.001
Time Management	55.02	87.95	32.93	30.41 – 35.45	0.73	High	<0.001
Emotional Intelligence	46.24	88.55	42.31	39.12 – 45.50	0.79	High	<0.001
Stress Management	54.22	88.22	34.00	31.43 – 36.57	0.74	High	<0.001
Team Communication	41.78	91.02	49.24	45.38 – 53.10	0.85	High	<0.001
Practical Application	50.92	90.50	39.58	36.61 – 42.55	0.81	High	<0.001

Participant feedback outcomes further demonstrated very high levels of satisfaction with the orientation program. As shown in **Table 3**, positive responses exceeded 93% across all evaluated feedback parameters. The highest positive response rate was observed for Relevance to Clinical Practice (97.1%; 95% CI: 95.7%–98.5%), followed by Clarity of Learning Objectives (96.6%; 95% CI: 95.1%–98.1%), Faculty Effectiveness (95.9%; 95% CI: 94.3%–97.5%), and

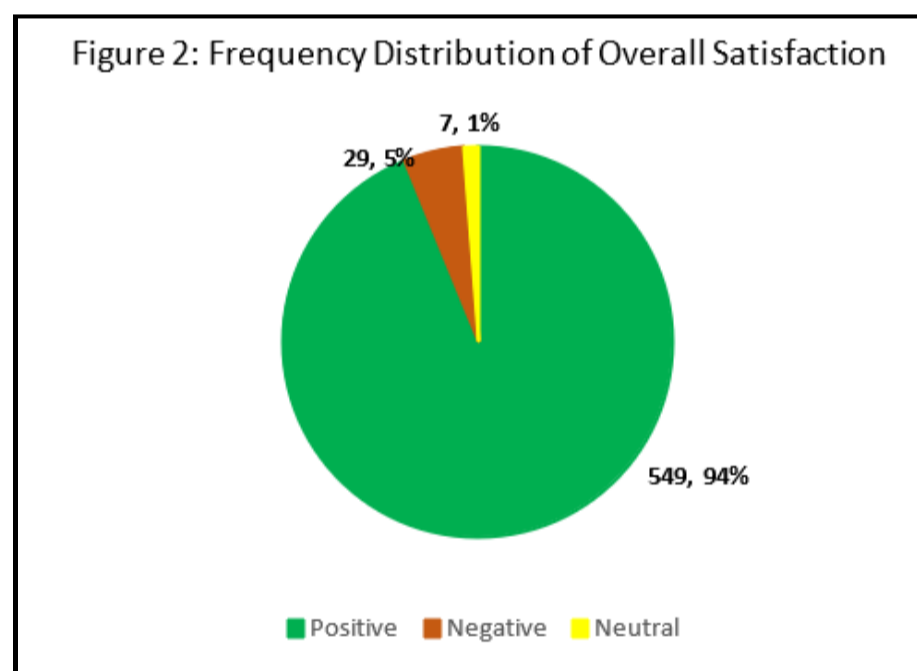
Engagement and Participation (95.9%; 95% CI: 94.3%–97.5%). Additionally, 94.9% of respondents expressed willingness to apply the acquired skills in future clinical practice, while 94.7% reported improved understanding of soft skills and AETCOM competencies. All feedback parameters demonstrated statistically significant predominance of positive responses ($p < 0.001$).

Table 3: Comparison of feedback parameters

Feedback Parameter	Positive Response n (%)	Neutral Response n (%)	Negative Response n (%)	95% CI	p-value
Relevance to Clinical Practice	568 (97.1%)	13 (2.2%)	4 (0.7%)	95.7% – 98.5%	<0.001
Clarity of Learning Objectives	565 (96.6%)	15 (2.6%)	5 (0.8%)	95.1% – 98.1%	<0.001
Faculty Effectiveness	561 (95.9%)	18 (3.1%)	6 (1.0%)	94.3% – 97.5%	<0.001
Engagement and Participation	561 (95.9%)	17 (2.9%)	7 (1.2%)	94.3% – 97.5%	<0.001
Programme Organisation	557 (95.2%)	20 (3.4%)	8 (1.4%)	93.5% – 96.9%	<0.001
Improvement in Understanding of Soft Skills and AETCOM	554 (94.7%)	24 (4.1%)	7 (1.2%)	92.9% – 96.5%	<0.001
Willingness to Apply Skills In Clinical Practice	555 (94.9%)	22 (3.8%)	8 (1.3%)	93.2% – 96.6%	<0.001
Overall Satisfaction with the Program	549 (93.84%)	29 (4.97%)	7 (1.19%)	91.9% – 95.8%	<0.001

The overall distribution of participant satisfaction is illustrated in **Figure 2**, which shows the overwhelming predominance of positive responses toward the program. Positive feedback accounted for 549 participants (93.84%), whereas neutral and negative responses

accounted for only 29 (4.97%) and 7 (1.19%) participants, respectively. These findings indicate excellent learner acceptance, perceived educational relevance, and strong practical applicability of the intervention.



Qualitative thematic analysis complemented the quantitative findings and revealed overwhelmingly positive learner perceptions regarding the educational strategies used during the program. Participants consistently identified role-play activities, small-group discussions, reflective learning exercises, and experiential teaching approaches as the most effective components of the intervention. Students reported notable improvements in communication skills, professionalism, emotional intelligence, teamwork, stress management, and time management. Faculty support, interactive learning methods, and learner-centered instructional approaches were also highly appreciated. Suggestions for improvement primarily focused on enhancing audio-visual quality, increasing the duration of interactive sessions, and incorporating additional case-based learning activities.

Collectively, the quantitative and qualitative findings demonstrate that the Medical Soft Skills Orientation Program was highly effective, well accepted, and suitable for broader implementation across undergraduate medical education settings.

Discussion

The present study demonstrates that a structured Medical Soft Skills Orientation Program can produce substantial improvements in undergraduate medical students' confidence across multiple AETCOM-related domains. Significant increases in post-test scores and consistently high normalized learning gains indicate strong educational effectiveness of the intervention. [7] Importantly, all assessed domains demonstrated statistically highly significant

improvement following the program.

The greatest improvement in team communication suggests that interactive learning approaches, such as group discussions, role plays, and experiential exercises, are highly effective in strengthening collaborative and interpersonal competencies among medical students. [2, 3, 16] Similarly, marked improvements in reflection, professionalism, emotional intelligence, and practical application indicate that structured early exposure to these competencies may positively influence future clinical behavior and patient interactions. [10, 17, 18]

These findings are consistent with the scoping review by Sancho-Cantus et al., which emphasized the growing importance of soft skills within healthcare education and identified gaps in structured teaching approaches. [8] The present study provides practical evidence that such competencies can be effectively developed through structured, learner-centred interventions implemented at scale.

The overwhelmingly positive participant feedback further strengthens the program's educational relevance. More than 93% of students reported positive overall satisfaction, and nearly all participants recognized the relevance of soft skills to future clinical practice. The strong intention among participants to apply the competencies they had learned in real clinical settings underscores the intervention's practical utility and translational potential. [19, 20]

Qualitative findings additionally demonstrated that students particularly valued experiential and reflective teaching methods. These findings support educational theories suggesting that active participation and reflective practice promote deeper learning and behavioral transformation compared to conventional didactic approaches alone. [11] Suggestions for improvement, including enhanced audiovisual support and expanded interactive sessions, provide valuable insights for future program refinement.

The consistent outcomes across institutions suggest that the nodal-center implementation model is both feasible and scalable. Integrating similar structured soft skills programs into undergraduate medical curricula may therefore significantly strengthen communication, professionalism, ethical reasoning, teamwork, and patient-centred care among future healthcare professionals. [5, 6, 17]

Future Recommendation

Based on the findings of this study, broader and sustained integration of soft skills training within undergraduate medical education is strongly recommended. The Medical Soft Skills Orientation Program

demonstrated substantial educational effectiveness and learner acceptance, supporting its incorporation as a longitudinal component of the Competency-Based Medical Education (CBME) curriculum rather than a one-time orientation activity. [2] Future implementation should consider expansion across all medical colleges in Tamil Nadu using the nodal-center model to ensure standardization, quality assurance, and scalability. Strengthening faculty development programs in experiential and reflective teaching methodologies would be essential to maintain instructional consistency and educational quality. [11]

Additionally, advanced clinically integrated soft skills modules should be introduced during the clinical years to address more complex professional scenarios such as difficult patient conversations, breaking bad news, ethical dilemmas, leadership, and conflict resolution. Greater emphasis may also be placed on simulation-based learning, case-based discussions, and Objective Structured Clinical Examinations (OSCEs) to facilitate objective assessment of communication and professionalism competencies. [10] Future research should include longitudinal follow-up studies to assess behavioral transfer and long-term clinical impact of soft skills training on professional practice, patient satisfaction, and healthcare outcomes. [21] Exploration of hybrid and digital learning platforms may further improve accessibility, sustainability, and large-scale implementation of structured soft skills education within medical curriculum.

Conclusion

The Medical Soft Skills Orientation Program demonstrated high effectiveness, strong learner engagement, and excellent participant satisfaction among undergraduate medical students across multiple institutions. Significant improvements were observed across all assessed soft skill domains, with high normalized learning gains and statistically significant post-intervention outcomes. The program successfully enhanced students' confidence in communication, professionalism, ethics, emotional intelligence, teamwork, and reflective practice.

The findings support the integration of structured soft skills training within undergraduate medical education as an essential component of the CBME and AETCOM framework. Furthermore, the nodal-center implementation model appears feasible, scalable, and sustainable for broader state-wide implementation across medical colleges.

References

1. Arnold EC, Boggs KU (2020) Interpersonal relationships: Professional communication skills for nurses. Elsevier.
2. Brown J, Noble LM, Papageorgiou A, Kidd J (2021) Communication skills teaching in medical education. *Medical Education Review*. 55(4): 411–420.
3. Duffy FD, Gordon GH, Whelan G, Cole-Kelly K, Frankel R, et al. (2014) Assessing competence in communication and interpersonal skills. *Acad Med*. 79(6): 495–507.
4. Zolnierok KB, Dimatteo MR (2019) Physician communication and patient adherence to treatment. *Med Care*. 47(8): 826–834.

5. National Medical Commission (2023) Competency-based medical education curriculum guidelines.
6. Medical Council of India (2018) Attitude, Ethics and Communication competencies for the Indian medical graduate.
7. Kadu S (2023) Soft skills—Need of an hour in health sciences curriculum of India. *MUHS Health Sciences Review*. 3(2): 1–8.
8. Sancho-Cantus D, Cubero-Plazas L, Botella Navas M, Castellano-Rioja E, Cañabate Ros M (2023) Importance of soft skills in health sciences students and their repercussion after the COVID-19 epidemic: Scoping review. *Int J Environ Res Public Health*. 20(6): 4901.
9. Hake RR (1998) Interactive-engagement versus traditional methods: A six-thousand-student survey of mechanics test data for introductory physics courses. *Ame J of Physi*. 66(1): 64–74.
10. Branch WT (2015) Teaching professional and humanistic values in medical education. *JAMA*. 313(6): 565–566.
11. Yardley S, Teunissen PW, Dornan T (2012) Experiential learning in medical education. *Med Teach*. 34(2): e102–e115.
12. Harden RM (2016) Outcome-based education: The future is today. *Med Teach*. 29(7): 625–629.
13. Epstein RM, Hundert EM (2018) Defining and assessing professional competence. *JAMA*. 287(2): 226–235.
14. Stern DT (2018) *Measuring medical professionalism*. Oxford University Press.
15. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, et al. (2019) Empathy decline and its reasons: A systematic review. *Acad Med*. 86(8): 996–1009.
16. Silverman J, Kurtz S, Draper J (2016) *Skills for communicating with patients*. CRC Press.
17. O'Sullivan H, van Mook W, Fewtrell R, Wass V (2012) Integrating professionalism into medical education. *Med Teach*. 34(2): e64–e77.
18. Kurtz S, Silverman J, Draper J (2017) *Teaching and learning communication skills in medicine*. CRC Press.
19. Rao KH, Rao SM, Kumar A (2022) Importance of communication skills in medical practice. *Indian Journal of Medical Ethics*. 7(1): 22–28.
20. Alessandri G, Zuffianò A, Perinelli E (2017) Evaluating intervention programs with a pretest-posttest design: A structural equation modeling approach. *Front Psychol*. 8: 223.
21. Makoul G (2019) Essential elements of communication in medical encounters. *Acad Med*. 76(4): 390–393.