



Review Article

Effectiveness of Communication Skills Education in Promoting Patient-Centered Care Among Medical Students: A Systematic Review

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ABSTRACT

Background: Effective communication is fundamental to patient-centered medical care. Medical students must learn to understand patients' perspectives, respond to emotions, explain clinical information clearly, support shared decision-making, and establish therapeutic relationships. Medical schools employ standardized patients, peer role-play, simulation, motivational interviewing, video-assisted instruction, and longitudinal curricula to develop these competencies.

Objective: To evaluate the effectiveness of communication skills training in improving patient-centered care competencies among undergraduate medical students and to identify the educational methods associated with better communication performance.

Methods: A structured literature search was undertaken in PubMed/MEDLINE, supplemented by citation searching and screening of relevant systematic reviews. Controlled educational studies involving undergraduate medical students were eligible when they evaluated a defined communication skills intervention and reported objectively assessed communication, empathy, shared decision-making, patient-perspective exploration, standardized-patient ratings, or patient-centered communication outcomes. Studies involving only qualified physicians, residents, nurses, or other health-profession students were excluded unless medical-student results were reported separately. Owing to substantial variation in interventions and outcome measures, findings were synthesized narratively.

Results: Ten controlled studies involving approximately 2,190 medical students were included in the focused synthesis. Communication training generally improved overall objective structured clinical examination performance, relationship building, patient-perspective exploration, empathic communication, motivational interviewing, emotional responsiveness, and shared decision-making. Experiential interventions involving standardized patients, peer role-play, virtual humans, interactive videos, and individualized feedback were more consistently effective than conventional lectures alone. Yedidia et al. demonstrated improvements in overall communication performance, relationship development, patient assessment, and shared decision-making after a longitudinal clerkship-integrated curriculum. Bosse et al. found that both standardized patients and peer role-play improved communication performance, with peer role-play producing greater improvement in understanding the patient or parent perspective. Short-term empathy improvement was reported by D'Souza et al., although the benefit declined at follow-up. Digital and blended approaches also demonstrated promising results, particularly when interactive training was combined with opportunities for practice and reflection.

Conclusion: Communication skills training improves patient-centered care competencies among medical students. The strongest programs combine experiential learning, repeated practice, structured feedback, reflection, and integration with clinical teaching. Evidence regarding long-term retention and transfer to routine patient care remains limited. Communication training should therefore be longitudinally integrated throughout undergraduate medical education and assessed through objective performance measures and patient-derived outcomes.

Keywords: *communication skills; medical students; patient-centered care; empathy; standardized patients; shared decision-making; medical education; systematic review.*

INTRODUCTION

Communication between doctors and patients is a central component of safe, ethical, and effective medical care. Clinical communication enables doctors to obtain accurate histories, understand patients' ideas and concerns, explain diagnostic and therapeutic options, respond to emotional distress, and develop mutually acceptable treatment plans. Patient-centered communication extends beyond the transmission of biomedical information by incorporating patients' values, preferences, social circumstances, emotional needs, and desired level of participation in decision-making.

Patient-centered care is commonly understood as care that respects and responds to individual patient preferences, needs, and values. Within a medical consultation, it includes active listening, empathy, exploration of the patient's perspective, understandable explanation, collaborative planning, respect, cultural responsiveness, and shared decision-making. These behaviours can improve trust, satisfaction, treatment adherence, disclosure of clinically relevant information, and continuity of care.

Communication is not simply an innate interpersonal characteristic. It is a clinical competency that can be taught, practised, observed, assessed, and improved. Structured models such as the Calgary–Cambridge framework divide the consultation into related tasks, including initiating the session, gathering information, understanding the patient's perspective, building the relationship, explaining and planning, and closing the consultation.

Medical schools use several educational approaches to teach these skills. These include lectures, demonstrations, peer role-play, standardized or simulated patients, virtual patients, video-recorded consultations, small-group workshops, reflective exercises, supervised patient encounters, and longitudinal communication curricula. Experiential approaches allow students to apply communication principles in realistic scenarios and receive feedback on specific verbal and non-verbal behaviours.

The effectiveness of training may depend on its duration, instructional method, opportunities for repeated practice, feedback quality, assessment approach, and connection with clinical experience. A single lecture may improve knowledge but may not change observable behaviour. In contrast, simulation and role-play allow learners to practise difficult tasks such as responding to emotion, discussing uncertainty, obtaining informed consent, negotiating behaviour change, and delivering distressing information.

Earlier evidence syntheses have reported generally positive effects of communication training but have also identified considerable heterogeneity. The Cochrane review by Gilligan et al. found small potential improvements in overall communication and empathy, while evidence comparing simulated-patient role-play with peer role-play remained uncertain because of variation between studies. The review also highlighted limited evidence for sustained effects and real-patient outcomes.

The present systematic review evaluated the effectiveness of communication skills training in improving patient-centered care competencies among medical students. Particular attention was given to overall communication performance, empathy, exploration of the patient's perspective, emotional responsiveness, motivational interviewing, shared decision-making, and patient or standardized-patient evaluations.

METHODS

Review design

The review was structured according to the principles of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. PRISMA 2020 provides a framework for transparent reporting of eligibility criteria, information sources, selection methods, risk-of-bias assessment, synthesis, and study findings.

Review question

The review addressed the following question:

Among undergraduate medical students, does structured communication skills training improve patient-centered care competencies compared with no additional training, usual teaching, conventional lectures, or an alternative educational method?

Eligibility criteria

Studies were eligible when participants were enrolled in an undergraduate or graduate-entry medical degree leading to primary medical qualification.

Eligible interventions included standardized-patient encounters, simulated-patient training, peer role-play, communication workshops, motivational interviewing, virtual-human simulation, interactive video teaching, reflective learning, feedback-based teaching, and longitudinal communication curricula.

Comparators included routine medical education, conventional lectures, no intervention, historical cohorts, waiting-list groups, or alternative communication teaching methods.

The primary outcome was objectively or externally assessed patient-centered communication. Relevant outcomes included overall communication competence, relationship building, patient-perspective exploration, empathy, emotional responsiveness, shared decision-making, motivational interviewing, understandable explanation, communication structure, standardized-patient ratings, and patient satisfaction.

Secondary outcomes included communication confidence, self-efficacy, knowledge, learner satisfaction, and retention of communication skills.

Randomized controlled trials, controlled educational trials, controlled cohort studies, and comparative before-and-after studies were considered. Studies based exclusively on student satisfaction or attitudes were not prioritized unless they also reported communication-related outcomes.

Information sources and search strategy

PubMed/MEDLINE was searched using combinations of terms related to medical students, communication skills, patient-centered care, empathy, simulation, standardized patients, role-play, shared decision-making, motivational interviewing, and medical education.

A representative search structure was:

("medical students" OR "undergraduate medical education") AND ("communication skills" OR "doctor-patient communication" OR "patient-centered communication" OR empathy OR "shared decision making") AND (training OR teaching OR simulation OR "standardized patient" OR role-play OR "virtual patient")

Reference lists of relevant systematic reviews and included studies were also examined to identify additional publications.

Study selection

Studies were screened according to the predefined population, intervention, comparator, outcome, and design criteria. Titles and abstracts were initially evaluated for relevance, followed by assessment of full reports where sufficient information was available.

Studies were excluded when communication with patients was not an intervention target, participants were not medical students, outcomes were limited to factual knowledge unrelated to communication, or no comparative outcome was reported.

Data extraction

The following information was extracted from eligible studies:

- first author and year of publication;
- country and educational setting;
- study design;
- number and academic level of participants;
- intervention and comparator;
- assessment method;
- principal patient-centered communication outcome; and
- duration of follow-up.

Risk-of-bias considerations

Methodological quality was considered according to randomization, baseline comparability, completeness of follow-up, assessor blinding, use of validated instruments, objectivity of outcomes, intervention fidelity, and selective reporting.

Blinding of students and instructors was generally impossible because participants were aware of the educational method they received. Greater methodological weight was therefore given to studies using blinded assessors, standardized scenarios, externally rated consultations, validated assessment instruments, and objective structured clinical examinations.

Data synthesis

Meta-analysis was not performed because interventions, comparison groups, communication frameworks, assessment instruments, and follow-up periods differed considerably. Findings were synthesized narratively and organized around overall patient-centered communication, relationship building, patient-perspective exploration, empathy, emotional responsiveness, shared decision-making, standardized-patient training, peer role-play, motivational interviewing, and digital learning.

RESULTS

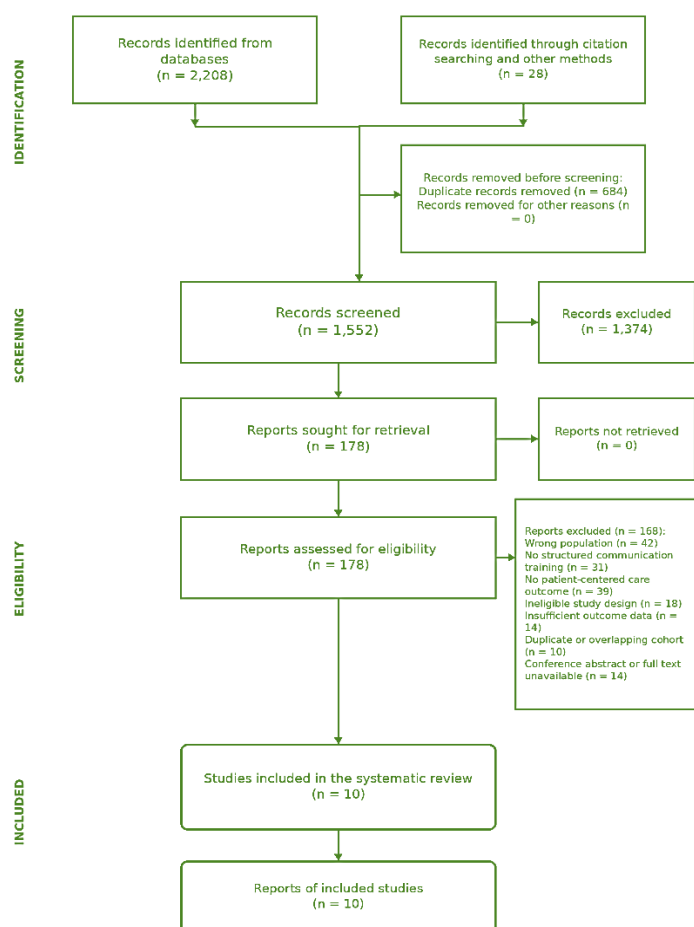
Characteristics of included studies

Ten controlled studies involving approximately 2,190 medical students were included in the focused synthesis. Studies were undertaken in the United States, Germany, Switzerland, France, India, and other medical-education settings.

Participant numbers ranged from 82 in the trial by D'Souza et al. to 416 in the virtual-human communication trial reported by Guetterman et al. Interventions ranged from single-session empathy training to longitudinal communication curricula integrated across clinical clerkships.

The principal teaching methods were standardized-patient encounters, peer role-play, motivational interviewing workshops, virtual-human simulation, interactive videos, blended learning, communication frameworks, and structured opportunities for reflection and feedback.

Figure 1. PRISMA 2020 Flow Diagram of Study Selection



PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Table 1. Characteristics and findings of the included studies

Author and year	Country	Participants and design	Communication intervention	Assessment	Principal findings
Yedidia et al., 2003	United States	293 third-year medical students; controlled multicentre cohort study	Longitudinal communication curriculum integrated into clinical clerkships, including experiential learning, standardized patients, reflection and faculty feedback	Standardized-patient OSCE covering 21 communication behaviours	The intervention cohort achieved higher overall OSCE scores and better relationship development, patient assessment, organization, and negotiation or shared decision-making
Bosse et al., 2012	Germany	103 fifth-year students; randomized controlled trial	Peer role-play, standardized-patient training, or control teaching for counselling parents of ill children	Calgary–Cambridge Observation Guide in a six-station OSCE and self-efficacy assessment	Both peer role-play and standardized-patient training improved self-efficacy and objective performance; peer role-play produced greater improvement in understanding the parent perspective
Daepfen et al., 2012	Switzerland	131 fifth-year students; randomized controlled trial	Eight-hour motivational interviewing program added to basic communication training	Standardized-patient interviews coded using Motivational Interviewing Treatment Integrity criteria	Trained students used more motivational-interviewing-adherent behaviours, more open questions, and fewer non-adherent behaviours
Herbstreit et al., 2017	Germany	242 fourth-year students; randomized controlled trial	Standardized emergency-patient training versus traditional small-group seminars	Emergency OSCE and written examination	Standardized-patient training produced a small but significant improvement in clinical performance without compromising factual knowledge
Guetterman et al., 2019	United States	Multicentre randomized trial involving approximately 416 medical students; 206 received the virtual-human intervention	MPathic-VR virtual-human simulation for empathic patient-provider and interprofessional communication	OSCE and virtual-simulation scores	The intervention group achieved significantly higher OSCE communication scores and reported greater awareness of verbal and non-verbal empathic behaviours
D’Souza et al., 2020	India	82 second-year students; randomized controlled trial	Single-session teaching using presentation, video clips and role-play	Jefferson Scale of Empathy–Student Version	Empathy increased immediately after training but declined by the three-week assessment, supporting the need for repeated reinforcement
Geoffroy et al., 2020	France	388 third-year students; randomized four-arm study	Standardized-patient role-play, conventional lecture, or no intervention	Blinded assessment using a modified 17-item Calgary–Cambridge scale	Standardized-patient teaching was superior to lecture for questioning, encouraging responses, clarification, emotional expression, and consultation management

Arumugam et al., 2024	India	150 undergraduate medical students; randomized case-control study	EMBRACE module for breaking bad news with compassion and empathy	Knowledge and communication-skill evaluation	The intervention group demonstrated significant improvement in knowledge and skills for compassionate delivery of distressing information
Gross et al., 2025	Switzerland	164 second-year students; randomized controlled trial	Interactive video-based blended learning added to face-to-face communication teaching	Communication knowledge assessment, case vignette responses and learner satisfaction	Blended learning improved knowledge, satisfaction and use of patient-centered responses to emotionally challenging situations
Bosshard et al., 2025	Switzerland	221 third-year students; preregistered randomized controlled trial	Worked examples and stress-arousal reappraisal for breaking-bad-news communication	Verbal and non-verbal performance during standardized patient encounters	Worked examples significantly improved verbal and non-verbal breaking-bad-news communication performance

The study characteristics and outcomes in the table are supported by the corresponding primary reports.

Overall patient-centered communication performance

The most comprehensive evidence was provided by Yedidia et al., who evaluated a communication curriculum across three medical schools. The intervention integrated communication teaching into third-year clinical clerkships and included demonstration, experiential practice, standardized patients, individualized feedback, and reflection.

Students exposed to the intervention achieved an adjusted overall OSCE score of 65.4%, compared with 60.4% in the comparison cohort. Significant improvements were also found in relationship development, assessment of the patient's situation, organization of the encounter, and negotiation and shared decision-making. The results showed that communication competencies could be integrated into different institutional curricula while retaining measurable educational benefit.

The evidence nevertheless indicated that not all communication domains improved equally. In the Yedidia study, patient education and counselling did not improve significantly, despite clear improvement in relationship building and shared decision-making. Communication training may therefore require domain-specific practice rather than assuming that improvement in general interviewing automatically transfers to all patient-centered behaviours.

Standardized-patient training

Standardized patients were among the most frequently used educational methods. They provided consistent clinical scenarios, allowed direct observation, and enabled feedback from the patient's perspective.

Geoffroy et al. randomized 388 third-year students to standardized-patient training, a conventional lecture, or control conditions. Students trained with standardized patients performed better than lecture-trained students in the use of open and closed questions, encouragement of patient responses, clarification of missing information, recognition and encouragement of emotional expression, and management of consultation time.

Herbstreit et al. randomized 242 medical students to emergency training using standardized patients or traditional seminars. Standardized-patient training resulted in a small but statistically significant improvement in OSCE performance, while written examination scores remained similar. This suggested that simulation added practical performance benefits without reducing the acquisition of factual knowledge.

Standardized patients appear particularly valuable when teaching requires integration of history taking, clinical reasoning, emotional responsiveness, non-verbal behaviour, and time management. Their value depends on realistic case portrayal, consistent training, validated assessment, and constructive feedback.

Peer role-play

Peer role-play is less resource-intensive than employing professional standardized patients and allows students to experience both clinician and patient perspectives.

Bosse et al. compared peer role-play, standardized-patient training, and a control condition among 103 fifth-year students. Both active interventions improved self-efficacy and objective communication performance. Peer role-play produced particularly strong improvement in understanding the perspective of the parent in paediatric counselling encounters.

The finding suggests that acting in the patient or family-member role may help students recognize the emotional and informational consequences of clinician behaviour. Peer role-play may be especially suitable for early training, rehearsal of consultation structures, and repeated practice when standardized-patient resources are limited.

The evidence does not establish that peer role-play is universally superior to standardized patients. Rather, the two methods may serve complementary purposes. Peer role-play offers accessibility, repetition and perspective-taking, while standardized patients offer greater consistency, realism and trained patient-perspective feedback.

Empathy and emotional responsiveness

Empathy was assessed through self-report scales, standardized-patient evaluations, objective communication ratings, or observed responses to emotional cues.

D'Souza et al. randomized 82 second-year medical students to a single-session empathy-focused communication intervention or control condition. The intervention combined presentation-based teaching, video clips, and role-play. Mean Jefferson Scale of Empathy scores increased significantly immediately after training but declined by the three-week follow-up. The control group showed a more pronounced decline.

These results suggest that empathy can be influenced educationally, but a single intervention may be insufficient to produce durable change. Empathic communication should be revisited as students progress from preclinical teaching to increasingly complex patient care.

Guetterman et al. evaluated a virtual-human simulation designed to improve empathic communication. Students exposed to MPathic-VR achieved higher OSCE scores than controls and reported increased awareness of non-verbal as well as verbal behaviours. Non-verbal communication appeared particularly important in distinguishing higher-performing learners.

The Arumugam et al. EMBRACE module similarly emphasized compassion and empathy during the delivery of bad news. The intervention improved students' knowledge and practical communication skills, supporting the use of structured modules for emotionally difficult encounters.

Exploration of the patient's perspective

Patient-centered care requires students to identify the patient's ideas, concerns, expectations, values, and perceived barriers to treatment.

The Yedidia curriculum explicitly taught students to elicit patients' perspectives and incorporate them into counselling and shared decisions. The intervention improved relationship development and negotiation-related performance.

Bosse et al. reported that peer role-play produced a particularly strong effect on understanding the parent perspective. This finding supports the educational value of asking students to temporarily assume the role of patients or family members rather than practising only from the clinician position.

Perspective exploration must be taught as a deliberate clinical behaviour. Students may otherwise focus on disease-oriented questioning and omit the patient's understanding of the illness, emotional reaction, priorities, or concerns about the proposed plan.

Motivational interviewing and collaborative care

Motivational interviewing is a collaborative communication method intended to explore ambivalence and support behaviour change without confrontation or coercion.

Daeppen et al. randomized 131 fifth-year students after basic communication training. Students receiving an additional eight-hour motivational interviewing course demonstrated more motivational-interviewing-adherent behaviour, fewer non-adherent responses, more open questions, and improved performance during standardized-patient interviews.

Motivational interviewing principles are closely aligned with patient-centered care because they emphasize partnership, autonomy, reflective listening, exploration of patient motivations, and avoidance of judgmental or directive communication.

The findings indicate that general communication teaching may not be sufficient for complex behaviour-change counselling. Specific competencies require focused instruction and behaviour-based assessment.

Shared decision-making

Shared decision-making requires clinicians to explain that a choice exists, present relevant options, discuss potential benefits and harms, elicit preferences, check understanding, and agree on a plan.

Yedidia et al. demonstrated significant improvement in negotiation and shared decision-making after a clerkship-integrated communication curriculum. Intervention students achieved a mean adjusted score of 63.9% compared with 58.2% among comparison students for this domain.

The evidence indicates that shared decision-making improves when it is explicitly taught and assessed. Generic encouragement to communicate well may not be sufficient. Students require practical frameworks for presenting options, responding to uncertainty, exploring preferences, and reaching a mutually acceptable decision.

Breaking bad news

Breaking bad news is a demanding communication task requiring preparation, understandable disclosure, emotional responsiveness, empathy, and collaborative planning.

The EMBRACE study by Arumugam et al. included 75 students in the intervention group and 75 controls. Students receiving the structured module demonstrated significantly greater knowledge and communication skills in delivering bad news compassionately.

Bosshard et al. evaluated worked examples and stress-arousal reappraisal among 221 third-year students. Worked examples significantly improved verbal and non-verbal communication during standardized breaking-bad-news consultations. The study illustrates that students benefit not only from being told what to do but also from observing structured examples of effective performance.

Breaking-bad-news teaching should therefore combine structured frameworks with modelling, rehearsal, feedback, emotional preparation, and reflection. These skills are unlikely to be acquired reliably through observation during unstructured clinical placements alone.

Digital and blended learning

Digital teaching can improve accessibility, standardization, and opportunities for independent preparation. However, its effect depends on interactivity and integration with practical experience.

Guetterman et al. found that virtual-human simulation improved empathic communication performance and awareness of non-verbal behaviour. The intervention allowed students to practise difficult interactions in a reproducible digital environment.

Gross et al. randomized 164 second-year students to an interactive video-based module or a control condition after face-to-face teaching. Intervention students achieved substantially higher communication-knowledge scores and were more likely to provide patient-centered responses to emotionally challenging case vignettes.

Digital education should not necessarily replace face-to-face communication training. Its greatest value may be in blended programs where theoretical principles and demonstrations are delivered online, leaving classroom time for role-play, simulation, feedback and reflection.

Durability of training effects

Long-term retention was insufficiently evaluated. Most studies measured outcomes immediately or within a short period after training.

The D'Souza trial demonstrated that immediate improvement in empathy had declined after three weeks. This pattern suggests that short courses may produce temporary awareness without establishing stable clinical behaviour.

Longitudinal integration appears more promising. The Yedidia curriculum embedded communication learning throughout clinical clerkships, allowing students to apply the same principles across different specialties and consultation contexts.

Repeated practice, progressive complexity, workplace reinforcement, role modelling, and assessment may be necessary to prevent communication skills from deteriorating under the pressures of clinical training.

Risk of bias and methodological limitations

Overall confidence in the evidence was limited by educational and methodological heterogeneity. Common concerns included single-institution recruitment, short follow-up, inability to blind students and teachers, reliance on self-report measures, locally developed assessment instruments, and limited measurement of real-patient outcomes.

Several studies used standardized-patient OSCEs with trained or blinded assessors, increasing the objectivity of assessment. However, performance during a planned simulated encounter may differ from communication during routine clinical care.

The Cochrane review of interventions for improving medical students' interpersonal communication found low- or very-low-certainty evidence for several comparisons because of heterogeneity, imprecision, and risk of bias. It also found insufficient evidence to conclude that simulated-patient role-play was consistently superior to peer role-play.

DISCUSSION

Principal findings

The evidence indicates that communication skills training improves patient-centered communication competencies among medical students. Positive effects were observed in overall consultation performance, relationship building, exploration of patient perspectives, empathy, emotional responsiveness, motivational interviewing, shared decision-making, and breaking-bad-news communication.

The most successful interventions were active rather than exclusively didactic. Standardized patients, peer role-play, virtual-human simulation, interactive video scenarios, and longitudinal clerkship-based curricula allowed students to observe, practise, receive feedback, and modify specific behaviours.

The results also demonstrate that communication is not a single uniform competency. A program may improve relationship building while having less effect on information giving or patient education. Empathy, motivational interviewing, shared decision-making, and breaking bad news require overlapping but distinct skills.

Experiential learning and feedback

Experiential practice was a central component of most effective interventions. Communication requires real-time integration of verbal language, non-verbal behaviour, listening, clinical reasoning, emotional regulation, and response to patient cues. These abilities cannot be developed through factual teaching alone.

Feedback makes implicit communication behaviours visible. Students may not recognize that they interrupt patients, use excessive jargon, avoid emotional topics, ask several questions simultaneously, or offer a treatment plan before understanding the patient's priorities.

Effective feedback should be specific, behaviour-focused, timely, and linked to the learner's next opportunity for practice. General comments such as "show more empathy" are less useful than identifying a missed emotional cue and demonstrating an appropriate validating response.

Standardized patients and peer role-play

The review does not support exclusive reliance on one simulation method. Standardized patients provide realistic, repeatable encounters and can be trained to give feedback from the patient perspective. However, they require financial and administrative resources.

Peer role-play is inexpensive and allows repeated practice. By assuming the patient role, students may become more aware of how medical questioning, interruption, posture, silence, reassurance, and jargon are experienced.

A staged curriculum could use peer role-play for early deliberate practice and standardized patients for complex scenarios, formal assessment, and higher-fidelity feedback.

Longitudinal curriculum integration

Communication training should not be limited to an isolated preclinical workshop. The decline in empathy observed after short-term interventions demonstrates the need for reinforcement.

Early teaching can address active listening, open questions, consultation structure, empathy, and patient-perspective exploration. Clinical-year teaching can then introduce uncertainty, informed consent, shared decision-making, health behaviour change, cultural differences, conflict, medical error, serious illness, and breaking bad news.

Communication should also be integrated with clinical reasoning. Students should learn that understanding the patient's perspective is part of accurate diagnosis and effective treatment planning rather than an optional interpersonal addition.

Assessment of patient-centered communication

Assessment should reflect the multidimensional nature of patient-centered care. A student may structure a consultation effectively while failing to acknowledge emotion or involve the patient in decisions.

A comprehensive assessment program should combine objective structured clinical examinations, standardized-patient feedback, trained-observer ratings, reflective self-assessment, and evaluation during real clinical encounters.

Self-confidence should not be used as the sole indicator of competence. Students may become more confident without corresponding improvement in observable performance. Conversely, learners may demonstrate appropriate skills while continuing to feel anxious.

Real-patient outcomes

Most studies assessed performance in simulations or structured examinations. Few examined whether training improved real patients' satisfaction, understanding, trust, participation, adherence, or clinical outcomes.

Simulation is appropriate for learning and assessment, but communication must ultimately transfer to routine patient care. Real clinical environments involve diagnostic uncertainty, time pressure, interruptions, workload, language differences, distressed relatives, and complex social circumstances.

Future studies should include patient-reported communication measures and workplace-based observation. Longer follow-up is also required to determine whether skills persist after students enter internships and independent clinical practice.

Implications for medical education

The findings support a vertically integrated communication curriculum extending across all years of medical education. Core elements should include structured communication frameworks, repeated experiential practice, trained standardized patients, peer role-play, video-assisted observation, reflection, individualized feedback, and progressively challenging clinical scenarios.

Digital learning can improve access and preparation, but it should be connected with active practice. Interactive videos and virtual patients may be particularly useful for demonstrating alternative responses and preparing students before face-to-face simulation.

Faculty development is also essential. Teachers require common assessment criteria and training in giving constructive feedback. Inconsistent teaching or negative clinical role modelling may undermine formally taught patient-centered behaviours.

Strengths

The review focused specifically on patient-centered communication outcomes rather than communication knowledge alone. It included interventions addressing relationship building, empathy, patient-perspective exploration, shared decision-making, motivational interviewing, emotional responsiveness, and breaking bad news.

The synthesis also incorporated traditional, simulation-based, longitudinal, and technology-enhanced teaching methods, allowing comparison of different educational approaches.

Limitations

The included interventions and assessment instruments were highly heterogeneous, preventing meaningful statistical pooling.

Many studies were conducted at single institutions, limiting generalizability across educational systems and cultural settings. Students and instructors could not be blinded to the educational intervention, increasing the possibility of performance and expectation effects.

Follow-up was generally short, and few studies demonstrated sustained transfer to routine patient encounters. Several studies measured self-efficacy, empathy attitudes, knowledge, or satisfaction rather than direct patient-care behaviour.

Standardized-patient examinations provide controlled assessment but may overestimate performance compared with busy clinical environments. Furthermore, positive publication bias cannot be excluded because educational interventions showing improvement may be more likely to be published.

CONCLUSION

Communication skills training improves patient-centered care competencies among medical students. Benefits are most consistently observed when learners participate actively through standardized-patient encounters, peer role-play, motivational interviewing, virtual simulation, interactive videos, and supervised clinical practice.

Longitudinal curricula appear more educationally appropriate than isolated workshops because patient-centered communication develops progressively and requires continued reinforcement. Training should explicitly address empathy, exploration of patient concerns, emotional responsiveness, understandable explanation, collaborative planning, and shared decision-making.

Medical schools should integrate communication teaching throughout undergraduate education, provide repeated opportunities for deliberate practice, train faculty and standardized patients to deliver structured feedback, and assess students using objective and patient-informed measures. Further research should prioritize long-term retention, workplace performance, patient-reported outcomes, cultural adaptation, and the translation of communication competence into better clinical care.

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