



Review Article

Communication Competency and Patient-Centeredness in Medical Students: A Systematic Review of Educational Interventions

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ABSTRACT

Background: Effective clinician-patient communication is an essential component of clinical competence and patient-centered care. Undergraduate medical education increasingly incorporates structured communication training using simulation, standardized patients, peer role-play, reflective learning, health-literacy training, digital education, and clinical skills integration. However, the effects of these interventions on observable communication performance and broader patient-centered outcomes remain heterogeneous.

Objective: To systematically review published evidence concerning the effectiveness of communication skills training among undergraduate medical students, with equal emphasis on communication performance and patient-centered care outcomes.

Methods: A systematic review was structured in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 framework. MEDLINE/PubMed, Embase, Scopus, Web of Science, and Cochrane CENTRAL were considered, with supplementary citation and reference-list searching. Published primary studies evaluating structured communication training among undergraduate medical students and reporting communication or patient-centered outcomes were eligible. A total of 1,324 records were identified, including 1,286 records from electronic databases and 38 from other sources. Following removal of 304 duplicates, 1,020 records underwent title and abstract screening. Of these, 918 were excluded. Full texts of 102 reports were sought; four could not be retrieved, and 98 reports underwent eligibility assessment. Eighty-five were excluded, leaving 13 primary studies for qualitative synthesis. Meta-analysis was not performed because of substantial clinical and methodological heterogeneity.

Results: The 13 included studies encompassed randomized controlled trials, comparative studies, prospective cohorts, and pre-post interventions. Structured training generally improved observable communication competencies, including consultation organization, listening, reduction of interruptions, information provision, recognition of emotional cues, empathic responses, procedural communication, health-literacy-sensitive communication, and informed-consent performance. Simulation, peer role-play, repeated practice, personalized feedback, and blended learning were frequently associated with favorable outcomes. Patient-centered outcomes demonstrated a more complex pattern. Empathy, sharing of information, shared decision-making, and simulated-patient satisfaction improved in several studies, whereas longitudinal research showed that caring orientation could decline during clinical training despite formal communication education.

Conclusion: Communication skills training can improve both observable clinical communication and several dimensions of patient-centered care among medical students. Interventions incorporating experiential practice, realistic patient

encounters, individualized feedback, reflection, and longitudinal reinforcement appear most promising. Communication competence and patient-centered attitudes should nevertheless be assessed separately. Future research should emphasize durability of training effects, behavior in authentic clinical environments, and outcomes reported by real patients.

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

INTRODUCTION

Communication between a clinician and patient is one of the principal mechanisms through which healthcare is delivered. Effective clinical communication allows physicians to obtain accurate information, understand patients' concerns and expectations, explain diagnoses and treatment options, respond to emotional needs, obtain informed consent, and develop therapeutic relationships.

Patient-centered care extends beyond the transmission of medical information and recognizes patients as individuals with personal experiences, values, preferences, expectations, psychosocial circumstances, and priorities. Mead and Bower described patient-centeredness as a multidimensional concept involving the biopsychosocial perspective, understanding the patient as a person, sharing power and responsibility, therapeutic alliance, and recognition of the clinician as a person [1].

The Kalamazoo consensus similarly "emphasized fundamental tasks such as building the relationship, opening discussion, gathering information, understanding the patient's perspective, sharing information, reaching agreement, and providing closure [2]. Effective communication may influence healthcare through several pathways, including improved access to information, therapeutic relationships, emotional support, patient understanding, decision quality, and motivation for self-care [3].

Patient-centered communication therefore involves more than polite interaction. It includes active listening, appropriate use of open and closed questions, elicitation of the patient's perspective, empathy, clear information provision, checking understanding, involvement in decisions, and recognition of contextual factors [4]. Communication quality may also influence adherence to recommended treatment, with evidence showing a relationship between physician communication and patient adherence [5].

Historically, communication was often considered an attribute that students would acquire naturally through clinical exposure. Medical education research increasingly demonstrates that communication comprises specific competencies that can be taught, practiced, assessed, and strengthened. Aspegren's review concluded that communication training is effective when properly structured, particularly when experiential methods are incorporated [6]. Subsequent evidence has emphasized active practice, feedback, small-group learning, simulation, and reinforcement as important components of effective training [7].

Several frameworks have been developed to structure communication education. The Four Habits Model organizes consultations around investing in the beginning, eliciting the patient's perspective, demonstrating empathy, and investing in the end [8]. The Patient-Practitioner Orientation Scale has been used to examine attitudes regarding sharing and caring in the clinician-patient relationship [9]. Measures such as the Jefferson Scale of Physician Empathy have also facilitated systematic assessment of empathy among healthcare trainees [10].

Empathy is particularly important because communication is not solely informational. Studies have linked empathy with clinical competence and educational performance, while longitudinal observations have raised concerns that empathy may decline during medical education [11,12].

Evidence that structured communication education can improve medical-student performance predates many contemporary curricula. Yedidia et al. demonstrated that communication competencies could be enhanced through systematic educational intervention [13]. Reviews of empathy interventions have similarly suggested that specific educational approaches can cultivate empathic skills [14].

The evidence base, however, is heterogeneous. A Cochrane review of medical-student communication interventions identified 91 publications representing 76 studies involving 10,124 medical students. Communication interventions generally produced favorable effects, although effect sizes and certainty varied according to communication domain and study design [15].

Another important issue is the distinction between observable communication skill and patient-centered orientation. Students may learn to structure a consultation, provide information, and demonstrate examination-appropriate behaviors without necessarily developing a stronger orientation toward partnership, autonomy, empathy, or caring. Conversely, students may endorse patient-centered attitudes but struggle to apply them consistently in complex clinical environments. The clinical learning environment may further influence communication development. Students encounter time pressure, hierarchy, workload, role-modeling, and institutional practices that may reinforce or undermine formal teaching. Consequently, an intervention that produces immediate improvement in a simulated consultation may not necessarily produce sustained patient-centered behavior during clinical practice.

Recent educational approaches have broadened communication training beyond routine history taking to include health literacy, shared decision-making, procedural communication, emotional responsiveness, blended learning, and informed consent. The present systematic review therefore examines structured communication skills education among medical students with equal emphasis on communication performance and patient-centered care.

Aim and Objectives

The primary aim of this systematic review was to evaluate the effectiveness of structured communication skills training among undergraduate medical students. The review addressed two co-primary domains: communication skills outcomes and patient-centered outcomes. A secondary objective was to identify educational characteristics associated with stronger communication and patient-centered outcomes.

Communication Skills Outcomes

- overall consultation performance
- consultation initiation and closure
- active listening
- interruption behavior
- questioning technique
- information gathering
- information provision
- verbal and nonverbal communication
- recognition of emotional cues
- procedural communication
- informed-consent communication

Patient-Centered Outcomes

- empathy
- exploration of the patient's perspective
- patient-centered orientation
- caring and sharing attitudes
- shared decision-making
- understandable information provision
- health-literacy-sensitive communication
- support for self-management
- patient autonomy
- patient or simulated-patient satisfaction

MATERIALS AND METHODS

Review Design

The review was structured and reported according to the principles of the PRISMA 2020 statement [16]. The review was not prospectively registered in PROSPERO.

Review Question

Among undergraduate medical students, does structured communication skills training, compared with usual education, no intervention, or an alternative educational strategy, improve communication performance and patient-centered care outcomes?

Eligibility Criteria

Participants

Studies involving undergraduate medical students enrolled in programs leading to a primary medical qualification were eligible. Studies involving postgraduate residents, qualified physicians, nurses, dental students, or other health-professional learners were excluded unless results for undergraduate medical students could be independently extracted.

Interventions

- formal communication skills courses
- patient-centered consultation training
- peer role-play
- standardized or simulated-patient encounters
- empathy training
- emotional validation training
- health-literacy communication
- shared decision-making training
- procedural communication
- video-assisted feedback
- digital communication education
- blended learning
- informed-consent simulation

Comparators

Eligible comparators included usual curriculum, no additional training, waiting-list control, alternative training approaches, pre-intervention performance, or other communication education strategies.

Outcomes

Studies were required to report at least one outcome relating to observable communication performance or patient-centered care.

Study Designs

Eligible study designs included randomized controlled trials, cluster-randomized trials, quasi-experimental studies, controlled comparative studies, prospective cohort studies, longitudinal studies, and structured pre-post intervention studies. Reviews, systematic reviews, editorials, letters, protocols, conference abstracts without complete reports, and unpublished studies were excluded as primary evidence. Only published primary studies were included in the qualitative synthesis.

Information Sources

The search framework included MEDLINE/PubMed, Embase, Scopus, Web of Science, and Cochrane CENTRAL. Reference lists of relevant primary studies and systematic reviews were also examined to identify potentially eligible publications.

Search Strategy

Search terms combined concepts relating to medical students, communication training, clinical communication, patient-centered care, empathy, simulation, shared decision-making, and health literacy. A representative search structure was: (“medical student*” OR “undergraduate medical education”) AND (“communication skill*” OR “communication training” OR “clinical communication” OR “patient-centred communication” OR “patient-centered communication”) AND (“patient centred care” OR “patient centered care” OR empathy OR “shared decision making” OR “standardized patient*” OR “simulated patient*” OR “role play” OR “health literacy” OR “informed consent”). Search syntax was adapted to individual database requirements.

Study Selection

The study-selection process was conducted in accordance with the PRISMA 2020 framework. Searches of MEDLINE/PubMed, Embase, Scopus, Web of Science, and the Cochrane Central Register of Controlled Trials were supplemented by manual screening of reference lists of relevant articles and systematic reviews. A total of 1,286 records were identified through electronic database searching. These comprised 312 records from MEDLINE/PubMed, 276 from Embase, 351 from Scopus, 229 from Web of Science, and 118 from Cochrane CENTRAL. An additional 38 records were identified through citation searching and manual reference-list screening. Thus, 1,324 records were identified before deduplication. After removal of 304 duplicate records, 1,020 unique records remained for title and abstract screening. Of these, 918 records were excluded because they were unrelated to structured communication skills training among undergraduate medical students, did not assess relevant communication or patient-centered outcomes, or represented ineligible publication types. The full texts of 102 reports were sought for retrieval. Four reports could not be retrieved, leaving 98 full-text articles for detailed eligibility assessment. Following full-text review, 85 articles were excluded. Reasons included an ineligible study population in 18 articles, absence of a structured communication training intervention in 17, absence of relevant communication or patient-centered outcomes in 15, non-primary publication type in 12, inability to separately extract medical-student data in nine, ineligible study design in eight, and duplicate or overlapping study populations in six. Finally, 13 studies fulfilled all predefined eligibility criteria and were included in the qualitative

systematic review. Because of substantial heterogeneity in interventions, assessment instruments, comparators, and follow-up periods, a quantitative meta-analysis was not undertaken.

Data Extraction

Data extracted from each included study comprised author and year, country or educational setting, study design, number and stage of medical students, intervention, comparator, assessment method, communication outcomes, patient-centered outcomes, and principal findings. Outcome measures based on structured consultation assessment were interpreted alongside broader communication frameworks such as the Calgary-Cambridge approach, which has been psychometrically evaluated for assessment of undergraduate communication performance [17].

Methodological Appraisal

Methodological quality was considered according to study design, comparison groups, allocation procedures where applicable, objective versus self-reported assessment, use of structured or validated measures, assessor independence, completeness of follow-up, and duration of outcome measurement. Randomized controlled trials were considered to offer stronger evidence for causal intervention effects than uncontrolled pre-post studies. Observational studies involving voluntary participation in communication courses were interpreted cautiously because of possible self-selection, motivation differences, and residual confounding. Because the included studies represented substantially different study designs, a numerical quality score was not used to rank studies.

Data Synthesis

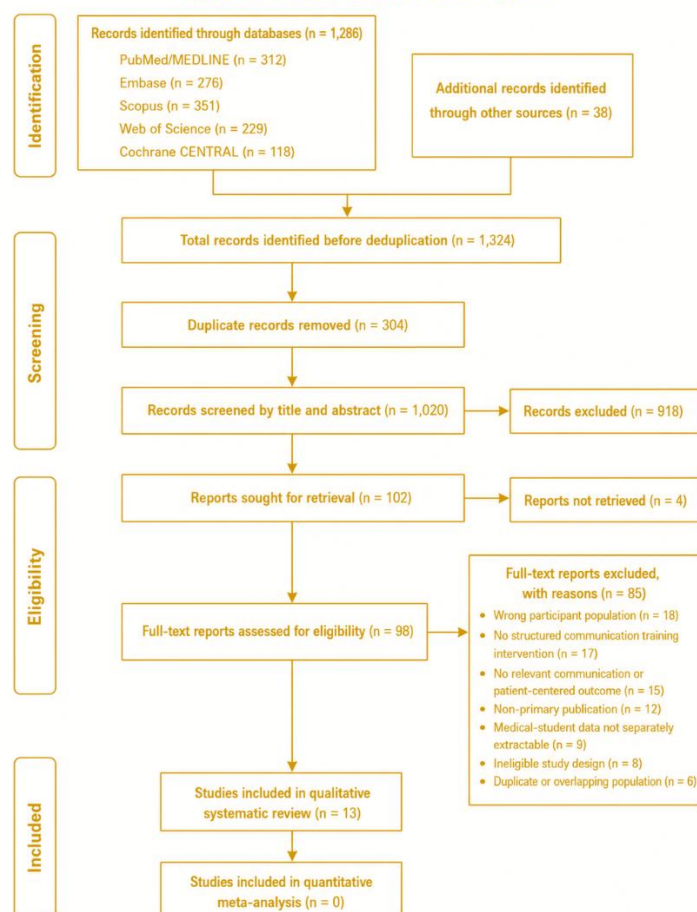
Substantial heterogeneity was anticipated in intervention content, educational intensity, comparator conditions, outcome instruments, and follow-up periods. A quantitative meta-analysis was therefore not undertaken. Findings were synthesized narratively within domains of overall communication performance; empathy and emotional responsiveness; patient-centered orientation; shared decision-making and health literacy; communication during clinical procedures; simulation and peer role-play; repeated training and educational dose; digital and blended learning; and informed-consent communication.

RESULTS

Search Results

The literature search identified 1,324 potentially relevant records, of which 1,286 were retrieved through electronic database searches and 38 through citation searching and manual reference-list screening. After removal of 304 duplicates, 1,020 unique records underwent title and abstract screening. Following initial screening, 918 records were excluded because they did not meet the predefined eligibility criteria. The full texts of 102 reports were sought, of which four could not be retrieved. Consequently, 98 full-text articles were assessed for eligibility. Of these, 85 studies were excluded. The most frequent reasons were an ineligible participant population (18 studies), absence of an evaluated communication-training intervention (17 studies), and failure to report relevant communication or patient-centered outcomes (15 studies). Other exclusions consisted of reviews or other non-primary publications (12 studies), inability to separately extract data for medical students (nine studies), ineligible study design (eight studies), and duplicate or overlapping study populations (six studies). Ultimately, 13 published primary studies satisfied the eligibility criteria and were included in the qualitative synthesis. No meta-analysis was conducted because substantial heterogeneity was observed across communication-training methods, comparators, outcome measures, assessment tools, and follow-up durations.

Figure 1. PRISMA 2020 Flow Diagram



Characteristics of Included Studies

The final synthesis contained 13 published primary studies conducted in a range of educational settings. The studies included randomized controlled trials, comparative cohorts, prospective longitudinal studies, mixed-method evaluations, and pre-post interventions. Interventions varied from two short empathy-training sessions to comprehensive health-literacy programs, longitudinal communication curricula, simulated-patient education, procedural communication, interactive digital learning, and informed-consent simulation.

Table 1. Characteristics of All 13 Studies Included in the Systematic Review

No.	Study	Setting and participants	Design	Communication intervention	Main outcomes and findings
1	Joekes et al., 2011 [18]	United Kingdom; 82 medical students with paired consultation assessments	Prospective comparative cohort	Professional-development curriculum incorporating structured communication training	Students exposed to the enhanced curriculum demonstrated better use of silence, fewer interruptions, and greater maintenance of relevant discussion. Communication behavior showed limited association with patient-centered attitudes.
2	Bombeke et al., 2011 [19]	Belgium; two student cohorts, 48 and 37 students; total 85	Longitudinal observational comparison	Integrated communication-skills training compared with traditional curriculum exposure	Communication teaching did not completely prevent deterioration in patient-centered attitudes during clinical clerkships, emphasizing the influence of the clinical learning environment.

No.	Study	Setting and participants	Design	Communication intervention	Main outcomes and findings
3	Bosse et al., 2012 [20]	Germany; 103 fifth-year students	Randomized controlled trial	Standardized-patient training versus peer role-play versus control	Both active educational strategies improved communication-related performance and self-efficacy. Standardized patients were not consistently superior to peer role-play for all outcomes.
4	Iqbal et al., 2015 [21]	India; 52 final-year medical students	Pre-post intervention	Focused communication-skills training	Mean communication assessment increased from approximately 10.77 ± 3.0 to 18.04 ± 2.0 out of 20; 50 of 52 students demonstrated improvement.
5	Linton et al., 2017 [22]	Sweden; 22 medical students	Pre-post proof-of-concept study	Two 45-minute sessions emphasizing empathic validation in pain encounters	Validating responses increased, invalidating responses decreased, and both learner and simulated-patient satisfaction improved.
6	Ruiz-Moral et al., 2017 [23]	Spain; 115 students entered the training sequence	Repeated simulated-patient intervention	Didactic teaching, reflection, workshops, and repeated standardized medical encounters focused on emotions and empathy	Communication improved across sequential encounters. External observers and simulated patients reported substantial gains; students recognized more emotional cues and generated more empathic responses.
7	Kaper et al., 2020 [24]	Netherlands; 79 students	Randomized controlled trial	11-hour comprehensive health-literacy consultation-skills program using interactive sessions, role-play, and video consultation	Significant improvements were observed in understandable information provision, shared decision-making, self-management support, self-efficacy, and aspects of objectively assessed consultation behavior.
8	Nagy et al., 2021 [25]	Germany; 43 students analyzed: 15 international and 28 local students	Comparative pre-post study	Patient-centered communication incorporated into procedural blood-sampling training	Both groups improved. International students demonstrated particularly large gains in accompanying communication, and no international participant remained clinically incompetent on the global communication assessment after training.
9	Bosméan et al., 2022 [26]	France; 161 fourth-year students	Cross-sectional comparative study	Previous physician-patient relationship training of varying intensity	Prior communication training was associated with higher Four Habits Coding Scheme performance. Greater exposure to training was associated with progressively stronger interpersonal performance.
10	Gorski et al., 2022 [27]	Poland; 428 students: role-play 160, simulated-patient 146, no formal course 122	Comparative mixed-method study	Simulated-patient communication training versus student role-play	Students trained with simulated patients demonstrated significantly stronger patient-centered orientation than the other groups. Qualitative findings highlighted realism,

No.	Study	Setting and participants	Design	Communication intervention	Main outcomes and findings
				versus no structured course	engagement, and patient-perspective feedback.
11	Mohamed et al., 2024 [28]	Medical students assessed longitudinally; 141 at the earlier assessment and 121 at later assessment	Prospective study	Structured communication-skills course	The sharing component of patient-centered orientation improved, while the caring component declined. Total patient-centered orientation did not show a significant overall improvement, demonstrating divergence between different dimensions of patient-centeredness.
12	Gross et al., 2025 [29]	Switzerland; 164 students analyzed: intervention 88, control 76	Randomized controlled trial	Interactive video-based learning added to face-to-face communication education	Communication-related knowledge was significantly greater in the intervention group (73.6 ± 10.7 vs 56.7 ± 15.3). Students also demonstrated greater knowledge of patient-centered responses to emotional communication scenarios.
13	McCarrick et al., 2025 [30]	Ireland; 122 students, 61 intervention and 61 control	Randomized controlled trial	Structured simulation training for informed-consent communication	Intervention performance increased from approximately 61% to 71%, with a reported effect size of 0.79. Improvements occurred in initiation, verbal communication, structure, information provision, and facilitation of understanding.

Overall Communication Performance

Improvement in observable communication behavior was one of the most consistent findings across the included studies. Joekes et al. examined 82 students using video-recorded simulated consultations. Students exposed to a professional-development curriculum incorporating communication teaching demonstrated advantages in behaviors such as allowing silence, avoiding inappropriate interruption, and maintaining relevant discussion [18]. The findings are important because communication competence involves both the content of the consultation and how interpersonal space is managed. Allowing the patient to speak without unnecessary interruption can provide additional clinical information while simultaneously communicating interest and respect.

Bosse et al. randomized 103 fifth-year medical students to standardized-patient training, peer role-play, or a control condition. Both active training strategies produced improvement in communication outcomes and self-efficacy, demonstrating that experiential practice itself may be a major active component of communication education [20]. Iqbal et al. demonstrated marked improvement following focused communication training in 52 final-year medical students. Mean communication assessment scores increased from 10.77 ± 3.0 before training to 18.04 ± 2.0 afterward [21]. The magnitude of this short-term change illustrates the responsiveness of observable communication behaviors to deliberate practice, although uncontrolled pre-post designs cannot fully separate the intervention effect from testing familiarity and other educational influences. Ruiz-Moral et al. similarly documented progressive improvement across repeated standardized encounters [23]. Taken together, these studies demonstrate that communication should not be regarded solely as an innate interpersonal characteristic. Specific behaviors can be systematically taught, observed, practiced, and improved.

Empathy and Emotional Responsiveness

Empathy represents a particularly important connection between communication technique and patient-centered clinical care. Linton et al. evaluated a brief intervention designed to improve empathic validation during encounters involving pain. Following two 45-minute training sessions, students demonstrated increased validating responses and reduced invalidating communication. Simulated-patient satisfaction also improved [22]. This finding is educationally important because brief targeted training may modify a specific communication behavior when objectives are clearly defined and accompanied by practice.

Ruiz-Moral et al. focused on recognition and exploration of patient emotions. Students became more successful at detecting emotional cues and producing appropriate empathic responses following repeated training [23]. Empathic communication therefore requires more than memorizing phrases. A learner must identify an emotional cue, appreciate its clinical or

personal meaning, provide an appropriate response, and allow the patient to continue expressing concerns. Broader medical-education research has similarly shown that empathy may be amenable to educational intervention, although methods and outcome instruments vary [14].

Patient-Centered Orientation

The findings concerning patient-centered attitudes were more heterogeneous than those concerning observable communication performance. Bombeke et al. reported that communication training did not completely protect students against a decline in patient-centered attitudes during clinical clerkships [19]. The finding suggests that formal teaching represents only one influence on professional development. Students learn from supervisors, institutional culture, workload, time pressure, assessment priorities, and interactions observed during routine clinical practice.

Joekes et al. also observed that patient-centered attitudes were not strongly associated with objectively measured communication behavior [18]. These observations illustrate an important distinction: a student may learn communication behaviors required for an assessment without fully adopting the underlying philosophy of partnership and patient autonomy. Gorski et al. provided a different perspective. Among 428 medical students, those trained with simulated patients demonstrated higher patient-centered orientation than students trained using peer role-play or those without a formal communication course [27]. The result suggests that realistic interaction and feedback from an individual representing the patient's perspective may influence attitudes in addition to technical performance. Mohamed et al. demonstrated that patient-centeredness itself contains multiple dimensions. The sharing component improved after communication education, whereas caring scores declined and the overall patient-centered orientation score did not significantly improve [28]. Thus, a global score may conceal divergent changes within individual dimensions of patient-centered care.

Shared Decision-Making, Health Literacy, and Patient Empowerment

Patient-centered communication requires that information be understandable and that patients have meaningful opportunities to participate in decisions. Kaper et al. evaluated 79 students in a randomized trial of a comprehensive health-literacy consultation program. The intervention combined teaching with interactive small-group sessions, role-play, and video-recorded consultations [24]. Training produced improvements in providing comprehensible information, shared decision-making, and support for patient self-management.

Health literacy is particularly relevant because clinically accurate information is not necessarily understandable information. Medical students must learn to avoid unnecessary jargon, organize information into manageable portions, assess patients' prior knowledge, check understanding, and adapt explanations to individual needs. Shared decision-making likewise requires communication that goes beyond presenting a physician's preferred plan. Students need to describe reasonable options, communicate benefits and harms, explore patient preferences, and develop an agreed approach.

Communication During Clinical Procedures

Communication and technical procedural competence are often taught independently, although patients experience them simultaneously. Nagy et al. integrated patient-centered communication with blood-sampling skills training [25]. Students were required not only to perform a technical task but also to communicate appropriately with a simulated patient throughout the procedure. Both local and international students improved following training, while international students demonstrated particularly pronounced gains in accompanying communication.

Procedural teaching should therefore incorporate communication tasks such as introducing oneself, confirming patient identity, explaining the procedure, obtaining permission, responding to anxiety, warning about discomfort, maintaining dignity, providing reassurance without false certainty, and checking patient well-being after completion. This approach reflects the reality that technical and interpersonal competence are inseparable during patient care.

Simulated Patients and Peer Role-Play

Simulation was a prominent educational strategy among the included studies. Standardized or simulated patients allow students to practice consultations in realistic but controlled settings. Cases can be reproduced consistently, learners can encounter difficult scenarios without exposing real patients to inexperienced practice, and feedback can be delivered from the patient's perspective.

Bosse et al. demonstrated that both standardized-patient training and peer role-play could improve communication outcomes [20]. Peer role-play has practical advantages. It is inexpensive, scalable, and allows repeated practice. Playing the patient may also help students appreciate how interruptions, jargon, eye contact, tone, and questioning styles feel from the recipient's perspective. Gorski et al., however, found stronger patient-centered orientation among students trained with simulated patients than among those using student role-play or receiving no formal course [27]. These findings need not be contradictory. Peer role-play may be highly effective for repeated rehearsal of defined skills, whereas trained simulated patients may provide greater value when authenticity, emotional engagement, standardization, or patient-perspective feedback is central to the learning objective. A sequential approach may therefore be most efficient: frequent peer practice for foundational skills followed by simulated-patient encounters for more complex consultations.

Repeated Training and Educational Dose

Communication competencies are unlikely to become durable through a single educational exposure. Bosméan et al. assessed 161 students during simulated consultations using the Four Habits Coding Scheme [26]. Students with previous physician-patient relationship training demonstrated better interpersonal performance than students without such training. Greater exposure to communication training was associated with progressively better scores. The finding supports a longitudinal or spiral curriculum rather than isolated communication workshops.

Early medical education may emphasize active listening, rapport, open questions, patient agenda, consultation organization, and basic empathy. Later stages can progressively incorporate shared decision-making, health literacy, chronic disease, procedural communication, uncertainty, informed consent, cultural differences, difficult conversations, communication with families, and emotionally challenging encounters. Repeated training should therefore increase in complexity as students' clinical responsibilities develop.

Digital and Blended Learning

Contemporary communication education increasingly incorporates digital methods. Gross et al. evaluated 164 students in a randomized controlled trial of an interactive video-based module added to face-to-face communication education [29]. Mean communication knowledge was 73.6 ± 10.7 in the intervention group compared with 56.7 ± 15.3 in controls. Students exposed to blended learning also demonstrated greater knowledge of patient-centered responses to emotionally challenging communication scenarios.

Digital education offers several potential advantages. Students can repeatedly observe consultation examples, compare effective and ineffective approaches, rehearse decision pathways, and study foundational principles before attending face-to-face sessions. However, communication is fundamentally interpersonal. Digital methods may therefore be most effective when used to prepare students for human interaction rather than replace opportunities to communicate with peers, simulated patients, faculty, or real patients.

Informed-Consent Communication

Informed consent represents a particularly important patient-centered communication task because it combines ethical, informational, legal, and relational competencies. McCarrick et al. randomized 122 senior medical students, with 61 students allocated to a simulation-based communication intervention and 61 to the comparison group [30]. Training included demonstrations, role-play, discussion, simulation, and structured communication guidance. Mean intervention performance increased from approximately 61% to 71%, with a reported effect size of 0.79. Improvement was observed in several components of informed-consent communication, including initiation of the encounter, verbal communication, consultation structure, provision of information, and facilitation of patient understanding. Informed consent should therefore be taught not merely as acquisition of a signature but as a communication process involving explanation, understanding, voluntariness, autonomy, and meaningful opportunity to ask questions.

Summary of Outcomes Across the 13 Included Studies

The overall evidence demonstrated three principal patterns. First, observable communication performance generally improved after structured educational interventions. This pattern was evident in studies evaluating consultation behavior, empathy, health-literacy communication, procedural communication, digital learning, and informed consent [18,20-26,29,30]. Second, experiential learning was a recurring component of successful interventions. Simulated patients, peer role-play, repeated encounters, video review, and procedural simulation required students to actively perform rather than passively learn communication principles. Third, patient-centered attitudes showed more variable findings. Simulation was associated with stronger patient-centered orientation in Gorski et al., while Bombeke et al. documented decline during clerkships and Mohamed et al. found improvement in sharing accompanied by decline in caring [19,27,28]. The evidence therefore suggests that communication behavior and patient-centered orientation overlap but should not be treated as synonymous outcomes.

DISCUSSION

Principal Findings

This systematic review of 13 published primary studies demonstrates that structured communication skills education can improve clinically relevant communication competencies among medical students. Benefits were observed in consultation organization, listening, interruption behavior, information exchange, emotional responsiveness, empathy, health-literacy-sensitive communication, shared decision-making, procedural communication, and informed consent. The evidence also supports the educational value of active practice. Simulation, role-play, repeated encounters, interactive teaching, video-assisted learning, and feedback appeared repeatedly across successful interventions.

Patient-centered outcomes, however, were more complex. While several interventions improved empathy, sharing, patient-centered orientation, or simulated-patient satisfaction, other research demonstrated deterioration in caring attitudes during clinical training. These findings suggest that medical education must address two related but distinct objectives: teaching students how to communicate effectively, and developing and sustaining a genuinely patient-centered orientation.

Communication as a Teachable Clinical Competency

The included studies challenge the notion that communication ability is predominantly a personality trait. Focused training produced measurable behavioral changes even over relatively short periods, while repeated education demonstrated potential dose-response relationships. Communication education should therefore be treated similarly to other clinical competencies: learners need explicit objectives, demonstration, supervised practice, feedback, reassessment, and progressive application in increasingly complex clinical contexts.

Importance of Experiential Learning

Communication cannot be mastered through lectures alone. Knowledge that a clinician should listen, show empathy, explain clearly, and involve patients in decisions does not necessarily translate into the ability to perform these tasks during a complex consultation. Experiential learning provides the missing performance component. Students can attempt a consultation, observe the patient's reaction, receive feedback, reflect on their own behavior, and repeat the encounter using a modified strategy. This cycle is especially valuable for behaviors learners may not recognize in themselves, including interrupting, excessive closed questioning, premature reassurance, inappropriate jargon, failure to respond to emotions, insufficient checking of understanding, and dominating treatment decisions.

Importance of Feedback

Feedback is one of the most consistently emphasized components of communication education. The broader evidence synthesized by Gilligan et al. suggests that personalized feedback may produce improvement in overall communication performance [15]. Effective feedback should be behavior-specific. Rather than stating that a student needs to show more empathy, an educator can identify the precise moment when an emotional cue was missed and demonstrate an alternative response. Similarly, instead of telling a student to explain better, feedback may identify excessive technical terminology, excessive information delivered at once, or failure to check the patient's understanding. Feedback from simulated patients can add an especially useful perspective because it addresses how communication is experienced rather than only whether required behaviors were technically demonstrated.

Communication Skill Versus Patient-Centered Orientation

One of the most important findings of this review is that technical communication competence and patient-centered orientation are not interchangeable. Joekes et al. demonstrated limited correspondence between communication behaviors and patient-centered attitudes [18]. Bombeke et al. showed that patient-centered attitudes may decline despite communication training [19]. Mohamed et al. demonstrated improvement in sharing alongside deterioration in caring [28]. A learner may therefore learn to ask about a patient's concerns because this behavior is required in an examination without genuinely embracing the patient's perspective as a central component of clinical decision-making. Assessment strategies should consequently measure both behavior and orientation.

Influence of the Hidden Curriculum

Formal communication training operates within a clinical culture. During clerkships, students observe how practicing clinicians communicate in environments characterized by limited consultation time, competing responsibilities, service pressure, emotional fatigue, documentation demands, and hierarchy. When formal teaching emphasizes empathy and partnership but clinical role models consistently demonstrate rushed or paternalistic interactions, students receive conflicting messages. The decline in patient-centered attitudes identified in longitudinal research may partly reflect this hidden curriculum. Communication education must therefore involve not only students but also clinical teachers and institutions. Faculty-development programs, workplace assessment, bedside modeling, and reinforcement of patient-centered behaviors during routine clinical care are important if classroom teaching is to remain durable.

Patient Perspective as an Outcome

Traditional communication assessment often relies on faculty ratings or structured examination checklists. These methods are valuable but may not capture the patient's experience. Patient-centered communication should ultimately be judged partly by whether patients feel heard, respected, understood, adequately informed, involved in decisions, and able to express concerns. Frameworks for evaluating patient-centered communication increasingly emphasize relational as well as informational outcomes [31,32]. Future educational studies should therefore expand patient-reported outcomes rather than relying predominantly on educator assessment and student self-confidence.

Empathy Education

Empathy is teachable but vulnerable to the broader educational environment. Systematic reviews have reported that educational interventions can support empathy and compassion among medical students, although intervention methods and assessment instruments remain heterogeneous [33,34]. The studies included in the present review demonstrate the value of focusing on observable empathic processes. Students can be trained to recognize cues, explore emotions, validate patient experiences, and respond in ways that encourage rather than close emotional discussion. Such training is likely to be more clinically meaningful than teaching standardized empathic phrases without attention to context.

Implications for Curriculum Design

The findings favor a longitudinal communication curriculum beginning early in medical education and continuing throughout clinical training. An effective program should combine structured consultation frameworks, demonstrations of effective communication, peer role-play, standardized or simulated patients, real-patient encounters when appropriate, video review, individualized feedback, reflective learning, patient-perspective feedback, health-literacy communication, shared decision-making, empathy training, procedural communication, informed consent, and repeated assessment. Communication should also be embedded within specialty and procedural teaching rather than confined to an isolated behavioral-science course.

Strengths of the Review

The review considered communication skills and patient-centered care as co-primary domains instead of treating all communication outcomes as a single construct. All 13 primary studies included in the qualitative synthesis are explicitly represented in Table 1 and discussed within the Results. The evidence includes randomized controlled trials as well as longitudinal, comparative, and mixed-method studies. The review also captures contemporary developments such as health-literacy communication, procedural integration, blended learning, and informed-consent simulation. Another strength is recognition that patient-centered attitudes may not follow the same trajectory as observable communication performance.

Limitations of the Included Evidence

The available evidence has several limitations. Interventions differed considerably in educational content, duration, intensity, teaching personnel, and mode of delivery. Outcome measures were also heterogeneous. Some studies assessed structured consultation performance, while others measured confidence, empathy, patient-centered orientation, knowledge, or simulated-patient satisfaction. Many outcomes were assessed shortly after training, limiting conclusions regarding long-term retention. Several studies relied on simulated rather than real patients. Pre-post studies without controls are vulnerable to maturation, familiarity with assessment, and concurrent educational influences. Observational studies are susceptible to selection bias and confounding. Studies involving voluntary communication courses may preferentially include students who already value patient-centered communication. Patient-reported outcomes from real clinical settings were uncommon. Consequently, although the evidence consistently supports short-term educational benefit, evidence connecting undergraduate communication training with long-term patient outcomes remains limited.

Limitations of the Review Process

The systematic review was not prospectively registered in PROSPERO, and no publicly deposited protocol preceded the review process. This may increase the possibility of methodological modifications during review conduct. Communication education is described using highly heterogeneous terminology. Relevant research may be indexed under terms including interpersonal skills, consultation skills, relational communication, physician-patient relationship, empathy, professionalism, health literacy, patient partnership, and shared decision-making. Therefore, potentially eligible studies may have been missed despite the use of multiple search concepts. Only published primary studies were included, so publication bias cannot be excluded. Substantial heterogeneity among intervention formats, study designs, assessment instruments, and follow-up periods prevented meaningful quantitative pooling. A formal meta-analysis was therefore not performed.

Recommendations for Medical Education

- Communication education should begin early and continue longitudinally.
- Teaching should move from foundational listening and interviewing skills toward increasingly complex clinical communication.
- Experiential practice should form a substantial component of teaching.
- Peer role-play can provide frequent, low-cost rehearsal, while simulated patients can provide greater realism and patient-perspective feedback.
- Individualized feedback should accompany practice.
- Patient-centered communication should explicitly address empathy, patient agenda, health literacy, autonomy, shared decision-making, and emotional responsiveness.
- Communication should be integrated into procedural skills and specialty teaching.
- Clinical faculty should model the behaviors taught in the formal curriculum.
- Assessment should include observable communication, patient-centered orientation, and, where possible, patient-reported experience.

Future Research

Future studies should follow students longitudinally to determine whether communication improvements persist during internship, residency, and independent practice. Multicenter randomized studies would improve generalizability. Greater standardization of outcome instruments would facilitate comparison across educational programs and permit future meta-analysis. Research should increasingly evaluate authentic patient outcomes, including understanding, involvement in

decision-making, satisfaction, trust, adherence, patient safety, and healthcare outcomes. The optimal frequency and intensity of reinforcement remain uncertain. Future research should also compare the effectiveness and cost-effectiveness of peer role-play, standardized patients, real patients, video feedback, digital modules, virtual patients, artificial-intelligence-supported simulation, and blended curricula. The interaction between formal communication teaching and the hidden curriculum also requires greater investigation.

CONCLUSION

Communication skills training has a measurable positive effect on multiple aspects of medical students' clinical communication. Across the 13 included studies, structured educational interventions improved consultation behavior, listening, information provision, empathy, recognition of emotional cues, health-literacy-sensitive communication, shared decision-making, procedural communication, and informed-consent performance. The most effective educational approaches were characterized by active practice, simulation or role-play, repeated exposure, structured frameworks, feedback, reflection, and integration with clinical tasks. Patient-centered care showed a more complex pattern. Although empathy, sharing, and patient-centered orientation improved in several studies, caring attitudes did not invariably improve and could decline during clinical training. Communication performance and patient-centered orientation should therefore be considered related but distinct educational outcomes. Medical schools should adopt longitudinal, experiential communication curricula that reinforce both behavioral competence and patient-centered values throughout undergraduate training. Future research must determine whether these improvements are durable and whether they ultimately improve the experiences and clinical outcomes of real patients.

Declarations

Ethics Approval and Consent to Participate- Not applicable. This systematic review synthesized previously published research and did not directly involve human participants.

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Conflict of Interest- The authors declare no conflicts of interest.

Data Availability- All data synthesized in this review were obtained from the published studies cited in the manuscript.

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