

EFFECTIVENESS OF TRAINING CLINICIANS' COMMUNICATION SKILLS ON PATIENTS' CLINICAL OUTCOMES: A SYSTEMATIC REVIEW

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ABSTRACT

Objective: The aim of this systematic review was to investigate the literature on the effectiveness of communication skills training for clinicians on patients' clinical outcomes in primary care and rehabilitation settings.

Methods: We systematically reviewed the literature for randomized controlled trials investigating the effectiveness of communication skills training for clinicians on patients' satisfaction with care and on pain and disability in primary care and rehabilitation settings. The search strategy was conducted using AMED, PsycINFO, MEDLINE, CINAHL, EMBASE, PEDro, and Cochrane Central Register of Controlled Trials through June 2015. Methodological quality of included trials was assessed by 2 independent investigators using the PEDro scale, and consensus was used to resolve disagreements. Data were extracted, and meta-analyses were performed.

Results: Nineteen randomized controlled trials were included. Of these, 16 investigated communication training for clinicians that emphasized patient participation (eg, shared decision-making approaches). Communication training had small effects on patients' satisfaction with care when compared to control (4.1 points on a 100-point scale, 95% confidence interval [CI], 1.1-7.0). Communication training also had small effects on pain and disability with pooled results showing weighted mean differences of -3.8 points (95% CI, -6.5 to -1.1) and -3.6 (95% CI, -5.4 to -1.7), respectively.

Conclusions: Studies show that communication training for clinicians produces small effects in improving patients' satisfaction with care or reducing pain and disability in primary care and rehabilitation settings. (*J Manipulative Physiol Ther* 2015;38:601-616)

Key Indexing Terms: *Communication; Professional-Patient Relations; Review Literature as Topic*

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Approaches used by clinicians to communicate with patients during clinical encounters are essential to exchange information and increase clarity, resulting in greater adherence with rehabilitation programs.^{1,2} A complex pathway has suggested that training clinicians' communication skills on, for instance, shared decision making³ could optimize their approaches and lately impact on improvements of patients' clinical outcomes.⁴ In approaches such as shared decision making, clinicians value patients' participation as well as their needs and preferences during clinical encounters.² Therefore, clinicians' communication skills training could be imperative in the process of managing and altering clinicians' behaviors and to improve patients' outcomes in primary care and rehabilitation settings.⁵

The current knowledge on the relationship between clinicians' communication skills and improvements in patients' outcomes suggests the importance of communication training.⁶⁻⁹ For instance, communication skills used by clinicians during their interaction with patients are

associated with better symptom resolution, functional and physiologic status, emotional health, and patients' satisfaction with care.⁶⁻⁹ Higher levels of therapeutic alliance, meaning more positive patient-clinician interaction, associate with greater improvements in clinical outcomes such as decreased pain and disability in chronic conditions.¹⁰ However, variables that are thought to be mediators in the process toward patients' clinical outcomes, including clinicians' communication skills, are complex, and whether training clinicians' communication skills in approaches such as shared decision making is effective to improve these patients' outcomes is still unclear.

Previous systematic reviews in oncology^{11,12} and in allied health⁴ have reported inconclusive evidence of the effectiveness of clinicians' communication skill training on patients' distress and satisfaction with care. Inconclusive evidence from these reviews^{4,11,12} was limited by the inclusion of low-quality studies (ie, nonrandomized controlled trials). No comprehensive review of high-quality studies (ie, randomized controlled trials) has investigated the effectiveness of clinicians' communication training on patients' satisfaction with care, pain, and disability in primary care and rehabilitation settings. Patients' satisfaction with care, pain, and disability are common clinical outcomes in primary care and rehabilitation settings,¹³ and their investigation may impact on the use and design of future approaches used by clinicians during patient-clinician interactions. Summarizing the evidence from high-quality studies in a systematic way is timing. Such an investigation may contribute to the understanding of the complex pathway between clinicians' communication skills and patients' outcomes.

The aim of this review was to investigate whether communication skills training for clinicians is effective on patients' clinical outcomes of patients' satisfaction with care, pain, and disability in primary care and rehabilitation settings.

METHODS

Identification of Studies

The search strategy was conducted using AMED, PsycINFO, MEDLINE, CINAHL, EMBASE, PEDro, and Cochrane Central Register of Controlled Trials. The full search strategy conducted on November 2012 and updated on June 2015 is presented in [Appendix A](#).

Several criteria were used to select eligible studies. We included randomized controlled trials that investigated the effect of any communication training (eg, patient-centered and shared decision-making approaches) for primary care and/or rehabilitation clinicians (eg, chiropractors, physiotherapists, osteopaths, doctors, residents, nurses, occupational therapists, and speech pathologists) compared to control (ie, no intervention or minimal communication intervention) on patients' satisfaction with care, pain intensity, and disability. Trials of mental illness were excluded because the nature of care for mental illness differs from conventional consultations.

Searches were not restricted for language. Screening of titles, abstracts, and full text identified in the search was undertaken by 2 investigators (VCO and RFF) using the eligibility criteria outlined above. Any disagreement was resolved by consensus.

Assessment of Methodological Quality

Methodological quality of included trials was assessed by 2 independent investigators (VCO and RZP) using the PEDro scale (score ranging from 0 to 10),¹⁴ and consensus was used to resolve disagreements.

Data Analysis

Descriptive data were extracted on clinicians and patients (ie, total sample, source of participants, age, gender, and treatment comparisons). Means and SDs were extracted for patients' satisfaction with care, pain, and disability. Where necessary, outcome scores (ie, mean and SDs) were transformed to common 100-point scales to compare trials. SDs were not provided in 6 trials, and values were either calculated based on the confidence intervals¹⁵⁻¹⁷ or inputted from the average SD of other included trials¹⁸⁻²⁰ according to the Cochrane Collaboration recommendations.²¹

Outcome data were extracted for short-term follow-up (<6 months after randomization). When multiple follow-up data were reported within the time point defined in our review, the follow-up closer to the end of intervention was used.

Data were pooled in meta-analyses and described as weighted mean differences with 95% confidence intervals. Between-trial heterogeneity was assessed using I^2 statistics, and random-effects models were used where appropriate (ie, an I^2 of $\geq 50\%$).²¹ To judge the magnitude of communication training effects (differences between training and control groups at follow-up), we used definitions of the American College of Physicians and the American Pain Society,²² as follows: small to moderate effects (<20 points on a 100-point scale) and large effects (>20 points). A funnel plot of SE by difference in means was used to investigate publication bias where appropriate and Comprehensive Meta-Analysis software version 2.2.04 (Biostat, Englewood, NJ) was used to conduct all analyses.

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) system was used to summarize the overall quality of the evidence.²³ The 4 levels of the GRADE system range from high-quality evidence, where further research is very unlikely to change the estimate of prevalence, to very low-quality evidence, where the estimate of prevalence is very uncertain.²³ Scoring the quality of evidence for each outcome using GRADE started at high-quality evidence, which was downgraded by 1 point if one of the following criteria was present: (i) methodological quality score of less than 5 points of 10, (ii) inconsistency of estimates among trials, (iii) indirectness of participants selected by no reliable methods (eg, findings on imaging), (iv) imprecision for

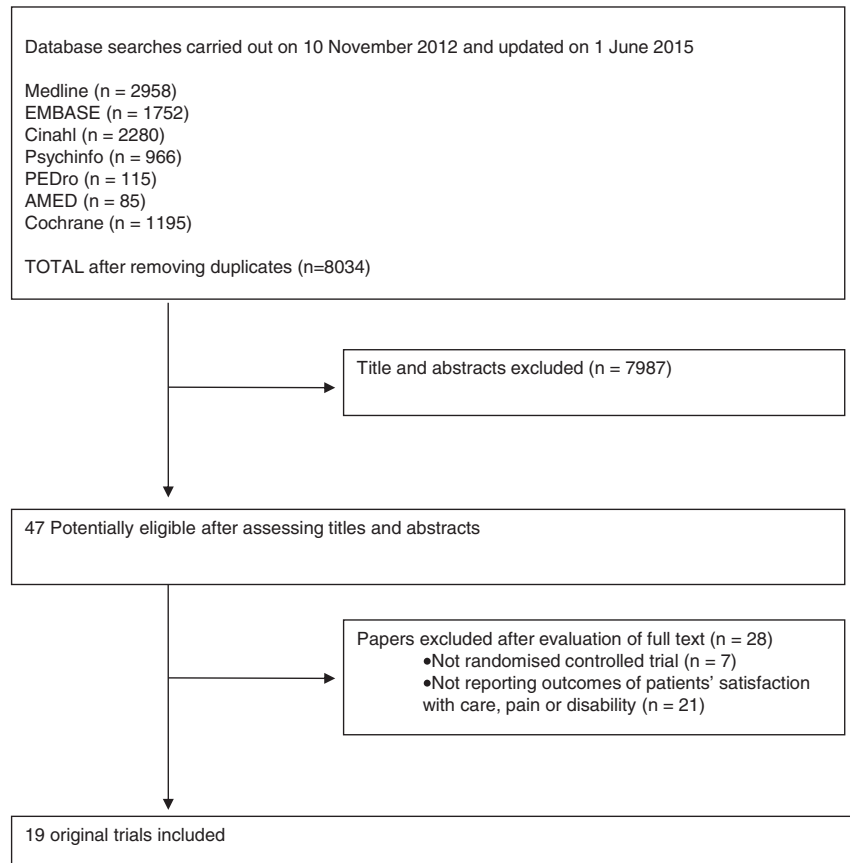


Fig 1. Flowchart of the study selection process. AMED, Alled and Complementary Medicine Database; Cinahl, Cumulative Index to Nursing and Allied Health Literature; EMBASE, Excerpta Medica database; PEDro, Physiotherapy Evidence Database.

samples less than 300 participants for each outcome,²⁴ and (v) publication bias for each outcome or when its analysis was not possible due to small number of trials.²⁵ Two independent reviewers (VCO and RZP) independently assessed the quality of the evidence using GRADE, and disagreements were resolved using consensus.

The protocol for this systematic review was registered at PROSPERO (CRD42012002120) and is available at: <http://www.crd.york.ac.uk/PROSPERO>.

RESULTS

Search strategies identified 8034 titles after removing duplicates. Screening of titles and abstracts identified 47 potentially eligible articles and 19 original trials were included.^{15-20,26-38} The main reasons for excluding articles from the 47 potentially eligible articles were as follows: the study was not randomized (n = 7) and the study did not report outcomes of patients' satisfaction with care, pain, or disability (n = 21) (Fig 1).

Characteristics of Included Trials

Included trials recruited 1036 clinicians treating 9063 patients with musculoskeletal problems^{29,31,33,36,38} or other

conditions such as cancer^{15-20,26-28,30,32,34,35,37} (Table 1). Eighteen trials investigated the effects of training on patients' satisfaction with care^{15-20,26-30,32-38} and 2 trials investigated effects on pain^{31,38} and disability.^{31,38}

Current Communication Skills Training for Clinicians

Sixteen of 19 trials focused on communication training that emphasized patient's participation (eg, patient-centered and shared decision-making approaches)^{15-20,26-32,34,35,37} (Table 2). Trials used theoretical workshops, written information, and discussion sessions with audiovisual resources (ie, audiotape or videotape of clinical consultations) as communication training. The number of intervention sessions given by trained people varied from 1 to 12 within 1 day to 6 months, and some interventions used reinforcement sessions.

Assessment of Methodological Quality

The mean score for methodological quality was 4.9/10 (ranging from 3 to 7) on PEDro scale. The methodological issues included the following: absence of concealed allocation; absence of report of similar groups at baseline; blinding of clinicians, patients, and assessors; more than 15% dropouts;

Table 1. Descriptive Data of Included Trials (n = 19)

Study	Clinician	Patient	Comparison	Outcome
Alder et al 2007 ²⁷	n = 32 Age: NA Sex: NA Source: incidental sampling of physicians of the department of obstetrics and gynecology, Switzerland	n = 128 Age: NA Sex: 100% female Source: real and simulated patients from the outpatient department	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 53-point scale)
Ammentorp et al 2009 ²⁸	n = 30 Age: NA Sex: 70% female Source: incidental sampling of physicians and nurses from pediatric outpatient clinics in Denmark	n = 764 Age: NA Sex: female and male Source: parents of children admitted	Int: communication skills training valuing patient's participation Con: no intervention	Parents satisfaction (satisfaction with communication assessed on proportion of parents satisfied)
Bernhard et al 2011 ²⁰	n = 62 Age: NA Sex: 58% female Source: incidental sampling of medical, surgical, radiation, and gynecological oncologists in cancer centers or clinics in Australia, New Zealand, Switzerland, Germany, and Austria	n = 694 Age: 24-88 y Sex: NA Source: patients with early breast cancer	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 49-point scale)
Bieber et al 2008 ^{28, a}	n = 10 Age: 30 y Sex: 50% female Source: incidental sampling of physicians from rheumatologic outpatient clinics in Germany	n = 149 Age: mean of 49 y Sex: >90% female Source: patients with fibromyalgia	Int: communication skills training valuing patient's participation + information for patients Con: information for patients	Patients satisfaction (satisfaction with communication assessed on a 5-point scale)
Brown et al 1999 ¹⁸	n = 69 Age: NA Sex: 32% female Source: incidental sampling of physicians, specialists and nurse practitioners in Oregon, USA	n = 61 Age: NA Sex: NA Source: NA	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with communication assessed on a 9-point scale)
Cals et al 2009 ³⁰	n = 40 Age: 45 y Sex: 40% female Source: incidental sampling of general practitioners in the Netherlands	n = 431 Age: mean of 49 y Sex: 62% female Source: patients with lower respiratory tract infection	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on proportion of patients satisfied)
Chassany et al 2006 ^{31, a}	n = 180 Age: 47 y	n = 842 Age: mean of 69 y	Int: communication skills training valuing patient's participation	Pain (assessed on a 101-point scale)

Edwards et al 2004 ¹⁵	Sex: NA Source: random sampling of general practitioners n = 21 Age: 38 y Sex: 40% female Source: incidental sampling of general practitioners in Gwent, South Wales	Sex: 65% female Source: patients with osteoarthritis n = 353 Age: mean of 59 y Sex: 59% female Source: patients with nonvalvular atrial fibrillation, prostatism, menorrhagia, and menopause-related problems attending consultation for review	Con: presentation about patient recruitment Int: communication skills training valuing patient's participation Con: no intervention	Disability (assessed on a 97-point scale) Patients satisfaction (satisfaction with communication assessed on a 101-point scale)
Evans et al 1987 ³²	n = 52 Age: 41 y Sex: 0% female Source: random sampling of general practitioners in Melbourne, Australia	n = 400 Age: mean of 42 y Sex: 55% female Source: real patients attended	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation on a 100-point scale)
Frostholm et al 2005 ^{33, a}	n = 38 Age: NA Sex: NA Source: incidental sampling of physicians in Aarhus County, Denmark	n = 1785 Age: mean of 39 y Sex: 62.4% female Source: patients with functional disorders and somatization	Int: communication skills training that do not focus on patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 35-point scale)
Haskard et al 2008 ¹⁹	n = 80 Age: 37 y Sex: 37% female Source: incidental sampling of physicians from primary care specialties	n = 80 Age: NA Sex: <50% female Source: patients interacting with physicians	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 5-point scale)
Jensen et al 2011 ¹⁶	n = 72 Age: 41 y Sex: 35% female Source: incidental sampling of physicians from a large general teaching hospital in Norway	n = 72 Age: NA Sex: NA Source: patients consecutively attended	Int: communication skills training valuing patient's participation Con: no intervention (crossover)	Patients satisfaction (satisfaction with consultation assessed on a 11-point scale)
Kennedy et al 2004 ²⁶	n = 19 sites Age: NA Sex: NA Source: incidental sampling of clinicians of outpatient clinics at hospitals in England	n = 635 Age: means around 44 y Sex: 52% female Source: patients who had established ulcerative colitis or Crohn disease	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 91-point scale)
Lewis et al 1991 ³⁴	n = 56 Age: 29 y Sex: 50% female Source: incidental sampling of pediatric trainees and residents	n = 141 Age: means around 8 y Sex: 43% female Source: 6- to 17-year-old patients accompanied by an adult	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 4-point scale)

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Table I (continued)

Study	Clinician	Patient	Comparison	Outcome
Loh et al 2007 ³⁵	n = 30 Age: 48 y Sex: 27% female Source: incidental sampling of primary care physicians in Germany	n = 405 Age: range from 40.8-50.4 y Sex: females ranged from 65.3%-77.8% Source: patients with newly diagnosed depression	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 25-point scale)
Sheffer 1999 ^{36, a}	n = 54 Age: NA Sex: NA Source: incidental sampling of family practice residents in Chicago	n = 54 Age: 31 y Sex: 70% female Source: patients over 18-year-old suffering musculoskeletal disorders	Int: communication skills training that do not focus on patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 7-point scale)
Shilling et al 2003 ³⁷	n = 160 Age: NA Sex: NA Source: incidental sampling of oncologists in UK	n = 861 Age: 86.4% ≥ 40 y Sex: 61.3% female Source: patients attending oncologists	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with consultation assessed on a 64-point scale)
Suarez-Almazor et al 2010 ^{38, a}	n = 6 Age: NA Sex: 0% female Source: incidental sampling of Chinese acupuncturists recruited through the American College of Acupuncture and Oriental Medicine	n = 560 Age: means around 63 y Sex: 64% female Source: patients with knee osteoarthritis	Int: acupuncture + communication skills training that do not focus on patient's participation Con: acupuncture	Patients satisfaction (satisfaction with consultation assessed on a 5-point scale) Pain (assessed on a 101-point scale) Disability (assessed on a 101-point scale)
Wetzels et al 2005 ¹⁷	n = 25 Age: NA Sex: NA Source: incidental sampling of general practitioners in the Netherlands	n = 648 Age: means around 76 y Sex: 33% female Source: patients ≥ 70 y	Int: communication skills training valuing patient's participation Con: no intervention	Patients satisfaction (satisfaction with communication assessed on a 4-point scale)

Con, no intervention; Disability, highest scores for worst disabilities; Int, communication skills training; n, number of clinicians/patients initially allocated; NA, not available; Pain, highest scores for worst pain; Patients satisfaction, highest scores for best satisfaction with care; y, mean/median age in years.

^a Musculoskeletal area.

Table 2. *Communication Skills Training of Included Trials (n = 19)*

Study	Communication Training	No. of Sessions
Alder et al 2007 ²⁷	Training aimed patient-centered approach from a biopsychosocial perspective establishing therapeutic relationship to exchange information and educate patients and to encourage shared decision making. One-day workshop gave clinicians the theoretical background for the consultations and the communicative and interpersonal processes. The theoretical background of communication, different communication models, and general and specific communication skills were discussed. Three half-day practice seminars were held for small groups where the acquired knowledge and specific communication skills were practiced (with video feedback). The last part of the intervention consisted of 5-6 1-h supervision sessions for each clinician over 3-months period. Trainees discussed problems related to types of communication they have encountered in their clinical work and were supervised by the group and the trainer. Short communication sequences were practiced.	9-10
Ammentorp et al 2009 ²⁸	Training consisted of 2 sections lasting, respectively, 3 and 2 days with 4 weeks separating sections. In between, clinicians videotaped one of their own consultations, and videotapes were used to provide feedback during the second section of the course. The training focused on the patient-centered approach eliciting and understanding patient concerns and needs and reaching a shared understanding of the problem and its treatment.	5
Bernhard et al 2011 ²⁰	Training consisted of a 7-h workshop with 1-2 follow-up telephone calls over 2 mo. The training focused on shared decision making and used video modeling behavior. Before the workshop, clinicians were expected to have read the strategies document. For each clinician, 2 audiotaped consultations were analyzed, and feedback was provided at the end of the workshop. One month later, the trainer called the clinicians to reinforce and extend learning.	2-3
Bieber et al 2008 ^{28, a}	Training aimed to ameliorate clinician's patient-centered communication to perform shared decision making. The training consisted of 12 sessions of 1.5 h. It focused on practicing competencies needed for the shared decision-making process and on building a good working alliance with the patient. Interactive talks and role plays are used, and videos are analyzed. Sensitivity to deliberate and unconscious signals of verbal and nonverbal communications is trained. Specific steps in shared decision making are practiced: inviting patients explicitly into the decision-making process, checking patients' role preference, explaining the notion of medical equipoise and available treatment options, checking patients' understanding and further need for information, identifying and responding to any expectations and fears, and negotiating a treatment decision.	12
Brown et al 1999 ¹⁸	Training consisted of an initial 4-h group workshop, 2 h of subsequent homework, and a 4-h follow-up workshop. The first workshop focused on skills for building effective relationships with patients including: listening actively; responding to patients' feelings; and communicating concern, understanding, and respect. The second workshop focused on skills for successful negotiation, particularly in situations of disagreement. During a 1-mo interval between the 2 workshops, the clinicians were asked to audiotape their consultations and listen to the recordings. In addition, an instructor called clinicians during the interval for reinforcement. The workshops included didactic components related to clinical needs and role playing that allowed clinicians to practice communication skills while focusing on situations that they found challenging and relevant. Instructors taught interactively, encouraging dialogue with and among participants.	3
Cals et al 2009 ³⁰	Training based on patient-centered strategy to achieve shared decisions about investigation and treatment. The training involved a 2-h group seminar, preceded and followed by consulting with simulated patients. The training was based on the elicit-provide-elicite framework, where clinicians first elicit what the patients know about their condition and what the patients' main worries and expectations are. Later, clinicians provide information relevant to the patients' individual understanding and interest. Then, clinicians elicit the patients' interpretation about what has been said and done and discuss implications. Clinicians had the opportunity to use the enhanced communication skills in daily practice during 8 wk before inclusion for study and had feedback from simulated patients.	1
Chassany et al 2006 ^{31, a}	Pragmatic and interactive training based on patient-physician relationship and on biopsychosocial model. The training focused on 3 themes: workshop 1 dealt with the patient-physician relationship; workshop 2 covered the analysis and evaluation of pain; and workshop 3 was dedicated to prescribing and the negotiation of a therapeutic contract with the patient. Videos of consultations and clinical situations were used to generate reactions and reflection from clinicians. The group training was delivered to clinicians during a 4-h meeting by 3 pairs of trainers acting as facilitator and expert. Each pair of trainers trained a group who discussed issues in groups of 6. After the training, 8 reminders were mailed to clinicians.	9
Edwards et al 2004 ¹⁵	Training workshops used simulated patients to develop shared decision-making competences. The competences involved: clear specification of condition; equipoise professionals may not have a clear preference about which treatment option is the best; treatment options; identify patients' preferences; check understanding of the range of options and information provided; explore ideas, concerns, and expectations; check role preference that patients accept the process and identify their decision-making role preference; decision making involving the patient to the extent they desire to be involved; review treatment needs and preferences; and the decision.	NA
Evans et al 1987 ³²	Two 2-h group seminar covered communication deficiencies and suggested techniques for increasing patient satisfaction. Written material provided for clinicians covered psychological variables in patient-clinician interactions, patient satisfaction, recall and understanding, patient compliance, and techniques. Training focused on clinicians' awareness and knowledge of potential communication problems in the consultation setting. At the first seminar, clinicians were given the written material and trainer presented a 1-h lecture on patient satisfaction and compliance. The remaining time was spent in discussion within the group.	2
Frostholm et al 2005 ^{33, a}	Training consisted of an educational program on assessment, treatment, and management of somatization, which rests on present theoretical and scientific knowledge about somatization and adopts a cognitive oriented approach. The training took place in the month preceding the study and consisted of a 2-d residential course (16 h) followed by 3-4 evening courses (2 hours' duration each). Moreover, a booster meeting (2 h) after 3 months and a facilitator visit to the physician's practice	7-8

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Table 2 (continued)

Study	Communication Training	No. of Sessions
	(one-half hour) after 6 months was included. The residential course was mainly based on skills training in groups using video supervision but also comprised theoretical presentations covering the somatization concept, patients' illness beliefs, iatrogenic factors, and the etiology and epidemiology of somatization. The objectives of the program were: knowledge about the condition, introduce physicians to interview and treatment techniques, and change attitude.	
Haskard et al 2008 ¹⁹	Three 6-h workshops built around a new model of clinician-patient communication, the "4E Model" (Engage, Empathize, Educate, and Enlist), which includes key clinician-patient communication competencies. The workshops were interactive and involved reflective exercises, role play, and video case examples. The first 6-h interactive workshop focused on: engaging; empathizing; educating patients of diagnosis, prognosis and treatment; and enlisting patients in mutually agreed upon treatment plans. The second 6-h workshop focused on: patient adherence; enhancing patients' health lifestyles; reducing health risk behaviors; and building confidence and conviction in patients to make health behavior changes. The last 6-h workshop focused on: sources and nature of interpersonal difficulties between clinicians and patients; recognizing and assessing tension in relationships; acknowledging problems, discovering meaning; showing compassion; setting boundaries; and helping patients find additional support.	3
Jensen et al 2011 ¹⁶	Doctors participated in the 20-h course over 2 consecutive days. The course consisted of a 50/50 mix of theory and group sessions including role plays with plenary debriefs after each group. The theory-based plenary sessions were about the core issues of good communication, structured according to the principles of the Four Habits. In the role plays, doctors played patients or themselves.	2
Kennedy et al 2004 ²⁶	2-h training aimed to provide principles of patient-centered style. The learning techniques of role play and video feedback were used.	1
Lewis et al 1991 ³⁴	Clinicians' training used a 15-min videotape and aimed to: think goals of medical visit as a competent, responsible participant in health care; model some interpersonal and communication skills needed to achieve the goals; and provide research evidence suggesting the importance of patient-inclusive model of communication. Physicians viewed the videotape that presented research evidence on the health consequences of physician-patient communication and on changes in patients' understanding of health-related information. Vignettes of medical visits demonstrated a number of communication skills including: building rapport with patients; checking on patients' understanding of medical information; handling incorrect or inadequate information provided by patients; and facilitating their expression of concerns. Physicians saw the videotape as part of a 1-h training session in which they received research articles related to the health consequences of effective communication, examples of cognitively appropriate interviewing techniques, and an acronym designed to remind them of critical interviewing skills. At 3, 8, and 15 mo after the intervention, physicians received a brief booster: a written summary of the intervention, data on the reported implementation of each communication goal, and a form for them to self-assess their progress in implementing each communication goal.	1
Loh et al 2007 ³⁵	Clinicians completed modules on guideline-concordant depression care. The modules also included content on enhancing skills for involving patients in the decision-making process during the medical encounter. Specific aspects of the modules included specialized lectures with accompanying questions and discussion rounds, facilitation practice, role playing, and video exemplars of high-quality shared decision making. Standardized case vignettes and case studies from the general practice were used. The training took place within a 6-mo period, which included 5 training program events, each including 4 discrete modules.	5
Sheffer 1999 ^{36, a}	Up to 4 encounters with patient-instructors during 3-mo period before study. Patient-instructor gave feedback and discussed clinicians' performance during consultation.	4
Shilling et al 2003 ³⁷	3-d training incorporating cognitive, experiential and behavioral components. Clinicians worked in small groups led by an experienced facilitator together with a core team of 6 patient simulators skilled in providing constructive feedback. A typical consultation filmed in each clinician was reviewed in depth at the start of the course training. Clinicians identified the communication problems most important to them and worked on ways of resolving at least one of these through role play with simulated patients followed by video review and group discussion. The feedback pack consisted of comprehensive written feedback based on analysis of the clinicians' communication skills displayed in all videotaped consultations, patients' satisfaction scores and comments after consultations, congruency of the clinicians' ratings of patients' distress and understanding of information with patients' self-report, and brief exit interviews with the researchers. A glossary of communication skills words and phrases to assist the clinicians' understanding of their feedback (eg, definitions of leading or focused, open questions); and an annotated bibliography and reprints of key references about effective communication skills were provided.	3
Suarez-Almazor et al 2010 ^{38, a}	Clinicians conveyed high expectations of improvement, using positive utterances such as "I think this will work for you," "I've had a lot of success with treating knee pain," and "Most of my patients get better." A high expectations brochure was developed and given to patients. The research coordinator assisting with these patients was also trained to interact with a high expectations style. Training materials were developed. Before the trial started, clinicians participated in two 2-d training sessions including didactic instruction, coaching, and group role play to practice the assigned style, with video recording to provide feedback.	2
Wetzels et al 2005 ¹⁷	A 30-min practice visit, in which clinicians were motivated to involve patients. The SWOT (strengths, weaknesses, opportunities, and threats) model was used to help the clinicians consider all aspects of involvement.	1

N/A, not available.

^a Musculoskeletal area.

Table 3. PEDro Scores of Included Trials (n = 19)

Study	Random Allocation	Concealed Allocation	Groups		Participant Blinding	Therapist Blinding	Assessor Blinding	<15% Dropouts	Intention-to-Treat Analysis	Between-Group Difference	Point Estimate and Variability	Total (0-10)
			Similar at Baseline	Blinding								
Alder et al 2007 ²⁷	Y	N	Y	Y	N	Y	Y	N	Y	Y	7	
Ammentop et al 2009 ²⁸	Y	Y	N	Y	N	Y	Y	N	Y	Y	7	
Bernhard et al 2011 ²⁰	Y	N	Y	N	N	N	N	N	Y	N	3	
Bieber et al 2008 ²⁸	Y	Y	N	Y	N	Y	N	Y	Y	Y	7	
Brown et al 1999 ¹⁸	Y	N	Y	N	N	N	Y	N	Y	Y	5	
Cals et al 2009 ³⁰	Y	N	N	N	N	N	Y	Y	Y	Y	5	
Chassany et al 2006 ³¹	Y	N	Y	N	N	N	Y	Y	Y	Y	6	
Edwards et al 2004 ¹⁵	Y	N	N	N	N	N	N	N	Y	Y	3	
Evans et al 1987 ³²	Y	N	N	N	N	N	Y	N	Y	Y	4	
Frostholm et al 2005 ³³	Y	N	N	N	N	N	N	N	Y	Y	3	
Haskard et al 2008 ¹⁹	Y	N	Y	N	N	N	Y	N	Y	Y	5	
Jensen et al 2011 ¹⁶	Y	N	Y	N	N	Y	N	Y	Y	Y	6	
Kennedy et al 2004 ²⁶	Y	N	Y	N	N	N	N	Y	Y	Y	5	
Lewis et al 1991 ³⁴	Y	N	N	N	N	N	N	N	Y	Y	3	
Loh et al 2007 ³⁵	Y	Y	Y	N	N	N	N	N	Y	Y	5	
Sheffer 1999 ³⁶	Y	N	N	N	N	N	N	N	Y	Y	3	
Shilling et al 2003 ³⁷	Y	N	N	N	N	N	N	N	Y	Y	3	
Suarez-Almazor et al 2010 ³⁸	Y	Y	Y	N	N	N	Y	Y	Y	Y	7	
Wetzels et al 2005 ¹⁷	Y	Y	Y	N	N	N	N	Y	Y	Y	6	
TOTAL	19	5	10	3	0	4	8	7	19	18	4.9/10	

N, no; Y, yes.

absence of an intention-to-treat analysis; and absence of report of point estimates and variability (Table 3).

Effectiveness of Communication Skills Training for Clinicians on Patients' Satisfaction With Care, Pain, and Disability

Figures 2 and 3 show meta-analyses for patients' satisfaction with care and pain and disability, respectively. Appendix B shows extracted data transformed and imputations (ie, means, SDs, and sample size for the included trials).

Satisfaction With Care. Pooled data of the 16 comparisons from 15 original trials provided weighted mean difference for patients' satisfaction with care of 4.1 points (95% confidence interval [CI], 1.1-7.0) on a 100-point scale (Fig 2). Publication bias was not detected (Fig 4). According to the GRADE system used in this review to interpret the results,

there is low-quality evidence that clinicians' communication training has small but statistically significant effects when compared to control interventions on patients' satisfaction with care.

Two other trials^{28,30} compared proportion of satisfied patients between the communication training and control groups and found no statistically significant differences between groups ($P > .05$) with high satisfaction levels for both groups. Another trial³³ investigated whether the intervention predicted patients' satisfaction with care and reported that communication training predicted higher satisfaction levels (odds ratio [OR], 0.7; 95% CI, 0.5-1.0).

Pain and Disability. For pain and disability, pooling of 2 trials^{31,38} (n = 971 patients) provided small effects favoring the intervention compared to control at short-term follow-up (Fig 3). Weighted mean differences for pain and disability were, respectively, -3.8 points (95% CI, -6.5 to -1.1)

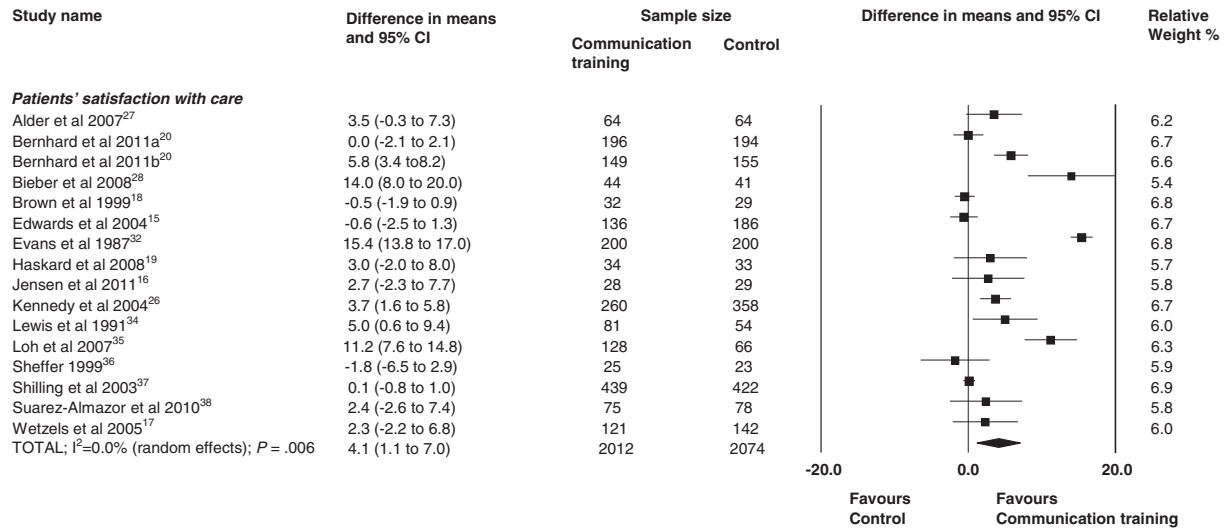


Fig 2. Pooled results for patients' satisfaction with care (communication training vs control). Right side favors the intervention.

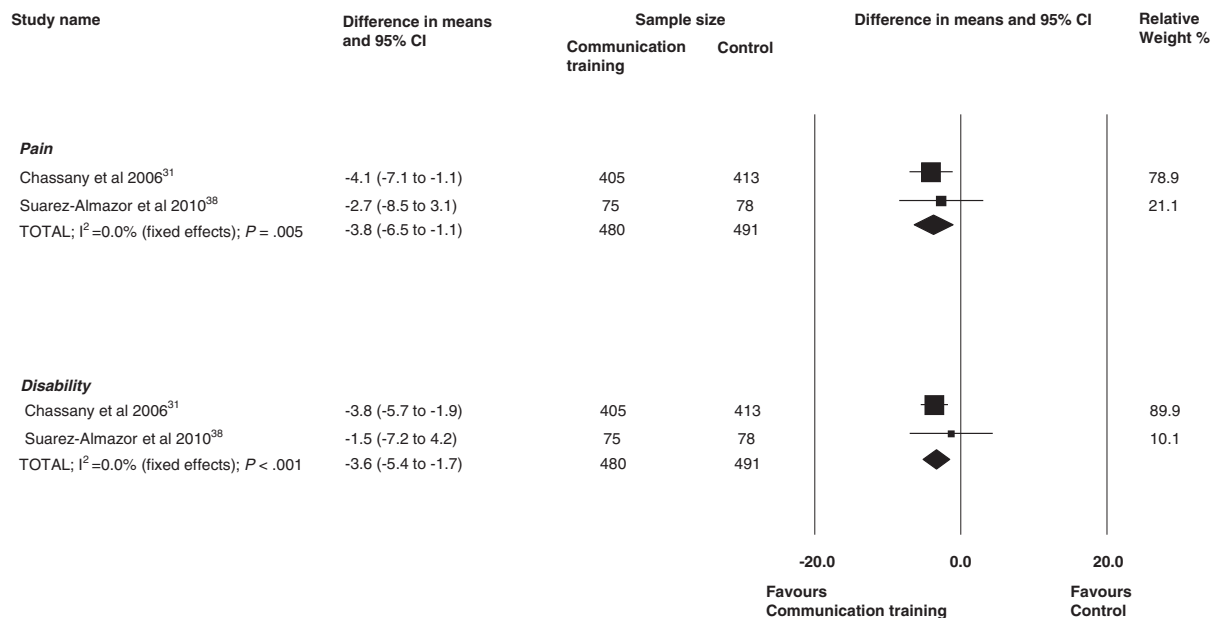


Fig 3. Pooled results for pain and disability (communication training vs control). Left side favors the intervention.

and -3.6 (95% CI, -5.4 to -1.7) on a 100-point scale. Based on the GRADE system, there is moderate-quality evidence that communication training for clinicians has small effects on pain and disability when compared to control interventions.

DISCUSSION

Communication training for clinicians has been advocated to improve clinical outcomes in primary care and rehabilitation settings.^{2-4,11,12} Nevertheless, this review provides evidence

that the effects of communication training for clinicians on patients' clinical outcomes were small.²² Training that emphasizes patients' participation showed effects across comparisons, which were statistically significant, although smaller than 5 points on a 100-point scale for satisfaction with care, pain, and disability. Current evidence shows that further research is very likely to have an important impact on our confidence in the estimate for patients' satisfaction with care and is likely to have an impact on our confidence in the estimate for pain and disability. Arguably, the small effects of communication training may be additional to specific effects of treatment rituals designed to decrease, for instance, pain and

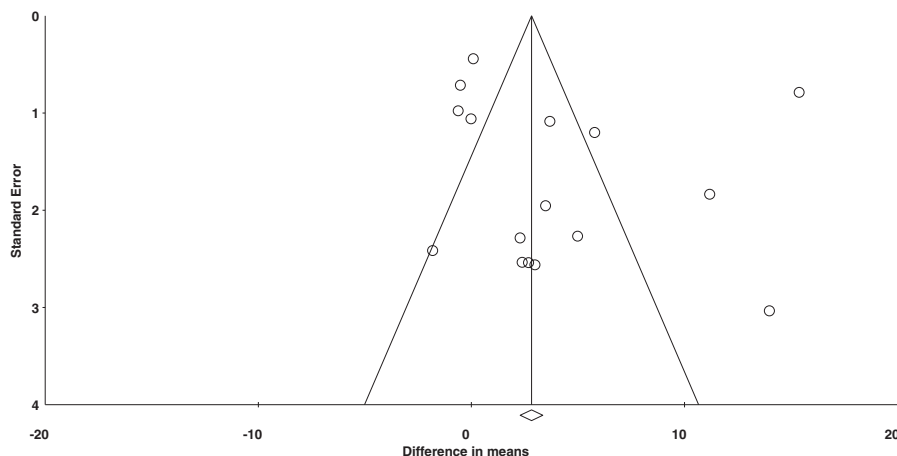


Fig 4. Funnel plot of SE by difference in means for the outcome patients' satisfaction with care ($n = 16$).

disability.³⁹ However, whether the additional effect provided by training clinicians' communication skills justifies the costs incurred with its implementation is still debatable.

A previous review¹¹ in the field of oncology showed small effects⁴⁰ favoring communication training compared to control interventions on satisfaction with care (ie, most standardized mean differences were < 0.20 , ranging from 0.07 to 0.70). Our results were consistent with evidence in oncology and suggest that current communication training effects are small for satisfaction with care, pain, and disability in primary care and rehabilitation settings. Interestingly, another review¹² including nonrandomized trials showed moderate effects of communication training on clinicians' communication skills (standardized mean difference of 0.54; 95% CI, 0.27-0.81); however, no significant effects were found on clinical outcomes. Hence, although communication training seems to be effective for changing clinicians' communication skills, it has only small effects on the patients' outcomes investigated in our review. This is the first systematic review to investigate the effectiveness of communication training for clinicians that included only randomized controlled trials in primary care and rehabilitation settings. We believe that our review provides the best available evidence to guide clinicians in primary care and rehabilitation settings, including allied health professionals.

Communication training for clinicians has moderate effects on clinicians' communication skills,¹² although our findings suggest that it is a long way from communication training to shifts in improvements in communication skills and then changes in patients' outcomes. The pathway or processes including variables that are thought to be intermediate or mediators in the pathway toward outcomes are complex, and patients' outcomes may not be the best benchmarks to investigate the effectiveness of communication training for clinicians. The effect of an appropriate interaction might facilitate active treatments for complex conditions such as low back pain to reach the smallest worthwhile effects.⁴¹ For instance, where exercise reduces pain by 14.0 points (95% CI,

6.0-21.0) on a 100-point scale in a typical patient with chronic low back pain, we argue that, with the additional effect of an improved patient-clinician interaction, the treatment benefits of exercise could reach the threshold considered by patients as being the smallest worthwhile effect for low back pain. Patients with chronic low back pain need to see on average 19.0 points (SD, 18) reduction in pain on a 100-point scale to consider exercise worthwhile.⁴²

There is limited evidence concerning the quality of frameworks in general underpinning communication training for clinicians, and those engaged in training have to rely on these limited resources. Arguably, specific verbal and nonverbal skills during patient-clinician interaction might impact on the effectiveness of communication training. Rapport building, up-front collaborative agenda setting, and acknowledging social and emotional concerns have emerged as potential domains to improve quality of care and efficiency.⁴³ For instance, emotional support (eg, length of consultation, interest, and caring) has consistently been associated with therapeutic alliance⁴⁴ and clinical outcomes⁸ and might be a specific skill to focus on. Our research group has conducted a systematic review to investigate the verbal and nonverbal factors and interaction styles associated with satisfaction with care.⁸ We found that some verbal and nonverbal factors concerning emotional support were consistently associated with higher levels of satisfaction with care (ie, most correlation values ranged from 0.21 to 0.41). Further research exploring potentially communication skills likely to impact on clinical outcomes is recommended. It remains unclear which specific communication skills should be addressed during communication skills training for clinicians.

A challenge in designing effective training for clinicians is the possibility of ceiling effects of communication skills. Many clinicians may already have adequate communication skills, and large improvements are unlikely to be achieved. This raises the question of indicators for training and whether there are clinicians with certain skills who would benefit most from these interventions.

LIMITATIONS AND FUTURE STUDIES

A limitation that we faced in the present review was the heterogeneity in the measurement of satisfaction with care. A potential explanation for that heterogeneity is the different measurement instruments to capture patients' satisfaction with care used in the included trials. Moreover, these different measurement instruments may assess different aspects of satisfaction with care, such as patients' satisfaction with communication or with decision making.^{18,20} This problem was reported by previous studies^{8,11}; however, the problem persists. To analyze effects of clinicians' communication training on the broad outcome patients' satisfaction with care described by the World Health Organization¹³ and reported in the literature,^{8,11,12} we transformed extracted data to a common 100-point scale and pooled them using random-effects model. That is recommended by the Cochrane Collaboration handbook to minimize heterogeneity among trials.²¹ Further limitations of the evidence include the methodological flaws of included trials. For instance, common problems included lack of concealed allocation, lack of similarity of groups at baseline, lack of blinding, dropouts more than 15%, and not reporting analyses by intention to treat. All these methodological flaws can potentially introduce confounding bias. Future trials should address these methodological flaws. In addition, few trials investigated the effectiveness of communication training for clinicians on the patients' outcomes of pain and disability, and its current evidence is limited.

Further investigation on specific communication skills that may influence the effects of communication training is warranted. In addition, further research should investigate whether communication training for clinicians is effective on other outcomes such as rehabilitation programs adherence. We caution that it would be premature to remove communication training from the curricula for clinicians in primary care and rehabilitation settings.

CONCLUSION

This study found that communication training for clinicians has small effects on patients' satisfaction with care, pain, and disability. The current size of training effects on the investigated patients' clinical outcomes challenges investing in the currently proposed clinicians' communication training methods to improve patients' clinical outcomes.

FUNDING SOURCES AND POTENTIAL CONFLICTS OF INTEREST

No funding sources or conflicts of interest were reported for this study.

CONTRIBUTORSHIP INFORMATION

Concept development (provided idea for the research):
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Design (planned the methods to generate the results):
V.C.O., M.L.F., R.F.F., K.R., P.H.F.

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Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results):
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Critical review (revised manuscript for intellectual content, this does not relate to spelling and grammar checking): V.C.O., M.L.F., R.Z.P., R.F.F., K.R., P.H.F.

Practical Applications

- This was the first systematic review to investigate the effectiveness of communication training for clinicians that included only randomized controlled trials in primary care and rehabilitation settings.
- Findings provided evidence that the effects of communication training for clinicians are small on patients' satisfaction with care, pain, and disability.
- Size of training effects on the investigated patients' clinical outcomes challenges investing in the currently proposed clinicians' communication training to improve patients' clinical outcomes.

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Appendix A. Search Strategy Conducted on November 10, 2012, and Updated on June 1, 2015

Ovid (Medline, AMED, PsycINFO, Cochrane)

1. randomized controlled trial\$.mp. or Randomized Controlled Trial/
2. controlled clinical trial\$.mp. or Controlled Clinical Trial/
3. random allocation.mp. or Random Allocation/
4. double-blind method.mp. or Double-Blind Method/
5. single-blind method.mp. or Single-Blind Method/
6. clinical trial\$.mp. or Clinical Trial/
7. random\$.mp.
8. Comparative Study/
9. evaluation studies.mp. or Evaluation Studies/
10. follow-up studies.mp. or Follow-Up Studies/
11. prospective studies.mp. or Prospective Studies/
12. cross-over studies.mp. or Cross-Over Studies/
13. control\$.mp.
14. prospective\$.mp.
15. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
16. health professional\$.mp.
17. physician\$.mp.
18. doctor\$.mp.
19. clinician\$.mp.
20. health practitioner\$.mp.
21. health provider\$.mp.
22. communication\$.mp.
23. training\$.mp.
24. intervention\$.mp.
25. 23 or 24
26. therapist\$.mp.
27. 16 or 17 or 18 or 19 or 20 or 21 or 26
28. 22 and 25 and 27
29. 15 and 28

Ebsco (CINAHL)

- S1. double blind studies
 - S2. single blind studies
 - S3. clinical trials
 - S4. ("placebo\$") or (MH "Placebos")
 - S5. (MH "Study Design+") or (MH "Experimental Studies+")
 - S6. (MH "Comparative Studies") or (MH "Multicenter Studies") or (MH "Multimethod Studies")
 - S7. (MH "Prospective Studies+") or (MH "Concurrent Prospective Studies")
 - S8. "random"
 - S9. S1 or S2 or S3 or S4 or S5 or S6 or S7 or S8
 - S10. ("Therapist\$") or (MH "Australian Association of Occupational Therapists") or (MH "Massage Therapists") or (MH "Recreational Therapists") or (MH "Respiratory Therapists") or (MH "Occupational Therapist Attitudes") or (MH "Physical Therapist Attitudes") or (MH "Respiratory Therapist Attitudes") or (MH "British Association and College of Occupational Therapists") or (MH "Canadian Association of Occupational Therapists")
 - S11. ("Health Professional\$") or (MH "Traveling Health Professionals") or (MH "Impairment, Health Professional") or (MH "Health Professional, Disabled+") or (MH "Health Personnel as Patients+") or (MH "Health Personnel, Infected") or (MH "Health Personnel, Minority+") or (MH "Multiskilled Health Practitioners") or (MH "Disease Transmission, Professional-to-Patient") or (MH "Foreign Professional Personnel+")
 - S12. ("Physician\$") or (MH "Physician's Role") or (MH "Physicians, Emergency") or (MH "Physicians, Family") or (MH "Physicians, Sports Team") or (MH "Physicians, Women") or (MH "American College of Emergency Physicians") or (MH "Physicians+") or (MH "Education, Physician Assistants") or (MH "Physician Assistants")
 - S13. ("Doctor\$") or (MH "Doctorally Prepared Nurses") or (MH "Education, Doctoral+") or (MH "Education, Nursing, Doctoral") or (MH "Education, Nursing, Post-Doctoral") or (MH "Education, Post-Doctoral+") or (MH "Students, Nursing, Doctoral") or (MH "Chiropractors") or (MH "Physicians+") or (MH "Physicians, Family")
 - S14. ("Clinician\$") or (MH "Expert Clinicians+") or (MH "Novice Clinicians+") or (MH "Clinical Nurse Specialists") or (MH "Decision Support Systems, Clinical")
 - S15. ("Health Practitioner\$") or (MH "Multiskilled Health Practitioners") or (MH "National Association of Nurse Practitioners in Reproductive Health") or (MH "Community Practitioners' and Health Visitors' Association") or (MH "Alternative Health Personnel+") or (MH "Rural Health Personnel")
 - S16. ("Health Care Provider\$") or (MH "Child Care Providers") or (MH "Health Care Delivery+") or (MH "Health Care Delivery, Integrated") or (MH "Health Care Errors+") or (MH "Health Care Reform")
 - S17. "\$therapist"
-

(continued)

Ovid (Medline, AMED, PsycINFO, Cochrane)

S18. S10 or S11 or S12 or S13 or S14 or S15 or S16 or S17

S19. ("Communication\$") or (MH "Communications Media+") or (MH "Nonverbal Communication+") or (MH "Communication Barriers")

S20. Training

S21. "intervention"

S22. S20 or S21

S23. S18 and S19 and S22

S24. S9 and S23

PEDro

Title and abstract: communication

Therapy: no selection

Problem: no selection

Body part: no selection

Subdiscipline: no selection

Method: clinical trial

Embase

16. #12 AND #15

15. #14 NOT #13

14. #1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8

13. 'animal' OR 'animal'/exp OR animal

12. #9 AND #10 AND #11

11. 'training'/exp OR 'training' OR 'intervention'

10. 'communication'/exp OR communication

9. 'therapist' OR 'health professional'/exp OR 'health professional' OR 'physician'/exp OR 'physician' OR 'doctor'/exp OR 'doctor' OR 'clinician'
OR 'health practitioner'/exp OR 'health practitioner' OR 'health provider'

8. random\$

7. clinical AND trial\$.

6. 'single blind' AND ('method'/exp OR method)

5. 'double blind' AND ('method'/exp OR method)

4. random AND allocation

3. randomised AND controlled AND trial\$

2. controlled AND clinical AND trial

1. randomized AND controlled AND trial

Appendix B. Transformed Data and Imputations for Included Trials

Study	Communication Training			Control		
	Mean	SD	Sample	Mean	SD	Sample
Satisfaction with care (transformed to 0-100 scale)						
Alder et al 2007 ²⁷	60.8	12.3	64	57.3	9.7	64
Bernhard et al 2011a ^{20,a,b}	59.6	10.5	196	59.6	10.5	194
Bernhard et al 2011b ^{20,a,b}	71.2	10.5	149	65.4	10.5	155
Bieber et al 2008 ²⁸	84.0	14.0	44	70.0	14.0	41
Brown et al 1999 ^{18, a}	0	2.8	32	0.5	2.8	29
Edwards et al 2004 ^{15, c}	-0.6	8.7	136	0.0	8.7	186
Evans et al 1987 ³²	99.3	3.9	200	83.9	10.5	200
Haskard et al 2008 ^{19, a}	91.0	10.5	34	88.0	10.5	33
Jensen et al 2011 ^{16, c}	2.7	9.6	28	0.0	9.6	29
Kennedy et al 2004 ²⁶	71.9	13.2	260	68.2	13.5	358
Lewis et al 1991 ³⁴	82.5	13.0	81	77.5	12.8	54
Loh et al 2007 ³⁵	91.2	10.8	128	80.0	14.4	66
Sheffer 1999 ³⁶	84.3	9.1	25	86.1	7.5	23
Shilling et al 2003 ³⁷	96.8	6.7	439	96.7	6.4	422
Suarez-Almazor et al 2010 ³⁸	82.6	15.6	75	80.2	15.8	78
Wetzels et al 2005 ^{17, c}	2.3	18.5	121	0.0	18.5	142
Pain (transformed to 0-100 scale)						
Chassany et al 2006 ³¹	-28.7	22.9	405	-24.6	20.9	413
Suarez-Almazor et al 2010 ³⁸	27.0	17.9	75	29.7	18.7	78
Disability (transformed to 0-100 scale)						
Chassany et al 2006 ³¹	-13.3	15.3	405	-9.5	12.6	413
Suarez-Almazor et al 2010 ³⁸	29.7	18.0	75	31.2	18.2	78

SD, standard deviation.

^a SD estimated based on average SD of other included trials.

^b Investigated effects in 2 different settings separately.

^c SD estimated based on confidence intervals.