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Communication skills training for healthcare professionals working with people who have cancer (Review)

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[Intervention Review]

Communication skills training for healthcare professionals working with people who have cancer

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ABSTRACT

Background

This is the third update of a review that was originally published in the Cochrane Library in 2002, Issue 2. People with cancer, their families and carers have a high prevalence of psychological stress, which may be minimised by effective communication and support from their attending healthcare professionals (HCPs). Research suggests communication skills do not reliably improve with experience, therefore, considerable effort is dedicated to courses that may improve communication skills for HCPs involved in cancer care. A variety of communication skills training (CST) courses are in practice. We conducted this review to determine whether CST works and which types of CST, if any, are the most effective.

Objectives

To assess whether communication skills training is effective in changing behaviour of HCPs working in cancer care and in improving HCP well-being, patient health status and satisfaction.

Search methods

For this update, we searched the following electronic databases: Cochrane Central Register of Controlled Trials (CENTRAL; 2018, Issue 4), MEDLINE via Ovid, Embase via Ovid, PsycInfo and CINAHL up to May 2018. In addition, we searched the US National Library of Medicine Clinical Trial Registry and handsearched the reference lists of relevant articles and conference proceedings for additional studies.

Selection criteria

The original review was a narrative review that included randomised controlled trials (RCTs) and controlled before-and-after studies. In updated versions, we limited our criteria to RCTs evaluating CST compared with no CST or other CST in HCPs working in cancer care. Primary outcomes were changes in HCP communication skills measured in interactions with real or simulated people with cancer or both, using objective scales. We excluded studies whose focus was communication skills in encounters related to informed consent for research.

Data collection and analysis

Two review authors independently assessed trials and extracted data to a pre-designed data collection form. We pooled data using the random-effects method. For continuous data, we used standardised mean differences (SMDs).

Main results

We included 17 RCTs conducted mainly in outpatient settings. Eleven trials compared CST with no CST intervention; three trials compared the effect of a follow-up CST intervention after initial CST training; two trials compared the effect of CST and patient coaching; and one trial compared two types of CST. The types of CST courses evaluated in these trials were diverse. Study participants included oncologists, residents, other doctors, nurses and a mixed team of HCPs. Overall, 1240 HCPs participated (612 doctors including 151 residents, 532 nurses, and 96 mixed HCPs).

Ten trials contributed data to the meta-analyses. HCPs in the intervention groups were more likely to use open questions in the post-intervention interviews than the control group (SMD 0.25, 95% CI 0.02 to 0.48; $P = 0.03$, $I^2 = 62\%$; 5 studies, 796 participant interviews; very low-certainty evidence); more likely to show empathy towards their patients (SMD 0.18, 95% CI 0.05 to 0.32; $P = 0.008$, $I^2 = 0\%$; 6 studies, 844 participant interviews; moderate-certainty evidence), and less likely to give facts only (SMD -0.26, 95% CI -0.51 to -0.01; $P = 0.05$, $I^2 = 68\%$; 5 studies, 780 participant interviews; low-certainty evidence). Evidence suggesting no difference between CST and no CST on eliciting patient concerns and providing appropriate information was of a moderate-certainty. There was no evidence of differences in the other HCP communication skills, including clarifying and/or summarising information, and negotiation. Doctors and nurses did not perform differently for any HCP outcomes.

There were no differences between the groups with regard to HCP 'burnout' (low-certainty evidence) nor with regard to patient satisfaction or patient perception of the HCPs communication skills (very low-certainty evidence). Out of the 17 included RCTs 15 were considered to be at a low risk of overall bias.

Authors' conclusions

Various CST courses appear to be effective in improving HCP communication skills related to supportive skills and to help HCPs to be less likely to give facts only without individualising their responses to the patient's emotions or offering support. We were unable to determine whether the effects of CST are sustained over time, whether consolidation sessions are necessary, and which types of CST programs are most likely to work. We found no evidence to support a beneficial effect of CST on HCP 'burnout', the mental or physical health and satisfaction of people with cancer.

PLAIN LANGUAGE SUMMARY

Do courses aimed at improving the way healthcare professionals communicate with people who have cancer impact on their physical and mental health?

What is the aim of this review?

The aim of this Cochrane review was to find out if communication skills training (CST) for healthcare professionals working with people who have cancer has an impact on how healthcare professionals communicate and on the physical and mental health of the patients.

What types of studies did we include?

We included only randomised trials (RCTs) that evaluated the impact of CST for healthcare professionals (doctors, nurses and other allied health professionals) who work with people with cancer. We included different types of CST and evaluated its impact on healthcare professionals and their patients, through the following reported outcomes: use of open questions, elicited concerns, delivery of appropriate information, empathy demonstration, use of fact contents, healthcare professional 'burnout' and patient anxiety.

What are the main results of the review?

We found 17 RCTs comparing CST with no CST. The studies used encounters with real and simulated patients to measure the communication outcomes. The evidence on whether CST leads to an improvement of the use of open questions is very uncertain. However, we did show that CST probably improves healthcare professional empathy and reduces the likelihood of their giving facts only without individualising their responses to the patient's emotions or offering support. . CST probably does not have an effect on the ability of healthcare professionals to elicit concerns or to give appropriate information.

Evidence suggesting that CST might prevent healthcare professional 'burnout' is of low-certainty and it is very uncertain whether CST has an effect on patient anxiety.

What do they mean?

CST probably helps healthcare professionals to empathise more with their patients, and probably improves some aspects of their communication skills. These changes might lead to better patient outcomes; however, evidence on the latter is very uncertain and more research is needed.

SUMMARY OF FINDINGS

Summary of findings for the main comparison. CST compared to control for healthcare professionals working with people who have cancer

Communication skills training for healthcare professionals working with people who have cancer

Patient or population: Healthcare professionals working with people who have cancer

Intervention: Communication skills training

Comparison: No communication skills training

Outcomes	Anticipated absolute effects* (95% CI)	Relative effect (95% CI)	N° of participants (studies)	Certainty of the evidence (GRADE)	Comments
	Risk with CST				
Used open questions	SMD 0.25 higher (0.02 higher to 0.48 higher)	—	796 (5 RCTs)	⊕⊕⊕⊕ Very low ^{1 2 3}	It is not clear whether communication skills training leads to an improvement of used open questions, because the certainty of the evidence is very low
Elicited concerns	SMD 0.24 higher (0.12 lower to 0.60 higher)	—	221 (3 RCTs)	⊕⊕⊕⊖ Moderate ²	Communication skills training probably increases elicited concerns.
Gave appropriate information	SMD 0.08 lower (0.26 lower to 0.10 higher)	—	489 (4 RCTs)	⊕⊕⊕⊖ Moderate ³	Communication skills training probably does not increase the delivery of appropriate information.
Showed empathy	SMD 0.18 higher (0.05 higher to 0.32 higher)	—	844 (6 RCTs)	⊕⊕⊕⊖ Moderate ^{2 3}	Communication skills training probably increases empathy demonstration
Gave facts only	SMD 0.26 lower (0.51 lower to 0.01 lower)	—	780 (5 RCTs)	⊕⊕⊕⊖ Low ^{2 3 4}	Communication skills training may decrease fact contents, but the certainty of this evidence is low
Emotional exhaustion: Maslach Burnout Inventory:	SMD 0.16 lower (0.44 lower to 0.12 higher)	—	202 (3 RCTs)	⊕⊕⊕⊖ Low ^{2 3}	Communication skills training may decrease emotional exhaustion, but the certainty of this evidence is low
Patient anxiety	SMD 0.17 higher (0.24 lower to 0.59 higher)	—	770 (3 RCTs)	⊕⊕⊕⊖ Very low ^{2 3 5}	It is not clear whether communication skills training leads to an improvement of patient anxiety, because the certainty of the evidence is very low

*The risk in the intervention group (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).

CI: Confidence interval; **RR:** Risk ratio

GRADE Working Group grades of evidence

High-certainty: We are very confident that the true effect lies close to that of the estimate of the effect

Moderate-certainty: We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different

Low-certainty: Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect

Very low-certainty: We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

¹ We downgraded two levels of certainty of evidence due to inconsistency because there are $I^2 = 74\%$ in simulated patients and 43.4% between real and simulated patients

² We downgraded one level of certainty of evidence due to imprecision because each end of confidence interval leads a different decision.

³ We downgraded one level of certainty of evidence due to risk of bias because most of trials have varied methodological limitations.

⁴ We downgraded one level of certainty of evidence due to inconsistency because there are $I^2 = 69\%$ in simulated patients, $I^2 = 52\%$ in real patients and 43,4% between real and simulated patients

⁵ We downgraded one level of certainty of evidence due to inconsistency evaluated with $I^2 = 72\%$

BACKGROUND

This is an updated version of a review that was originally published in the Cochrane Database of Systematic Reviews in 2002 (Fellowes 2002) and updated in 2004 (Moore 2004) and 2013 (Moore 2013). Good communication between healthcare professionals (HCPs) and patients is essential for high-quality health care. Effective communication benefits the well-being of patients and HCPs, influencing the rate of patient recovery, effective pain control, adherence to treatment regimens, and psychological functioning (Fallowfield 1990; Gattellari 2001; Stewart 1989; Stewart 1996; Vogel 2009). People with cancer have a high prevalence of psychological stress, and need emotional and social support. Hence, it is important that from the start there is adequate communication about the diagnosis, prognosis and treatment alternatives (Hack 2012). Furthermore, treatment of psychological stress may have a positive effect on quality of life (Girgis 2009).

Conversely, ineffective communication can leave patients feeling anxious, uncertain and generally dissatisfied with their care (Hagerty 2005), and has been linked to a lack of compliance with recommended treatment regimens (Turnberg 1997). Avoiding disclosing cancer as the diagnosis has been linked to higher rates of depression and anxiety and lower use of coping skills (Donovan-Kicken 2011). Complaints about HCPs made by patients frequently focus, not on a lack of clinical competence per se, but rather on a perceived failure of communication and an inability to adequately convey a sense of care (Moore 2011; Lussier 2005). Communication issues are an important factor in litigation (Levinson 1997).

Ineffective communication is also linked to increased stress, lack of job satisfaction and emotional burnout amongst HCPs (Fallowfield 1995; Ramirez 1995). Self-awareness, reflection and learning about communication skills may have benefits for health professionals, and prevent burnout.

Most people with cancer prefer a patient-centred or collaborative approach (Dowsett 2000; Hubbard 2008; Tariman 2010); however, there is a minority who prefer a more task-centred approach. Furthermore, patient preferences regarding the communication of bad news have been found to be culturally dependent (Fujimori 2009). This makes it imperative that HCPs understand the needs of the individual patient (Dowsett 2000; Sepucha 2010). The type of relationship that occurs in reality can be very different from that preferred by patients and doctors (Tariman 2010; Taylor 2011), and the literature suggests that people with cancer continue to have unmet communication needs (Hack 2005). Taylor 2011 reported that a majority of clinicians liked to include emotional issues during their interviews with people with cancer, however, clinical interviews tend to be predominated by biomedical discussion with only a minimal time dedicated to psychosocial issues (Hack 2012; Vail 2011).

The ability to communicate effectively is a pre-condition of qualification for most HCPs (ACGME 2009; CanMEDS 2011; GMC 2009). As communication skills do not reliably improve with experience alone (Cantwell 1997), communication skills training (CST) is mandatory in many training programs, therefore, considerable effort and expense is being dedicated to CST.

There has also been increasing interest in the effect of training patients in communication skills prior to their consultation (Kinnarsley 2007), including question prompts for people with

cancer (Brandes 2015), and it has been suggested that it may be more effective to train both HCPs and patients in communication skills.

Description of the intervention

CST courses or workshops generally focus on communication between HCPs and patients during the formal assessment procedure (interview), and include emphasis on skills for building a relationship, providing structure to the interview, initiating the session, gathering information, explaining, planning and closure (Silverman 2005). Building a relationship may be particularly relevant with people with cancer where promoting a greater disclosure of individual concerns and feelings may enable optimum care. Breaking bad news and shared decision-making have been other focuses of CST for HCPs involved in cancer care (Fallowfield 2004; Paul 2009).

Most approaches to teaching communication in health care incorporate cognitive, affective and behavioural components, with the general aim of promoting greater self-awareness in the HCP. CST based on acquiring skills may be more effective than programmes based on attitudes or specific tasks (Kurtz 2005), and is considered to be more effective if experiential. The essential components that facilitate learning have been highlighted in guidelines (Gysels 2004; Stiefel 2010) and include the following.

- Systematic delineation and definition of the essential skills (verbal, non-verbal and paralinguistic). Skills that are effective in communication with people with cancer are defined (e.g. the use of open questions, incorporating a psychosocial assessment, demonstrating empathy). Pitfalls include leading questions, focusing only on the physical and failing to explore the more psychological issues and premature reassurance. However, some claim that the evidence base for this definition of essential skills is still weak (Cegala 2002; Paul 2009).
- Observation of learners: through the use of learning techniques such as role-play, participants are then given the opportunity to practice their communication skills using facilitating behaviours and avoiding blocking behaviours in a 'safe' environment. Often, role-playing is aided by the use of simulated patients trained to represent someone with cancer, and who can provide a range of cues and responses to communication in the role-play, thus providing a safe opportunity for HCPs to practice communication skills without distressing patients (Aspegren 1999; Kruijver 2001; Nestel 2007).
- Well-intentioned, descriptive feedback, which may be verbal or written.
- Video or audio-recordings and review permitting self-reflection.
- Repeated practice.
- Active small group or one-to-one 'learner-centred' learning.
- Facilitators with training and experience (Bylund 2009).

CST has been delivered in a variety of ways, for example, via sessions integrated into degree or diploma studies (e.g. Wilkinson 1999) or three- to five-day workshops using actors as simulated patients (Fallowfield 1990; Heaven 1995; Razavi 2000). The optimal length for CST is under debate. Gysels 2004 argues that longer courses are more effective. However, in time-pressured health care, there is an expectation to train effectively in less on-site time. E-learning (learning conducted via electronic media, typically on the Internet) and B-learning (face-to-face training and online

education) are methods that perhaps should be incorporated in CST. There has been some move towards a unified approach to teaching communication skills for professionals who work within the cancer field (Arraras 2015).

There is a wide variety of models and approaches to trials of CST and interpreting the data is often hampered by poor methodological quality (Fallowfield 2004), and difficulty in recruitment of HCPs (Gyawali 2015). There has been some debate about the current paradigm that supports research and education in this area (Salmon 2017; Silverman 2017) and increasing interest in including the views of patients and professionals in the design of the CST course (Solomon 2017). In 2013, the third version of this Cochrane review concluded, based on 15 randomised controlled trials, that CST courses appear to be effective in improving some types of HCP communication skills particularly related to information gathering and supportive skills, but there was insufficient evidence to determine whether the effects of CST are sustained over time, whether consolidation sessions are necessary, and which types of CST programs are most likely to work (Moore 2011). Since then, other reviewers have reached the same conclusions in different ways (Barth 2011; Bylund 2010; Kissane 2012). Whilst some have suggested that these positive effects can be maintained over time, others have concluded that a strong evidence base for a significant effect on trial outcomes is lacking (Alvarez 2006), particularly for an effect on patient outcomes (Uitterhoeve 2010).

Why it is important to do this review

There has been much research in this area since the original Cochrane review was published, including several randomised controlled trials (RCTs), which were scant at the time of the original review. Other more recent reviews in the field have included a variety of studies with different study designs, however, none have conducted meta-analyses of the results from RCTs. By undertaking this systematic review and keeping it up-to-date, we aim to critically evaluate all RCTs that have investigated the effectiveness of CST for HCPs working in cancer care, in order to enable evidence-based teaching and practice in this important and expanding area. Furthermore, we hoped that a review and meta-analysis of data from such RCTs would provide stronger evidence of any potential benefits that CST may have on HCP behaviour and provide guidance on the optimal methodology and length of training, as well as how to ensure that these newly acquired skills are transferred to the workplace.

OBJECTIVES

To assess whether communication skills training (CST) is effective in changing behaviour of healthcare professionals (HCPs) working in cancer care and in improving HCP well-being, patient health status and satisfaction.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs), including cluster-randomised studies.

Types of participants

- *Types of healthcare professionals (HCPs):* all qualified HCPs (medical, nursing and allied health professionals including residents (i.e. doctors on post-graduate training courses) within all hospital, hospice and ambulatory care settings, working in cancer care. If a study included other non-professionals but the percentage of professionals in the sample was more than 60%. If a study also included HCPs working in non-cancer care and the percentage of HCPs working in cancer care was more than 60%. Training of intermediaries (e.g. interpreters, advocates, self-help groups) was not considered.
- *Types of patients:* men and women with a diagnosis of cancer, at any stage of treatment. If a study included people with other diagnoses but the people with cancer made up more than 60% of the study sample. We included studies that assessed interviews in both real and simulated patients (for definition see Appendix 1).
- *Types of encounters:* consultations and interviews where the care of people with cancer is the main aim. We excluded trials that studied encounters where the aim was to improve the quality of informed consent or to disclose information for informed patient consent to participate in a RCT.

Types of interventions

We included only studies in which the intervention group had communication skills training (CST) (e.g. study days, teaching pack, distance learning, workshops; and including any mode of training such as audio-tape feedback, videotape recording of interviews, role-play, group discussion, didactic teaching), and in which the control group received nothing beyond the usual, or received an alternative training to the intervention group. We included all types and approaches to teaching, any length of training and any focus of communication between professionals and people with cancer within the context of patient care. We excluded studies whose focus was communication skills in encounters related to informed consent for research. This specific type of CST is under discussion as the subject of a separate Cochrane review.

Types of outcome measures

We included outcomes that measured changes in HCP behaviour or skills, other HCP outcomes and patient-related outcomes at any time after the intervention. We anticipated that many of these outcomes would be measured by validated study-specific observational rating scales and potentially subject to a high degree of inter-trial methodological heterogeneity. Studies that only reported outcomes of changes in attitudes/knowledge on the part of the HCPs or patients without examining resulting changes in behaviour of HCPs were excluded from the review, as self-perceived improvements have been shown to be over-optimistic (Chant 2002; Dickson 2012).

Primary outcomes

HCP communication skills

- Information-gathering skills, such as open questions, leading questions, facilitation, clarifying and summarising
- Discovering the patients perspective such as eliciting concerns
- Explaining and planning skills such as giving the appropriate information, checking understanding, and negotiating procedures and future arrangements

- Supportive, building relationship skills such as empathy, responding to emotions/psychological utterances; and offering support
- Undesirable outcomes, including blocking behaviours such as interruptions and false reassurances, and providing facts only

Secondary outcomes

Other HCP outcomes

- Burnout

Patient-rated outcomes

- Patient health status
 - Anxiety level/psychological distress
 - Quality of life
- Patient Perception
 - Perception of HCP's communication skills: clarification, assessment of concerns, information, support, trust
 - Satisfaction

Outcomes of 'significant other'

- Perception of significant other
 - Perception of HCP's communication skills: clarification, assessment of concerns, information, support, trust
 - Satisfaction

Search methods for identification of studies

Electronic searches

For the original review, the following databases were searched.

- CENTRAL (the Cochrane Library, 2001, Issue 3)
- MEDLINE (1966 to November 2001)
- Embase (1980 to November 2001)
- PsycInfo (1887 to November 2001)
- CINAHL (1982 to November 2001)
- AMED (1985 to October 2001)
- SIGLE (Start to March 2002) (Grey literature database held by British Library)
- Dissertation Abstracts International (1861 to March 2002)
- Evidence-Based Medical Reviews (1991 to March/April 2001)

For the first and second updates of the review, the search strategy was modified by Jane Hayes (JH), Cochrane Gynaecological, Neuro-oncology and Orphan Cancers (CGNOC), who extended the searches of CENTRAL, MEDLINE, Embase, PsycInfo and CINAHL to November 2003 and February 2012. In addition, JH searched the Database of Reviews of Effects (DARE) in the Cochrane Library in September 2011. No language restrictions were applied. (See [Appendix 2](#), [Appendix 3](#), [Appendix 4](#) for search strategies).

For this (third update) review, we used the same search strategies. Jo Platt of the CGNOC extended the searches of CENTRAL, MEDLINE, Embase, PsycInfo and CINAHL to May 2018:

- Cochrane Central Register of Controlled Trials (CENTRAL; 2018, Issue 4)
- MEDLINE via Ovid (February 2012 to May week 4 2018)
- Embase via Ovid (February 2012 to 2018 week 22)
- PsycInfo (February 2012 to May 2018)

- CINAHL (February 2012 to May 2018)

No language restrictions were applied. We searched in Epistemonikos database for studies included in similar reviews.

Searching other resources

We searched the US National Library of Medicine Clinical Trial Registry (ClinicalTrials.gov) and handsearched the reference lists of relevant studies that we identified from the electronic searches and the conference abstracts of the annual International Psycho-Oncology Society meetings.

Data collection and analysis

Selection of studies

For the original review (Version 1), two of three review authors, Deborah Fellowes (DF), Susie Wilkinson (SW) and Philippa Moore (PM) independently applied inclusion criteria to each identified study. For the first and second update (Versions 2 and 3), two out of three review authors (PM and Solange Rivera Mercado (SRM) or Monica Grez Artigues (MGA)) independently evaluated identified studies for inclusion.

For this third update (Version 4), all articles found by the search strategy were submitted to the tool Collaboratron™ (Epistemonikos Foundation). The title and summary of all articles was reviewed independently by two of the review authors (PM, SRM, Gonzalo Bravo-Soto (GB) or Camila Olivares (CO)). Disagreements were resolved by discussion between the review authors. We identified potentially eligible studies from the search abstracts and retrieved the full text of the articles if the review criteria were met, or if the abstract contained insufficient information to assess the review criteria.

Data extraction and management

For the original data extraction, two review authors recorded the methodology (including study design, participants, sample size, intervention, length of follow-up and outcomes), quality and results of the included studies on a standardised data extraction form.

For the updated reviews, we designed a new data extraction form to include some specific outcomes and a 'Risk of bias' assessment. Two of the review authors extracted data independently (PM, SRM, MGA, GB, CO) and resolved any disagreement by discussion. We entered the data into Review Manager software Revman 5.3 (RevMan 2011) and checked for accuracy.

Assessment of risk of bias in included studies

The quality of eligible studies was assessed independently by three review authors (DF, SW, PM) for the original review, and by two of the review authors (PM, SRM, GB, CO) for the updates of the review. For included studies, we assessed the risk of bias as follows.

- Selection bias: random sequence generation and allocation concealment
- Detection bias: blinding of outcome assessment
- Attrition bias: incomplete outcome data
- Reporting bias: selective reporting of outcomes
- Other possible sources of bias

For further details see [Appendix 5](#).

Measures of treatment effect

Tools for assessing communication were diverse and usually consisted of validated questionnaires and scales. Data for all outcomes were continuous. We had planned to measure the mean difference (MD) between treatment arms, however most trials measured the same outcome using different scales, and so we used the standardised mean difference (SMD) for all meta-analyses.

Unit of analysis issues

The units of analyses included the HCPs, their patients and significant others, and their encounters/conversations/interviews. Two of the review authors (PM, SRM MG, GB or CO) reviewed unit of analysis issues according to [Higgins 2011](#), and differences were resolved by discussion. These included reports where there were multiple observations for the same outcome, e.g. several interviews involving the same HCP for the same outcome at different time points. When there were multiple time points for observation, we considered the data from the time point closest to the end of intervention as the post-intervention measurement. This ranged from immediately post-intervention to three months post-intervention. We also analysed the longest follow-up measurement for each study which ranged from two to 36 months.

Dealing with missing data

For included studies, we noted the level of attrition. Studies with greater than 20% attrition were considered at moderate to high risk of bias. For all outcomes, we attempted to carry out analyses on an intention-to-treat basis. We did not impute missing outcome data. If data were missing or only imputed data were reported, we attempted to contact trial authors to request the missing data.

Assessment of heterogeneity

We assessed the heterogeneity between studies by visual inspection of forest plots, by estimation of the percentage heterogeneity between trials (the I^2 statistic) ([Higgins 2003](#)), and by a formal statistical test of the significance of the heterogeneity ([Deeks 2001](#)). We considered a P value of less than 0.10 and an $I^2 > 50\%$ to represent substantial heterogeneity.

Assessment of reporting biases

We intended to examine funnel plots corresponding to meta-analysis of the primary outcome to assess the potential for small study effects such as publication bias if a sufficient number of studies were identified, however, there were fewer than 10 studies in all meta-analyses.

Data synthesis

We used the random-effects model with inverse variance weighting for all meta-analyses ([DerSimonian 1986](#)) and pooled the SMDs, presenting these results with the corresponding 95% confidence intervals (CIs).

Subgroup analysis and investigation of heterogeneity

To investigate heterogeneity, we carried out subgroup analyses of the primary outcomes according to staff group (e.g. doctors and nurses), patient type (e.g. real or simulated) and type of comparison (e.g. CST versus no-CST or CST with follow-up versus CST alone). We had intended to carry out subgroup analyses according to

the type of CST e.g. didactic teaching, distance learning, role-play workshops, however this was not possible due to the wide variety of interventions included. We will attempt subgroup analyses in future versions of this review.

Sensitivity analysis

We performed sensitivity analysis for the primary outcomes to investigate heterogeneity between studies. Three studies compared a CST intervention with no CST after giving preliminary CST to all HCP participants (intervention and control groups). Where any of these three studies contributed to meta-analyses, we performed sensitivity analyses by excluding these data and compared the results.

Summary of findings

We presented an the overall certainty of the evidence for each outcome according to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach, which takes into account issues not only related to internal validity (risk of bias, inconsistency, imprecision, publication bias), but also to external validity such as directness of results ([Langendam 2013](#)). We created a 'Summary of findings' table based on the methods described the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)) and using [GRADEpro GDT](#). We used the GRADE checklist and GRADE Working Group certainty of evidence definitions ([Meader 2014](#)). We downgraded the evidence from 'high' certainty by one level for serious (or by two for very serious) concerns for each limitation.

- **High-certainty:** We are very confident that the true effect lies close to that of the estimate of the effect.
- **Moderate-certainty:** We are moderately confident in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different.
- **Low-certainty:** Our confidence in the effect estimate is limited: The true effect may be substantially different from the estimate of the effect.
- **Very low-certainty:** We have very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

RESULTS

Description of studies

Results of the search

The searches of the original review and the three updates combined retrieved 3969 records, which we subsequently screened by title and abstract. We assessed 250 full-text papers for inclusion in this review. We excluded 175 of those articles for the reasons we have described in the [Characteristics of excluded studies](#) table.

In total, we included 17 trials (56 publications) that fulfilled our criteria (see the [Characteristics of included studies](#) table for details); two studies ([Fallowfield 2002](#); [Razavi 1993](#)) from the original review ([Fellows 2002](#)), one additional study ([Razavi 2002](#)) from the first update ([Moore 2004](#)), and 12 from the second update ([Moore 2013](#)) ([Butow 2008](#); [Fujimori 2014](#) (previously [Fujimori 2011](#)); [Goelz 2011](#); [Heaven 2006](#); [Kruijver 2001](#); [Lienard 2010](#); [Merckaert 2015](#) (previously [Gibon 2011](#)); [Razavi 2003](#); [Stewart 2007](#); [Tulsky 2011](#); [van Weert 2011](#); [Wilkinson 2008](#));. In this third update, we included

two new trials ([Epstein 2017](#); [Gorniewicz 2017](#)) and six articles with new information of trials already included: Bragard 2010, in: [Lienard 2010](#); Cavinet 2014, in: [Razavi 2002](#); Fujimori 2014 and Fujimori 2014, in: [Fujimori 2014](#); Merckaert 2015 and Leonard 2016, in: [Merckaert 2015](#).

We have summarised the study selection processes in [Figure 1](#); [Figure 2](#); [Figure 3](#)

Figure 1. Study flow diagram of original searches (November 2001 and November 2003)

Figure 2. Study flow diagram of updated searches to 28 February 2012. *Therefore, 15 studies and 44 records in total (updated search results plus original results)

Figure 3. Study flow diagram of updated searches from February 2012 to June 2018

Figure 3. (Continued)

Included studies

We identified 17 trials in total (56 publications). All trials were published in full. We found four protocols of ongoing trials and contacted the authors but received no further information at the time of publication (Berger-Höger 2015, De Figueiredo 2015; Libert 2017; Parker 2016).

- Eleven trials (Butow 2008; Fujimori 2014; Goelz 2011; Gorniewicz 2017; Kruijver 2001; Lienard 2010; Merckaert 2015; Razavi 1993; Razavi 2002; van Weert 2011; Wilkinson 2008) investigated the effect of communication skills training (CST) in the intervention group compared with a control group with no intervention.
- Two trials (Epstein 2017; van Weert 2011) compared the effect of CST and patient coaching in the intervention group compared with a control group with no intervention.
- One trial (Fallowfield 2002) compared two interventions in four comparative groups: CST or no training, and the provision of individual feedback or no feedback.
- Three trials assessed the effect of a follow-up intervention after initial training: six bi-monthly consolidation workshops of three hours in length (Razavi 2003), four half-day supervision sessions spread over four weeks (Heaven 2006), and CD-ROM (Tulsky 2011).
- One study compared different durations of CST (Stewart 2007).

Overall, the communication skills of 1249 healthcare professional (HCP) participants were reported in these studies and 2638 real patient encounters and 1605 simulated patient encounters were analysed. People with cancer were from various cancer care settings (63% women; mean age 61 years) and the studies enrolled the following HCPs.

- Doctors (10 trials): Butow 2008 = 30 oncologists; Epstein 2017 = 38 oncologists; Fallowfield 2002 = 160 oncologists; Fujimori 2014 = 30 oncologists; Goelz 2011 = 41 mainly haematology/oncology doctors; Gorniewicz 2017 = 38 residents; Lienard 2010 = 113 residents; Razavi 2003 = 63 physicians (62% oncologists); Stewart 2007 = 51 doctors (18 oncologists, 17 family physicians and 16 surgeons); Tulsky 2011 = 48 oncologists.
- Nurses (six studies): Heaven 2006 = 61 nurses; Kruijver 2001 = 53 nurses; Razavi 1993 = 72 nurses; Razavi 2002 = 116 nurses; van Weert 2011 = 48 nurses; Wilkinson 2008 = 172 nurses.

- Other HCPs: one trial studied the effect of CST on radiotherapy teams, which included a mixed group of 96 doctors, nurses, physicists and secretaries (Merckaert 2015).

The majority of the trials were conducted in Europe, with the exception of Stewart 2007 (Canada), Butow 2008 (Australia); Fujimori 2014 (Japan) and Tulsky 2011; Epstein 2017; Gorniewicz 2017 (USA). The average age of the HCP participants (15 studies) was 38 years and the number of HCPs in the studies ranged from 30 to 172 (mean, 71). Women comprised approximately 36% of participants in the trials involving doctors and approximately 92% of those involving nurses. Their experience working with people with cancer ranged from < two years to 24 years. With regard to previous CST, one study reported that 47% of the participants had received > 50 hours of CST prior to the trial (Heaven 2006); two studies reported that participants had received no previous CST (Goelz 2011; Wilkinson 2008).

Most studies were conducted in the hospital outpatient setting except for two studies that involved professionals working in the community (primary care and hospices) (Heaven 2006; Wilkinson 2008) and four that involved HCPs working in an inpatient setting (Kruijver 2001; Lienard 2010; Razavi 2002; van Weert 2011).

Type of intervention

The objective of most trials was to train the professionals in general communication skills (Fallowfield 2002; Fujimori 2014; Heaven 2006; Merckaert 2015; Razavi 1993; Razavi 2002; Stewart 2007; Wilkinson 2008). Two trials aimed to train professionals specifically to detect and respond to patients emotions (Butow 2008; Tulsky 2011). Four trials trained HCPs in giving bad news (Fujimori 2014; Gorniewicz 2017; Lienard 2010; Razavi 2003). Epstein 2017 and Goelz 2011 trained HCPs in addressing palliative care and the transition to palliative care, respectively. Kruijver 2001 concentrated on CST for nurses' admission interviews, and van Weert 2011 on CST for patient education on chemotherapy. Merckaert 2015 had a component of team communication training.

The patients' perspective was included in the design (one trial, Gorniewicz 2017) and videos of patients' perspectives were used in the intervention (two trials Gorniewicz 2017; Stewart 2007).

Most trials specified the use of learner-centred, experiential, adult education methods by experienced facilitators (13 trials: Butow 2008; Epstein 2017; Fallowfield 2002; Fujimori 2014; Goelz 2011;

Heaven 2006; Lienard 2010; Merckaert 2015; Razavi 2003; Stewart 2007; Tulskey 2011; van Weert 2011; Wilkinson 2008). Co-teaching was stated in nine studies (Butow 2008; Epstein 2017; Fujimori 2014; Goelz 2011; Heaven 2006; Kruijver 2001; Merckaert 2015; Razavi 1993; Razavi 2003). CST was taught in small groups (range three to 15 participants) in 12 trials (Butow 2008; Fallowfield 2002; Goelz 2011; Heaven 2006; Kruijver 2001; Lienard 2010; Razavi 1993; Razavi 2002; Razavi 2003; Stewart 2007; van Weert 2011; Wilkinson 2008). All small-group studies used role-play, although it was often unclear if the cases used were pre-defined or true cases of the participants, and if the role-play was between participants or with simulated patients. Two studies described individual on-site training (Epstein 2017; Heaven 2006). Real patients were used in the preparation of one intervention (Gorniewicz 2017) and in video-clips in van Weert 2011, but no trials used real patients during on-site training.

Most interventions included written material (nine trials); Butow 2008; Fallowfield 2002; Goelz 2011; Kruijver 2001; Razavi 1993; Razavi 2002; Razavi 2003; Stewart 2007; Wilkinson 2008), and short didactic lectures (10 trials; Butow 2008; Fujimori 2014; Goelz 2011; Kruijver 2001; Lienard 2010; Merckaert 2015; Razavi 1993; Razavi 2002; Razavi 2003; Wilkinson 2008). Eight trials specified the use of role-modelling (Butow 2008; Gorniewicz 2017; Heaven 2006; Kruijver 2001; Lienard 2010; Stewart 2007; Tulskey 2011; Wilkinson 2008); and 13 trials specified the use of audio or video material (Butow 2008; Epstein 2017; Fallowfield 2002; Fujimori 2014; Goelz 2011; Gorniewicz 2017; Heaven 2006; Kruijver 2001; Razavi 1993; Stewart 2007; Tulskey 2011; van Weert 2011; Wilkinson 2008). Two trials described b-learning: 1.5 hour video conferences as follow-up after the CST (Butow 2008), and e-learning prior to face-to-face session (van Weert 2011). Two trials described only e learning (Gorniewicz 2017; Tulskey 2011).

The participants received feedback from their tutors either verbally (Butow 2008; Epstein 2017; Goelz 2011; Heaven 2006; Kruijver 2001; Lienard 2010; Razavi 1993; Razavi 2002; Razavi 2003; Stewart 2007; Tulskey 2011; Wilkinson 2008), or in writing (Epstein 2017; Fallowfield 2002). In addition, there was feedback from the simulated patients (two trials Butow 2008; Epstein 2017), and from the participants' peers (three trials Goelz 2011; Fujimori 2014; van Weert 2011). No study stated whether the feedback was structured using a checklist.

Duration of intervention

Three trials had very short training: one hour e-learning Gorniewicz 2017 and short on-site training with no follow-up: Epstein 2017 (95 minutes); Stewart 2007 (six hours). Four trials included on-site training that lasted 24 hours or less with no follow-up intervention (10 hours: Fujimori 2014; 24 hours: Razavi 1993; 24 hours over three days: Fallowfield 2002 and Wilkinson 2008).

Seven trials included on-site training of less than 24 hours but with follow-up sessions, including:

- three-day course followed by four three-hour weekly sessions with one-to-one supervision (Heaven 2006);
- 1.5-day course followed by four 1.5-hour monthly video conferences (Butow 2008);
- one day course with a follow-up meeting at six weeks (van Weert 2011);
- 19-hour course followed by six three-hour consolidation workshops (Razavi 2003);

- 18-hour course with a follow-up meeting at two months (Kruijver 2001);
- 11-hour course followed by one-to-one coaching at 12 weeks (Goelz 2011);
- one-hour lecture followed by the use of a CD-ROM for one month (Tulskey 2011).

Three trials had longer on-site training: 38 hours (Merckaert 2015), 30 hours (Lienard 2010) and 105 hours (Razavi 2002).

Some on-site training was on consecutive days (Fallowfield 2002: three-day residential course; Wilkinson 2008: two days; Fujimori 2014); other on-site training was spread over a longer period of time (Epstein 2017; Lienard 2010; Razavi 1993; Razavi 2002; Razavi 2003), ranging from weekly for three weeks (Razavi 2003) to bimonthly over an eight-month period (Lienard 2010).

Measurement of Outcomes

Primary Outcomes

Most studies measured outcomes before and after the CST (or no CST). Changes in HCP behaviour were measured in interviews involving simulated and/or real patients as follows:

- simulated patients only: six trials (Butow 2008; Fujimori 2014; Goelz 2011; Gorniewicz 2017; Razavi 1993; Stewart 2007);
- real patients only: five trials (Epstein 2017; Fallowfield 2002; Tulskey 2011; van Weert 2011; Wilkinson 2008);
- real and simulated patients: six trials (Heaven 2006; Kruijver 2001; Lienard 2010; Merckaert 2015; Razavi 2002; Razavi 2003).

One trial measured HCP behaviour in interviews with simulated patients only when real patients were not available, however, the data were analysed together (Wilkinson 2008). Investigators reported on a total of 1739 recordings of simulated patient encounters and 5662 recordings of real patient encounters.

The number of real patient interviews per HCP, assessed at each assessment point, ranged from one (Epstein 2017; Razavi 2002; Razavi 2003) to six (Kruijver 2001). Interviews were mostly assessed using audio-recording (Epstein 2017; Heaven 2006; Lienard 2010; Merckaert 2015; Razavi 2002; Razavi 2003; Stewart 2007; Tulskey 2011), or video recording (Butow 2008; Fallowfield 2002; Goelz 2011; Kruijver 2001; Razavi 1993; Razavi 2002; Razavi 2003; van Weert 2011; Wilkinson 2008).

HCP communication skills were evaluated using a variety of scales (see Table 1). Almost every trial used its own unique scale; only three scales were used in more than one study: the Cancer Research Campaign Workshop Evaluation Manual (CRCWEM) (Booth 1991) (Razavi 1993; Razavi 2002; Razavi 2003); and LaComm, a French Communication Analysis Software (LaComm; Gibon 2010) (Merckaert 2015; Lienard 2010), and The Roter interaction analysis system (RIAS) (Fujimori 2014; Kruijver 2001). Most studies mention that their scale had been validated. The scales had an average of 25 variables (range six to 84). Most studies used more than one rater, and the inter-rater reliability was considered acceptable by the authors and ranged from 0.49 to 0.94.

All the trials included measurement of outcomes relating to HCPs' supportive/building relationship skills (Table 2). One study measured supportive skills only for HCPs outcomes (Tulskey 2011). Other frequently measured outcomes related to:

- information gathering e.g. open questions (10 studies: [Butow 2008](#); [Fallowfield 2002](#); [Heaven 2006](#); [Kruijver 2001](#); [Lienard 2010](#); [Merckaert 2015](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#); [Wilkinson 2008](#)); clarifying or summarising (eight studies: [Fallowfield 2002](#); [Goelz 2011](#); [Gorniewicz 2017](#); [Kruijver 2001](#); [Merckaert 2015](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#)), and eliciting concerns (10 studies: [Butow 2008](#); [Epstein 2017](#); [Goelz 2011](#); [Gorniewicz 2017](#); [Heaven 2006](#); [Kruijver 2001](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#); [Stewart 2007](#));
- explaining and planning e.g. appropriate information giving (10 studies: ([Epstein 2017](#); [Fallowfield 2002](#); [Fujimori 2014](#); [Goelz 2011](#); [Lienard 2010](#); [Razavi 2002](#); [Razavi 2003](#); [Stewart 2007](#); [van Weert 2011](#); [Wilkinson 2008](#)), and negotiating (seven studies: [Butow 2008](#); [Heaven 2006](#); [Lienard 2010](#); [Merckaert 2015](#); [Razavi 1993](#); [Razavi 2003](#); [Stewart 2007](#)).

Secondary Outcomes

Other HCP outcomes that were measured in these studies included:

- HCP health status (six trials: [Butow 2008](#); [Kruijver 2001](#); [Lienard 2010](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#));
- HCP perception of the interview (three trials: [Fallowfield 2002](#); [Razavi 2002](#); [Razavi 2003](#));
- HCP perception of their behaviour change (nine trials: [Fallowfield 2002](#); [Fujimori 2014](#); [Lienard 2010](#); [Merckaert 2015](#); [Kruijver 2001](#); [Razavi 2002](#); [Razavi 2003](#); [Tulsky 2011](#); [Wilkinson 2008](#));
- HCP perception of their attitude change (eight trials: [Butow 2008](#); [Fallowfield 2002](#); [Kruijver 2001](#); [Lienard 2010](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#); [Wilkinson 2008](#)).

We considered HCP perceptions to be very subjective outcomes and so excluded these from our review.

Patient outcomes were measured in 13 trials, 6166 patients ([Butow 2008](#); [Epstein 2017](#); [Fallowfield 2002](#); [Fujimori 2014](#); [Kruijver 2001](#); [Lienard 2010](#); [Merckaert 2015](#); [Razavi 2002](#); [Razavi 2003](#); [Stewart 2007](#); [Tulsky 2011](#); [van Weert 2011](#); [Wilkinson 2008](#)) including:

- patients' perception of the interview (11 trials: [Epstein 2017](#); [Fallowfield 2002](#); [Fujimori 2014](#); [Gorniewicz 2017](#); [Kruijver 2001](#); [Lienard 2010](#); [Razavi 2002](#); [Razavi 2003](#); [Stewart 2007](#); [Tulsky 2011](#); [Wilkinson 2008](#));
- patients' trust in oncologist ([Fujimori 2014](#); [Tulsky 2011](#))
- patient health status (10 trials: [Butow 2008](#); [Epstein 2017](#); [Fallowfield 2002](#); [Fujimori 2014](#); [Gorniewicz 2017](#); [Kruijver 2001](#); [Merckaert 2015](#); [Razavi 2003](#); [Stewart 2007](#); [Wilkinson 2008](#));
- objective measure of patients communication (five trials: [Kruijver 2001](#); [Lienard 2010](#); [Razavi 2002](#); [Razavi 2003](#); [van Weert 2011](#)).

Two trials measured HCP communication with 'significant others' ([Goelz 2011](#); [Razavi 2003](#)); one trial measured the satisfaction of 'significant others' ([Razavi 2003](#)).

All secondary outcomes except the objective measurement of patient communication were measured with questionnaires, most of which were developed locally and it was not always stated whether they had been previously validated (see [Table 3](#) and [Table 4](#)). The following validated questionnaires were used:

- HCP health status: Maslach Burnout Inventory (MBI) [Schaulell 1993](#) (used by [Fujimori 2014](#); [Kruijver 2001](#); [Lienard 2010](#); [Razavi 2003](#));
- Nursing Stress scale [Gray-Toft 1981](#) (used by [Razavi 1993](#); [Razavi 2002](#));
- Patients' perception of satisfaction with the interview:
 - Patients perception of Patient Centredness [Henbest 1990](#) (used by [Stewart 2007](#));
 - Patient Satisfaction Questionnaire (PSQ-C) [Blanchard 1986](#) (used by [Kruijver 2001](#));
 - Patient Satisfaction with Communication Questionnaire [Ware 1983](#) (used by [Fallowfield 2002](#); [Wilkinson 2008](#));
 - European Organization for Research and Treatment of Cancer (EORTC) Outpatient Satisfaction with Care Questionnaire [Poinot 2006](#) (used by [Merckaert 2015](#));
 - Support Care Needs Survey [Sanson-Fisher 2000](#) (used by [Butow 2008](#));
 - Perceived Efficacy of patient Physician Interaction (PEPPI) [Maly 1998](#) (used by [Epstein 2017](#));
 - The human connection scale [Mack 2009](#) (used by [Epstein 2017](#));
 - Helath Care Climate Questionnaire [Williams 1998](#) (used by [Epstein 2017](#)).
- Patient health status:
 - General Health Questionnaire 12 or GHQ12 [Williams 1988](#) (used by [Fallowfield 2002](#); [Wilkinson 2008](#));
 - European Organization for Research and Treatment of Cancer (EORTC) Quality of Life Questionnaire-30 or QLQ-C30 [Aaronson 1993](#); [Hjermstad 1995](#) (used by [Butow 2008](#); [Kruijver 2001](#); [Razavi 2002](#));
 - Hospital Anxiety and Depression Scale (HADS) [Snaith 1986](#); [Julian 2011](#) (used by [Butow 2008](#); [Fujimori 2014](#); [Razavi 2003](#));
 - Spielberger's State Trait Anxiety Inventory (STAI-S) [Spielberger 1983](#) (used by [Razavi 2003](#); [Wilkinson 2008](#));
 - Functional Assessment of Cancer Therapy scale [Cella 1993](#) (used by [Epstein 2017](#));
 - McGill Quality of Life questionnaire [Cohen 1995](#) (used by [Epstein 2017](#));

Timing of the measurement of outcomes

Most studies measured communication skills prior to the intervention (within one to four weeks) and after a post-intervention period (between one week and six months). Two studies had a further measurement at 12 and 15 months post-intervention, respectively ([Butow 2008](#); [Fallowfield 2002](#)). Three studies evaluated the effects of follow-up CST interventions conducted between one and six months after the preliminary CST intervention ([Heaven 2006](#); [Razavi 2003](#); [Tulsky 2011](#)). One study measured patient outcomes for three years after intervention ([Epstein 2017](#)).

Excluded studies

We excluded 175 studies (183) articles after full-text assessment because they did not meet our criteria for study design (see the 'Characteristics of excluded studies' table); 132 of these studies were either not RCTs, or were not intervention studies of communication skills training. We excluded the remaining 43 RCTs for the following reasons:

- 13 trials not CST for HCPs;
- 11 CST in HCPs who did not work specifically in cancer care or where < 60% HCOs worked in cancer care;
- 3 trials CST was aimed at facilitating recruitment of patients to trials;
- 1 trial CST was only measured in the intervention group not the control group;
- 15 trials HCP behaviour change was not measured or was self-assessed.

See [Characteristics of excluded studies](#) and [Appendix 6](#).

Risk of bias in included studies

We considered studies to be at a low risk of overall bias if we assessed the individual 'risk of bias' criteria as 'low risk' in 3/6 criteria. As a result, we considered 15 of the 17 included RCTs to be at a low risk of overall bias ([Characteristics of included studies](#) and [Figure 4](#))

Figure 4. 'Risk of bias' graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

Allocation

Randomisation was computer-generated in four trials ([Goelz 2011](#); [Lienard 2010](#); [Tulsky 2011](#); [Wilkinson 2008](#)); by random number tables in two trials ([Butow 2008](#); [Stewart 2007](#)); stratified block-randomisation in one trial ([Epstein 2017](#)), and was not described in 10 trials.

Allocation concealment was described in six trials ([Butow 2008](#); [Epstein 2017](#); [Razavi 1993](#); [Stewart 2007](#); [Tulsky 2011](#); [Wilkinson 2008](#)), and unclear (not described) in 11 trials.

Blinding

Blinding of participants was not possible in these trials, however, outcome assessment was clearly stated as blinded in 12 of the 17 trials. Most studies pre-specified their outcomes and reported their pre-specified primary outcomes. The following studies stated measuring some patient outcomes, however, did not report these results: [Epstein 2017](#); [Fallowfield 2002](#); [Razavi 2002](#) and [Razavi 2003](#).

Incomplete outcome data

Loss to follow-up in relation to the primary outcomes was unclear in seven trials and considered 'low risk' in 10 trials with attrition rates ranging from 0% to 20%.

Selective reporting

In the majority of studies all pre-specified outcomes were described. No protocols were available for [Gorniewicz 2017](#) and [Merckaert 2015](#). [Merckaert 2015](#) did not report results of the Hospital Anxiety and Depression Scale (HADS) questionnaire. [Epstein 2017](#) did not report the results of all the patient questionnaires listed in the protocol.

Other potential sources of bias

Four studies reported differences between the study groups in baseline characteristics of the HCPs ([Goelz 2011](#); [Merckaert 2015](#); [Tulsky 2011](#); [Wilkinson 2008](#)), or patients ([Razavi 2003](#)). In two studies that measured outcomes at several points in time, it was unclear which participant interviews were included in their analyses ([Lienard 2010](#); [van Weert 2011](#)).

Effects of interventions

See: [Summary of findings for the main comparison](#) CST compared to control for healthcare professionals working with people who have cancer

Communication skills training (CST) compared to no CST

Healthcare professionals (HCP) outcomes

Communication skills

Seven studies ([Fujimori 2014](#); [Lienard 2010](#); [Merckaert 2015](#); [Razavi 1993](#); [Razavi 2002](#); [Razavi 2003](#); [Tulsky 2011](#)) contributed data to

these meta-analyses: six of these studies contributed data to the 'simulated patients' subgroup and five contributed data to the 'real patients' subgroup. HCPs in these studies included 263 doctors (four studies ([Fujimori 2014](#); [Lienard 2010](#); [Razavi 2003](#); [Tulsky 2011](#)), 188 nurses ([Razavi 1993](#); [Razavi 2002](#)), and one mixed group or radiotherapy team of 80 HCPs ([Merckaert 2015](#)).

At the post-intervention assessment, HCPs in the intervention group were more likely than the control group to:

- use open questions (standardised mean difference (SMD) 0.25, 95% confidence interval (CI) 0.02 to 0.48; $P = 0.03$, $I^2 = 62\%$; 5 studies, 796 participant interviews; very low-certainty evidence [Analysis 1.1](#);
- show empathy (SMD 0.18, 95% CI 0.05 to 0.32; $P = 0.008$, $I^2 = 0\%$; 6 studies, 844 participant interviews) moderate-certainty evidence; [Analysis 1.2](#);
- less likely to 'give facts only' without individualising their responses to the patient's emotions or offering support. (SMD -0.26, 95% CI -0.51 to -0.01; $P = 0.05$, $I^2 = 68\%$; 5 studies, 780 participant interviews; low-certainty evidence; [Analysis 1.3](#).

There were no differences between CST and no CST on eliciting patient concerns ([Analysis 1.4](#)) and providing appropriate information ([Analysis 1.5](#)); moderate-certainty evidence, although eliciting concerns showed a tendency in favour of the CST intervention. No differences were found in the other HCP communication skills, including clarifying and/or summarising information, and negotiation ([Analysis 1.6](#); [Analysis 1.7](#)).

Other HCP communication skills that were evaluated in some studies but that were either not included in our 'Types of outcome measures', or that gave insufficient data for inclusion in meta-analyses (e.g. only gave P values), included the following.

- Emotional depth: [Merckaert 2015](#) and [Kruijver 2001](#) reported significantly greater emotional depth in the intervention groups compared with the control groups, $P = 0.03$ and $P = 0.05$, respectively.
- Empathy: [Butow 2008](#) found less empathy in intervention group compared with the control group at six months post-intervention ($P = 0.024$).
- Checking that the patient understands: [Kruijver 2001](#) reported significantly less checking of patient understanding in the CST group than in the control group; whereas [Fallowfield 2002](#); [Fujimori 2014](#) and [Goelz 2011](#) reported no significant difference between the groups.
- Appropriate information: there was less appropriate information giving in the CST groups than the control groups in [Kruijver 2001](#) ($P < 0.05$), [Lienard 2010](#) (P value < 0.001) and [van Weert 2011](#) (P value < 0.01).
- Team orientated focus: [Merckaert 2015](#) reported greater team orientated focus in favour of the intervention group ($P = 0.023$).
- Blocking behaviours: no significant effect of CST was found by [Butow 2008](#) ($P = 0.66$), [Heaven 2006](#) and [Razavi 1993](#); whereas, [Wilkinson 2008](#) found significantly less blocking behaviour in the intervention group ($P = 0.001$).
- Global score: there was a significant intervention effect on global communication scores in the three studies that measured this: [Wilkinson 2008](#); (P value < 0.001) [Goelz 2011](#) ($P = 0.007$) and [Gorniewicz 2017](#) with a composite score ($P = 0.001$).

- Preamble to 'Breaking bad news' (BBN): [Fujimori 2014](#) reported a statistically significant intervention effect ($P = < 0.001$). [Gorniewicz 2017](#) found no effect using a composite score.

Several studies showed significant intervention effects on composite scores of different communication domains.

- [Epstein 2017](#) created a composite score of four pre-specified communication measures (engaging, responding to patient emotions, informing patients about disease prognosis and treatments, balanced framing of decisions). His composite measure of patient-centred communication showed a significant intervention effect (estimated adjusted intervention effect 0.34 95% CI 0.06 to 0.62; $P = 0.02$), but none of the four pre-specified communication measures showed a significant difference between groups.
- [Fujimori 2014](#) found that three of four categories formed by 27 specific skills had statistically significant intervention effects (setting supportive environment $P = 0.002$, considering how to deliver bad news $P = 0.001$, emotional support $P = 0.011$). Only seven of the 27 specific skills showed significant intervention effects.
- [Gorniewicz 2017](#) found significant intervention effects in three composite scores on BBN: breaking bad news $P = 0.004$; communication related to patient emotions $P = 0.034$; 'determines patient readiness' to proceed $P = 0.041$; and four general communication composite scores: active listening ($P = 0.011$); addressing feelings (P value < 0.001); closing interview $P = 0.002$ and global $P = 0.001$.
- [van Weert 2011](#) found a significant intervention effect on one of seven dimensions from 67 specific communication skills: communicating realistic expectations $P < 0.01$. The dimension rehabilitation improvement was significantly better in the control group P value < 0.01 .

Doctors only

Four studies enrolling doctors contributed data to these subgroup analyses ([Fujimori 2014](#); [Lienard 2010](#); [Razavi 2003](#); [Tulsky 2011](#)); the results were consistent with the main findings. At the post-intervention assessment, doctors in the intervention group were more likely than those in the control group to:

- use open questions (SMD 0.27, 95% CI 0.05 to 0.50; $P = 0.02$, $I^2 = 0\%$; 2 studies, 306 participant interviews; [Analysis 2.1](#))
- show empathy (SMD 0.22, 95% CI 0.01 to 0.43; $P = 0.04$, $I^2 = 0\%$; 3 studies, 354 participant interviews; [Analysis 2.2](#)).

There were no differences between the intervention and control groups in the meta-analyses of the following outcomes: clarifying and summarising, eliciting concerns, giving appropriate information and giving facts only ([Analysis 2.3](#); [Analysis 2.4](#); [Analysis 2.5](#); [Analysis 2.6](#)).

Nurses only

Only two studies contributed data to these subgroup analyses ([Razavi 1993](#); [Razavi 2002](#)). At the post-intervention assessment, there were no differences between the intervention and control groups in any of the meta-analyses ([Analysis 3.1](#); [Analysis 3.4](#); [Analysis 3.5](#); [Analysis 3.6](#)). For two outcomes (clarifying/summarising [Analysis 3.2](#); and eliciting concerns [Analysis 3.3](#)), only one study contributed data ([Razavi 2002](#))

Sensitivity analyses

We performed sensitivity analyses of our primary HCP outcomes to exclude studies that evaluated follow-up interventions, i.e. [Razavi 2003](#) and [Tulsky 2011](#). We noted the following effects:

- [Analysis 1.1](#) the use of 'open questions' no longer showed any difference when one study ([Razavi 2003](#)) was removed (4 studies, 676 participant interviews; SMD 0.23; 95% CI -0.06 to 0.06; $P = 0.69$; $I^2 = 71\%$);
- [Analysis 1.2](#): showing 'empathy' continued to show a small difference when two studies ([Razavi 2003](#) and [Tulsky 2011](#)) were excluded (4 studies, 676 participant interviews; SMD 0.17 95% CI 0.02 to 0.32; $P = 0.74$; $I^2 = 0\%$);
- the results of the other primary analyses either remained either very similar to the original analyses, or they contained insufficient studies for meta-analyses to be performed.

We also performed subgroup analyses to determine whether there were significant differences in primary outcomes between nurses and doctors participating in these trials ([Analysis 4.1](#); [Analysis 4.2](#); [Analysis 4.3](#); [Analysis 4.4](#); [Analysis 4.5](#); [Analysis 4.6](#)), however, tests for subgroup differences were not significant.

Other HCP outcomes

Three studies ([Kruijver 2001](#); [Lienard 2010](#); [Razavi 2003](#)) contributed data to meta-analyses relating to HCP 'burnout'. [Kruijver 2001](#) enrolled nurses and [Lienard 2010](#) and [Razavi 2003](#) enrolled residents (doctors in specialist postgraduate training) and doctors (62% were oncologists), respectively. Burnout was measured using the Maslach Burnout Inventory (MBI). For the outcome 'emotional exhaustion' there was no difference in mean scores between the intervention and control groups (SMD -0.16, 95% CI -0.44 to 0.12; $P = 0.26$, $I^2 = 0\%$; 3 studies, 202 participant interviews; [Analysis 5.1](#)). For the outcome 'personal accomplishment' there was no difference between the intervention and control groups (SMD 0.24, 95% CI -0.04 to 0.52; $P = 0.09$, $I^2 = 0\%$; 3 studies, 202 participant interviews; [Analysis 5.2](#)). For the outcome 'depersonalisation' with data from just one study ([Lienard 2010](#)), there was no difference between the intervention and control groups (mean difference (MD) 0.50, 95% CI -1.50 to 2.50; $P = 0.62$; 1 study, 96 participant interviews; low-certainty evidence; [Analysis 5.3](#)). [Butow 2008](#) also reported 'burnout' and found no significant effect of CST on this outcome, however did not report these data in a usable form for this meta-analysis.

Patient outcomes

'Patient anxiety' was measured in two studies ([Razavi 2003](#); [Wilkinson 2008](#)) using the Spielberger State of Anxiety Inventory (STAI-S) and in one study ([Fujimori 2014](#)) using the HADS. Anxiety scores decreased in both groups in both studies after all the interviews; in [Fujimori 2014](#) the mean reduction in anxiety scores (pre- and post-interview) was significantly greater in the control group (SMD 0.17; 95% CI -0.24 to 0.59; $P = 0.41$; $I^2 = 78\%$, 3 studies, 770 participant interviews; very low-certainty; [Analysis 6.2](#)).

[Wilkinson 2008](#) evaluated patient 'psychiatric morbidity', assessed by the GHQ 12 questionnaire, and found it to be significantly lower in the intervention group than the control group (one study, 127 participant interviews; SMD -0.36, 95% CI -0.71 to -0.01; [Analysis 6.1](#); $P = 0.05$), however, this study reported significantly greater baseline anxiety in the control group.

There were no differences in either the outcomes 'patient perception of HCP communication skills' ([Razavi 2002](#); [Razavi 2003](#)) (2 studies, 170 participant interviews; SMD -0.14; 95% CI -0.44 to 0.16; $P = 0.37$; $I^2 = 0\%$ [Analysis 6.3](#)) nor 'patient satisfaction with communication' ([Fallowfield 2002](#); [Wilkinson 2008](#)) (2 studies, 429 participant interviews; SMD 0.20; 95% CI -0.23 to 0.63; $P = 0.36$; $I^2 = 74\%$; very low-certainty; [Analysis 6.4](#)).

Patient outcomes that were either not included in our 'Types of outcome measures', or that gave insufficient data for inclusion in meta-analyses (e.g. only gave P values), included the following.

- Patient trust: two studies reported significantly greater patient trust in the intervention group ([Fujimori 2014](#); [Tulsky 2011](#)) ($P = 0.009$ and $P = 0.036$, respectively).
- Quality of life: [Kruijver 2001](#) found statistically significant improvement in only 1/30 items; and [Butow 2008](#) found no significant differences. [Epstein 2017](#) did not find any statistical difference using a single item scale nor on the McGill Quality of life Questionnaire nor on the Functional Assessment of Cancer Therapy scale.
- Anxiety: [Butow 2008](#) reported a reduction in patient anxiety (telephone interviews) one week after the consultation in the intervention group ($P = 0.021$). This change was not maintained in telephone interviews three months later.
- Depression: [Butow 2008](#) found no difference in patient depression (telephone interviews) at one week after the consultation in the intervention group.
- Distress: [Fujimori 2014](#) reported that distress scores were 'significantly decreased' in the intervention group compared with the control group.
- Satisfaction: [Fujimori 2014](#) reported that distress scores were 'significantly decreased' in the intervention group compared with the control group. [Merckaert 2015](#) reported no significant differences in satisfaction between patients of the intervention group and the control group when considering the whole team, but in relation to the nurses care, there was a higher level of satisfaction ($P = 0.028$) in the intervention group.
- Health care utilisation: [Epstein 2017](#) found no intervention effects in aggressive treatments and hospice use in the last 30 days of life.
- Recall of information: [van Weert 2011](#) reported a 'marginally significant' improvement in total patient recall following HCP CST. This was a composite score of six sub-categories, only two of which has statistical difference between groups in favour of intervention.
- Number of questions asked by patients: [van Weert 2011](#) found the number of questions asked by patients and companions increased in the intervention group ($P < 0.05$).

'Significant other' outcomes

One study reported no differences in relatives' anxiety or satisfaction between intervention and control groups ([Razavi 2003](#)), however the data given were insufficient for meta-analysis. [Goelz 2011](#) found improvements in some HCP behaviour in relation to relatives in simulated interviews ($P < 0.001$).

Effect of CST over time

Two trials studied the effect of CST up to one year after the intervention. [Butow 2008](#) reported that clinically significant

improvements in doctors communication skills at six months were maintained at 12 months in the group that received CST, however these improvements were not significant. Doctors in the intervention group scored lower on responding to distress than the control group at 12 months.

[Fallowfield 2002](#) evaluated all participants at three months post-intervention and evaluated the intervention group only at 15 months post-intervention. For the intervention group doctors, most statistically significant benefits of CST (appropriate questions and responses) displayed at three months were maintained at 15 months, however, there was a drop off in empathy scores ($P < 0.001$). At 15 months post-intervention, the investigators also noted a significant improvement in the HCPs' summarising of information for the patients ($P = 0.038$), and that they interrupted less ($P < 0.001$) than at the three-month assessment.

Follow-up CST compared with no follow-up CST

Three trials studied the effect of follow-up interventions ([Heaven 2006](#); [Razavi 2003](#); [Tulsky 2011](#)), however, they reported little data that we could use in our meta-analyses, most of which ([Analysis 7.1](#); [Analysis 7.2](#); [Analysis 7.3](#); [Analysis 7.4](#); [Analysis 7.5](#); [Analysis 7.6](#); [Analysis 7.7](#)) contain data from only one study ([Razavi 2003](#)). However, meta-analysis of two studies was possible for the outcome 'empathy'. We found no difference between the intervention and control groups with regard to this outcome (SMD 0.23, 95% CI -0.07 to 0.54; $P = 0.14$; $I^2 = 0\%$; 2 studies, 168 participant interviews; [Analysis 7.4](#)).

Individually, these studies reported the following.

- [Razavi 2003](#) reported some statistically significant improvements in doctors' communication skills after a single 2.5 day CST workshop followed by six, bimonthly, three-hour consolidation workshops compared with a single 2.5 day CST workshop only. These significant improvements included: open questions in simulated interviews ($P = 0.014$); checking understanding ($P < 0.01$); and empathic statements in real patient interviews ($P = 0.009$) and in interviews where a relative was present. In addition, patients interviewed by doctors who received the follow-up CST perceived that their doctor had a better understanding of their disease than patients of doctors who received no follow-up CST ($P = 0.04$). The follow-up CST had no significant effect on patient satisfaction or anxiety levels, except in interviews with relatives, where the patients, but not the relatives, were reported to be more globally satisfied ($P = 0.024$).
- [Tulsky 2011](#) reported a improvement in oncologists communication skills in interviews with real patients after a CST lecture and the use of a follow-up CD-ROM, compared with a control group who had received a CST lecture only: 'empathic statements' ($P = 0.024$) and 'response to empathic opportunity' ($P = 0.03$) were improved in the intervention group. 'patient trust' also improved ($P = 0.036$).
- [Heaven 2006](#) failed to show any difference in nurses' communication skills in real patient encounters after receiving a three-day CST course followed by four half-day supervision sessions spread over four weeks, compared with the three-day CST course only.

Comparison of different types of CST

One trial with 51 participants (18 oncologists, 17 family physicians and 16 surgeons) compared a six-hour student-centred, experiential CST, with a two-hour small-group discussion commenced with a video ([Stewart 2007](#)). No differences were found between the groups in HCP behaviour outcomes in the post-intervention simulated interviews, however, in the subgroup analysis of family physicians, those who participated in the six-hour course showed better scores in offering support ($P = 0.02$), information sharing ($P = 0.05$), and exploring and validating whole person issues ($P = 0.02$ and $P = 0.05$, respectively) compared with those who participated in the two-hour course. In the subgroup of surgeons, patient satisfaction and perception of well-being improved after the six-hour course ($P = 0.02$ and $P = 0.03$, respectively). Overall, there was no significant effect on the patients' psychological distress; however, using a single validated question, more patients 'felt better' with HCPs who had undergone the six-hour training course than with HCP participants of the two-hour course ($P = 0.02$).

Feedback compared to no feedback

Only one study reported this comparison ([Fallowfield 2002](#)) and found no between HCP communication skills in groups receiving 'feedback' or 'no feedback'.

DISCUSSION

Summary of main results

We performed meta-analyses of seven healthcare professional (HCP) communication skill outcomes (using open questions, clarifying/summarising, eliciting concerns, showing empathy, giving appropriate information, giving facts only, and negotiating), three 'other' HCP outcomes relating to 'burnout' (emotional exhaustion, depersonalisation, personal accomplishment), and four patient outcomes (psychiatric morbidity, anxiety, perception of HCP communication, satisfaction with HCP communication). Overall, 10 studies contributed data to the meta-analyses.

HCPs in the intervention groups were more likely to show empathy towards their patients (6 studies, 844 participant interviews; $P = 0.008$, $I^2 = 0\%$) and less likely to 'give facts only' without individualising their responses to the patient's emotions or offering support (5 studies, 780 participant interviews; $P = 0.05$, $I^2 = 68\%$). We considered these findings to be of a moderate- and low-certainty, respectively ([Summary of findings for the main comparison](#)). They were also more likely to use open questions in the post-intervention interviews than the control group (five studies, 796 participant interviews; $P = 0.03$, $I^2 = 62\%$); however the certainty of evidence was very low. In subgroup analyses according to staff type, these benefits of communication skills training (CST) remained statistically significant when 'doctors only' were included in the meta-analyses, but not for 'nurses only'; however, doctors and nurses did not perform differently for any HCP outcomes.

There were no differences in the other HCP communication skills. Tests for subgroup differences (between real and simulated patients) were significant.

HCP 'burnout' was assessed post-intervention in five studies using the Maslach Burnout Inventory (MBI). Three studies could be included in a meta-analysis: one was conducted in nurses, two trials

in doctors (mainly oncologists). There were no differences between the intervention and control groups with regard to 'emotional exhaustion' (202 participant interviews; $P = 0.26$, $I^2 = 0\%$); 'personal accomplishment' (202 participant interviews; $P = 0.09$, $I^2 = 0\%$) or 'depersonalisation' with data from just one study (96 participants, MD 0.50, 95% CI -1.50 to 2.50; $P = 0.62$). We consider this evidence to be of a low-certainty.

With regard to patient outcomes, three studies contributed data to the outcome 'patient anxiety'. There were no differences between the intervention and control groups (770 participant interviews; SMD 0.17; 95% CI -0.24 to 0.59; $P = 0.41$; $I^2 = 78\%$). In a study of 172 nurses, psychiatric morbidity was found to be lower in the intervention group than the control group (SMD -0.36, 95% CI -0.71 to -0.01 $P = 0.05$). There were no differences in 'patient perception of HCPs communication skills' (two studies, 170 participant interviews; SMD -0.14; 95% CI -0.44 to 0.16; $P = 0.37$; $I^2 = 0\%$), and 'patient satisfaction with communication' (two studies, 429 participant interviews; SMD 0.20; 95% CI -0.23 to 0.63; $P = 0.36$; $I^2 = 74\%$) in meta-analyses of these outcomes.

Overall completeness and applicability of evidence

These meta-analyses offer limited evidence that communications skills training of HCPs working in cancer care has a beneficial effect on some HCP communication skills when assessed up to six months after the training course or workshop. The types of skills that showed improvement in our meta-analyses were related to information gathering (open questions) and supportive or relationship-building skills (empathy) and giving facts only. However, in the use of open questions, the certainty of evidence was very low. These benefits probably apply to both doctors and nurses as tests for subgroup differences were not significant.

The types of CST, length of training and time spread were diverse and it was not possible to draw conclusions as to the relative efficacy of the different programs. These results, therefore, are not necessarily applicable to all types of CST. In future versions of this review, it may be desirable to subgroup our results according to intervention type; this was not possible for the current version due to the small number of contributing studies. Furthermore, longer-term follow-up is necessary to ascertain whether these skills are retained. In the 17 included studies, the longest follow-up for HCP communication skills occurred in [Butow 2008](#) and [Fallowfield 2002](#), at 12 and 15 months post-intervention, respectively. These studies give conflicting results and we were unable to combine these data in a meta-analysis.

Three trials studied the effects of follow-up interventions on HCP communication skills and reported some positive effects on the maintenance of behaviour change in clinical practice ([Heaven 2006](#); [Razavi 2003](#); [Tulsky 2011](#)), however, the longest follow-up period was six months, and meta-analyses including these studies were not possible except for the outcome 'empathy', for which we found no difference. The efficacy of follow-up CST is inconclusive based on the available evidence.

Few studies reported patient health-related outcomes and those that did had little usable data. Evidence for a beneficial effect on patients' psychological and physical health is lacking and further research is needed in this regard. All trials were performed in developed countries and, thus, the results may not be widely applicable to less-developed regions.

Quality of the evidence

We graded the review evidence according to guidelines from the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)), that supports the GRADE approach, defining the certainty of the body of evidence as the extent to which one can be confident that an estimate of effect or association is close to the quantity of specific interest. Downgrading of evidence can occur if there are limitations in the design and implementation of available studies, the data are inconsistent or imprecise reflected by wide confidence intervals, the evidence is indirect or there is a high probability of publication bias.

We consider the evidence related to three primary outcomes, 'empathy', 'giving appropriate information' and 'eliciting concerns' to be of moderate-certainty. ([Summary of findings for the main comparison](#)). We considered the evidence relating to 'open questions' to be of very low-certainty, downgrading it due to inconsistency, imprecision and risk of bias amongst studies included in the meta-analysis of this outcome.

The certainty of evidence for secondary outcomes 'emotional exhaustion' and 'patient anxiety' is low and very low respectively. This is due to imprecision, risk of bias and inconsistency.

In general, most included studies displayed considerable heterogeneity in terms of the types of CST, the types of patients (real or simulated), the outcomes assessed, the measurement tools used to evaluate outcomes, and other variables.

Potential biases in the review process

For the protocol and original 2003 review ([Fellowes 2002](#)), we defined 'Types of outcomes' simply as '*changes in behaviour or skills measured using objective and validated scales*'. However, for the first update, we defined primary and secondary outcomes more clearly. By so doing, we may have introduced bias into the review. In addition, by choosing to extract data and perform meta-analyses, thereby possibly limiting the review findings to a handful of outcomes, rather than present the data of the 17 studies in a narrative review, we may have introduced bias. Several studies reported other HCP behavioural outcomes (i.e. that were not included in our list of outcomes) and we hope that by presenting these additional data, we have been able to present the wide range of evidence (and certainty of evidence) available to inform opinion.

Some trials reported statistically significant effects (both positive and negative) of various HCP communication outcomes but were limited by the inadequate reporting of data, such that the data could not be used in meta-analyses. Types of limited reporting included only giving P values, percentages, or means without numbers assessed or standard deviations. The fact that useable data for these outcomes were not available, may have inherently biased the review. For example, three studies ([Kruijver 2001](#); [Lienard 2010](#); [van Weert 2011](#)) individually reported statistically significantly less 'appropriate information giving' in their intervention groups than the control groups, suggesting that CST may negatively impact this outcome, but there were no accompanying extractable data to support the reports. Our meta-analysis of this outcome included data from only three studies and we found no significant difference between the two groups, although the point-estimate favoured the control group ([Analysis 1.5](#)).

In some studies, outcomes consisted of phrases, or aspects of scales that we had not included as outcomes for this review. Almost every trial used its own unique scale with an average of 25 variables (range, six to 84); with only three scales used in more than one study. We used standardised mean differences to adjust for these different scales and random-effects methods for all meta-analyses, to minimise potential biases.

Lastly, by including data from the studies of follow-up interventions (three studies) in our meta-analyses of 'CST versus no CST', we may have introduced bias into our meta-analyses. All HCPs in these studies received preliminary CST and then subsequently randomised to receive a follow-up CST intervention. We performed sensitivity analyses to determine what effect including these studies had on our overall results and reported these findings.

Agreements and disagreements with other studies or reviews

Previous reviews [Barth 2011](#); [Paul 2009](#); [Uitterhoeve 2010](#) have consistently concluded that CST leads to better HCP communication behaviours. [Barth 2011](#) included 13 studies (three non-randomised) and extracted effect sizes for the outcomes HCP behaviour, HCP attitudes and patient outcomes. It is not clear to us how they combined the several aspects of HCP behaviour into a single effect size as the included studies reported diverse behaviour outcomes, however, they report a low to moderate effect of CST on HCP behaviour. Thus, our findings seem to agree. [Barth 2011](#) also performed subgroup analysis to assess the effect of the duration of the CST course on HCP behaviour and reported a trend toward shorter courses being less successful than longer ones; this finding supports the conclusions of [Gysels 2004](#), but we were unable to corroborate these findings.

Healthcare professional attitude change is a very subjective outcome and, although CST has been reported in other reviews to have a positive effect on this outcome ([Barth 2011](#)), we have not included it in our review. [Barth 2011](#) suggests that the inability to show profound results following CST workshops may be due to the high pre-intervention competencies in the participants taking part in the CST. This is a good point. Most of our included studies were conducted in oncologists and cancer care nurses with experience ranging from two to 24 years.

We agree with the findings of other reviews ([Barth 2011](#); [Paul 2009](#); [Uitterhoeve 2010](#)), that CST in HCPs appears to have little effect on patient outcomes, however high-certainty data for patient outcomes are scarce. The [Kissane 2012](#) review expressed uncertainty as to whether the skills acquired from CST are maintained in the long term; we agree that the long-term benefits of CST are not clearly established. Our findings support the recommendations for the development of standardised outcome measures for future research in the consensus statement of European experts ([Stiefel 2010](#)).

AUTHORS' CONCLUSIONS

Implications for practice

Communication skills training for healthcare professionals (HCPs) working in cancer care using learner-centred, experiential education methods by experienced facilitators, can result in improvements of some communication skills, particularly

empathy, and can help HCP to be less likely to give facts only without individualising their responses to the patient's emotions or offering support. Whilst improving these communication skills, CST courses should also aim to ensure appropriate eliciting-concerns and information-giving skills in HCP participants. It is unclear whether the skills acquired by HCPs are retained in the long term. In addition, it is unclear what type, duration and intensity of CST is most effective, and whether consolidation workshops may improve the impact of CST. CST appears to have little measurable benefit to the mental or physical health, and satisfaction of people with cancer and does not appear to reduce 'burnout' in HCPs.

Implications for research

The original version of this review called for further research and the number of randomised trials has since increased dramatically. However the diversity of studies, particularly in the scales used to measure HCP communication skills, continues to limit the conclusions of this updated review. We recommend that randomised controlled (RCTs) use standard validated scales, and that (limited) core study outcomes (both for HCP outcomes and patient outcomes) are identified and pre-specified. Several validated scales to measure HCP communication now exist ([Table 1](#)) but investigators should ensure that their outcomes permit comparability between studies. It may be preferable to use real patients for measurement of HCP communication in studies of CST interventions to ensure clinically meaningful results. Trials should include clear reporting of trial methods and study outcomes, and data should be reported in full e.g. continuous data as means with standard deviations and the number analysed per outcome.

Other important questions remain unanswered:

- the optimal length of training/course structure;
- the long-term efficacy of communication skills training;
- the role of e-learning;
- compulsory rather than voluntary training;
- the role of consolidation courses;
- the role of training both HCPs and patients in communication skills.

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REFERENCES

References to studies included in this review

Butow 2008 {published data only}

* Butow P, Cockburn J, Girgis A, Bowman D, Schofield P, D'Este C, et al. Increasing oncologists' skills in eliciting and responding to emotional cues: evaluation of a communication skills training program. *Psycho-Oncology* 2008;**17**(3):209-18. [PUBMED: 17575560]

Girgis A, Cockburn J, Butow P, Bowman D, Schofield P, Stojanovski E, et al. Improving patient emotional functioning and psychological morbidity: Evaluation of a consultation skills training program for oncologists. *Patient Education and Counseling* 2009;**77**(3):456-62. [PUBMED: 19819660]

Epstein 2017 {published data only}

* Epstein RM, Duberstein PR, Fenton JJ, Fiscella K, Hoerger M, Tancredi DJ, et al. Effect of a patient-centered communication intervention on oncologist-patient communication, quality of life and health care utilization in advanced cancer: the VOICE randomized clinical trial. *Jama Oncology* 2017;**3**(1):92-100. [DOI: [10.1001/jamaoncol.2016.4373](https://doi.org/10.1001/jamaoncol.2016.4373); PUBMED: 27612178]

Fenton JJ, Kravitz RL, Duberstein P, Tancredi DJ, Xing G, Epstein R. A cluster randomized trial of a patient-centered communication intervention in advanced cancer: The Values and Options In Cancer Care (VOICE) study. *Journal of Clinical Oncology* 2016;**34**(26):suppl 2-2.

Hoerger M, Epstein RM, Winters PC, Fiscella K, Duberstein PR, Gramling R, et al. Values and options in cancer care (VOICE): study design and rationale for a patient-centered communication and decision-making intervention for physicians, patients with advanced cancer, and their caregivers. *BMC Cancer* 2013;**13**:188. [DOI: [10.1186/1471-2407-13-188](https://doi.org/10.1186/1471-2407-13-188); PUBMED: 23570278]

Rodenbach RA, Brandes K, Fiscella K, Kravitz RL, Butow PN, Walczak A, et al. Promoting end-of-life discussions in advanced cancer: effects of patient coaching and question prompt lists. *Journal of Clinical Oncology* 2017;**35**(8):842-51. [DOI: [10.1200/JCO.2016.68.5651](https://doi.org/10.1200/JCO.2016.68.5651)]

Fallowfield 2002 {published data only}

* Fallowfield L, Jenkins V, Farewell V, Saul J, Duffy A, Eves R. Efficacy of a Cancer Research UK communication skills training model for oncologists: a randomised controlled study. *Lancet* 2002;**359**(9307):650-6. [DOI: [10.1016/S0140-6736\(02\)07810-8](https://doi.org/10.1016/S0140-6736(02)07810-8)]

Fallowfield L, Jenkins V, Farewell V, Solis TI. Enduring impact of communication skills training: results of a 12-month follow-up. *British Journal of Cancer* 2003;**89**(8):1445-9.

Jenkins V, Fallowfield L. Can communication skills training alter physicians' beliefs and behavior in clinics?. *Journal of Clinical Oncology* 2002;**20**(3):765-9. [DOI: [10.1200/JCO.2002.20.3.765](https://doi.org/10.1200/JCO.2002.20.3.765)]

Shilling V, Jenkins V, Fallowfield L. Factors affecting patient and clinician satisfaction with the clinical consultation: can communication skills training for clinicians improve

satisfaction?. *Psycho-Oncology* 2003;**12**(6):599-611. [DOI: [10.1002/pon.731](https://doi.org/10.1002/pon.731)]

Fujimori 2014 {published data only}

Fujimori M, Shirai Y, Asai M, Akizuki N, Katsumata N, Kubota K, et al. Development and preliminary evaluation of communication skills training program for oncologists based on patient preferences for communicating bad news. *Palliative & Supportive Care* 2014;**12**(5):379-86.

* Fujimori M, Shirai Y, Asai M, Kubota K, Katsumata N, Uchitomi Y. Effect of communication skills training program for oncologists based on patient preferences for communication when receiving bad news: a randomized controlled trial. *Journal of Clinical Oncology* 2014;**32**(20):2166-72. [DOI: [10.1200/JCO.2013.51.2756](https://doi.org/10.1200/JCO.2013.51.2756)]

Fujimori MS. Effect of communication skills training program for oncologists based on the patient preferences for communicating bad news: A randomized control trial. *Psycho-Oncology Conference: 13th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Antalya Turkey*. Conference Start: 20111016 Conference End: 20111020. 2011:Conference Publication:[var.pagings].

Goelz 2011 {published data only}

Goeltz TW. The transition from curative to palliative care in oncology-a special challenge requires special communication skills training. Evaluation of a specific and individualized training concept-a RCT. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria*. Conference Start: 20090621 Conference End: 20090625. 2009:Conference Publication:[var.pagings].

* Goelz T, Wuensch A, Stubenrauch S, Ihorst G, de Figueiredo M, Bertz H, et al. Specific training program improves oncologists' palliative care communication skills in a randomized controlled trial. *Journal of Clinical Oncology* 2011;**29**(25):3402-7. [DOI: [10.1200/JCO.2010.31.6372](https://doi.org/10.1200/JCO.2010.31.6372)]

Goelz TW. *Psycho-Oncology; Conference*(var.pagings). Conference Publication, 2010; Vol. 19(Suppl 2):S1-S313.

Gorniewicz 2017 {published data only}

Bishop TW, Gorniewicz J, Floyd M, Tudiver F, Odom A, Zoppi K. Innovative patient-centered skills training addressing challenging issues in cancer communications: Using patient's stories that teach. *International Journal of Psychiatry in Medicine* 2016;**51**(4):357-66. [DOI: [10.1177/0091217416659272](https://doi.org/10.1177/0091217416659272)]

* Gorniewicz J, Floyd M, Krishnan K, Bishop TW, Tudiver F, Lang F. Breaking bad news to patients with cancer: A randomized control trial of a brief communication skills training module incorporating the stories and preferences of actual patients. *Patient Education and Counseling* 2017;**100**(4):655-66. [DOI: [10.1016/j.pec.2016.11.008](https://doi.org/10.1016/j.pec.2016.11.008)]

Heaven 2006 {published data only}

Heaven C, Clegg J, Maguire P. Transfer of communication skills training from workshop to workplace: the impact of clinical supervision. *Patient Education and Counselling* 2006;**60**(3):313-25. [DOI: [10.1016/j.pec.2005.08.008](https://doi.org/10.1016/j.pec.2005.08.008)]

Kruijver 2001 {published and unpublished data}

Kruijver IPM, Kerkstra A, Kerssens JJ, Bensing JM, Van De Wiel HBM, Wind RM, et al. Communication between nurses and admitted cancer patients: the impact of a communication training program on nurse and patient outcomes. Chapter 5: Kruijver thesis 145-66.

* Kruijver IPM, Kerkstra A, Kerssens JJ, Holtkamp CCM, Bensing JM, Van de Wiel HBM. Communication between nurses and simulated patients with cancer: evaluation of a communication training programme (including commentary by Heaven C and Payne S). *European Journal of Oncology Nursing* 2001;**5**(3):140-53.

Lienard 2010 {published data only}

Bragard I, Etienne AM, Libert Y, Merckaert I, Lienard A, Meunier J, et al. Efficacy of a communication and stress management training on residents' stress to communicate, self-efficacy and burnout level: A randomized controlled study [conference abstract]. *Psycho-Oncology: the 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria, 21-25 June 2009. Conference publication, 2009:S252*. [DOI: [10.1002/pon](https://doi.org/10.1002/pon)]

Bragard I, Etienne AM, Merckaert I, Libert Y, Razavi D. Efficacy of a communication and stress management training on medical residents' self-efficacy, stress to communicate and burnout: a randomized controlled study. *Journal of Health Psychology* 2010;**15**(7):1075-81. [DOI: [10.1177/1359105310361992](https://doi.org/10.1177/1359105310361992).]

Damas AM. Impact of a communication skills training program on residents' bad news disclosure in a simulated consultation: A randomised study. *Psycho-Oncology Conference abstract: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS, Vienna, Austria. 2009; Vol. 18:S269*.

Gibon AS, Merckaert I, Libert Y, Lie A, Etienne AM, Reynaert C, et al. The efficacy of a communication skills training program on successive sequences of breaking bad news simulated consultation: A randomized controlled study. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:s9*. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Hasoppe J, Merckaert I, Libert Y, Bragard I, Etienne AM, Reynaert C, et al. Communication skills training: A study of residents' psychological and physiological variables which facilitate or inhibit the learning of assessment.. *Psycho-Oncology Conference abstract: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS, Vienna, Austria. 2009; Vol. 18:s269*. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

* Lienard A, Merckaert I, Libert Y, Bragard I, Delvaux N, Etienne M, et al. Is it possible to improve residents breaking bad news skills? A randomised study assessing the efficacy of a

communication skills training program. *British Journal of Cancer* 2010;**103**(2):171-7. [DOI: [10.1038/sj.bjc.6605749](https://doi.org/10.1038/sj.bjc.6605749)]

Lienard A, Merckaert I, Libert Y, Bragard I, Delvaux N, Etienne M, et al. Transfer of communication skills to the workplace during clinical rounds: impact of a program for residents. *PLoS One* 2010;**5**(8):e12426. [DOI: [10.1371/journal.pone.0012426](https://doi.org/10.1371/journal.pone.0012426)]

Lienard AM, Merckaert I, Libert Y, Bragard I, Delvaux N, Etienne AM, et al. Is it possible to improve residents breaking bad news skills? A randomised study assessing the efficacy of a communication skills training program. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:s277*. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Lienard AM, Merckaert I, Libert Y, Bragard I, Delvaux N, Etienne AM, et al. Transfer of communication skills training to workplace: Impact of a program for residents. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:s76*. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Merckaert I, Liénard A, Libert Y, Bragard I, Delvaux N, Etienne AM, et al. Is it possible to improve the breaking bad news skills of residents when a relative is present? A randomised study. *British Journal of Cancer* 2013;**109**(10):2507-14.

Meunier J, Merckaert I, Libert Y, Delvaux N, Etienne AM, Liénard A, et al. The effect of communication skills training on residents' physiological arousal in a breaking bad news simulated task.. *Patient Education and Counseling* 2013;**93**(1):40-7. [DOI: [10.1016/j.pec.2013.04.020](https://doi.org/10.1016/j.pec.2013.04.020)]

Merckaert 2015 {published data only}

Gibon AS, Merckaert I, Lienard A, Libert Y, Marchal S, Etienne AM, et al. Is it possible to improve radiotherapy team communication skills? A randomized study assessing the efficacy of a training program in the context of an encounter with a simulated anxious patient called Mrs Leblanc. *Psycho-Oncology. 2011; Vol. 13th World Congress of the International Psycho-Oncology Society 16/01/2011 -20/01/2011, Antalya, Turkey:102*. [DOI: [10.1002/pon.2077](https://doi.org/10.1002/pon.2077)]

Gibon AS, Merckaert I, Liénard A, Libert Y, Delvaux N, Marchal S, et al. Is it possible to improve radiotherapy team members' communication skills? A randomised study assessing the efficacy of a 38-h communication skills training program. *Radiation Oncology (London, England)* 2013;**109**(1):170-7. [DOI: [10.1016/j.radonc.2013.08.019](https://doi.org/10.1016/j.radonc.2013.08.019)]

Liénard A, Delevallez F, Razavi D, Gibon AS, Libert Y, Delvaux N, et al. Is it possible to improve communication around radiotherapy delivery: A randomized study to assess the efficacy of team training?. *Radiotherapy and Oncology* 2016;**119**(2):361-7.

* Merckaert I, Delevallez F, Gibon AS, Liénard A, Libert Y, Delvaux N, et al. Transfer of communication skills to the workplace: impact of a 38-hour communication skills training

program designed for radiotherapy teams. *Journal of Clinical Oncology* 2015;**33**(8):901-9. [DOI: [10.1200/JCO.2014.57.3287](https://doi.org/10.1200/JCO.2014.57.3287)]

Razavi 1993 {published data only}

Delvaux N, Razavi D, Marchal S, Bredart A, Farvacques C, Paesmans M. The effects of a 24hr psychological training programme on attitudes, communication skills and occupational stress in oncology: a randomised study. *Quality of Life Research* 1993;**2**:55-6.

* Razavi D, Delvaux N, Marchal S, Bredart A, Farvacques C, Paesmans M. The effects of a 24-h psychological training program on attitudes, communication skills and occupational stress in oncology: a randomised study. *European Journal of Cancer* 1993;**29A**(13):1858-63.

Razavi 2002 {published data only}

Canivet D, Delvaux N, Gibon AN, Slachmuylder JL, Razavi D. Impact of a communication skills training on nurses communication efficiency: A qualitative analysis of an encounter with Mrs Gudule, a simulated cancer patient anxious about taking morphine. *Psycho-Oncology Conference: 13th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Antalya Turkey. Conference Start: 20111016 Conference End: 20111020. 2011; Vol. 20:107.* [DOI: [10.1002/pon.2078](https://doi.org/10.1002/pon.2078)]

Canivet D, Delvaux N, Gibon AS, Brancart C, Slachmuylder JL, Razavi D. Improving communication in cancer pain management nursing: a randomised controlled study assessing the efficacy of a communication skills training program. *Support Care Cancer* 2014;**22**(12):3311-20.

Delvaux N, Razavi D, Marchal S, Bredart A, Farvacques C, Slachmuylder JL. Effects of a 105 hours psychological training program on attitudes, communication skills and occupational stress in oncology: a randomised study. *British Journal of Cancer* 2004;**90**(1):106-14.

Gibon AS, Durieux JF, Merckaert I, Delvaux N, Farvacques C, Libert Y, et al. Development of the LaComm, a French medical communication analysis software: A Study assessing its sensitivity to change. *Psycho-Oncology*. 2010; Vol. 19(Suppl 2):S133. [DOI: [10.1002/pon.1776](https://doi.org/10.1002/pon.1776)]

* Razavi D, Delvaux N, Marchal S, Durieux J-F, Farvacques C, Dubus L, et al. Does training increase the use of more emotionally laden words by nurses when talking with cancer patients? A randomised study. *British Journal of Cancer* 2002;**87**(1):1-7.

Razavi 2003 {published data only}

Bragard I, Libert Y, Etienne AM, Merckaert I, Delvaux N, Marchal S, et al. Insight on variables leading to burnout in cancer physicians. *Journal of Cancer Education: the official journal of the American Association for Cancer* 2010;**25**(1):109-15.

Delvaux N, Merckaert I, Marchal S, Libert Y, Conradt S, Boniver J, et al. Physicians' communication with a cancer patient and a relative: a randomised study assessing the efficacy of consolidation workshops. *Cancer* 2005;**103**(11):2397-411.

Lienard A, Merckaert I, Libert Y, Delvaux N, Marchal S, Boniver J, et al. Factors that influence cancer patients' and relatives' anxiety following a three-person medical consultation: impact of a communication skills training program for physicians. *Psycho-Oncology* 2008;**17**(5):488-96. [DOI: [10.1002/pon.1262](https://doi.org/10.1002/pon.1262)]

Lienard A, Merckaert I, Libert Y, Delvaux N, Marchal S, Boniver J, et al. Factors that influence cancer patients' anxiety following a medical consultation: impact of a communication skills training programme for physicians. *Annals of Oncology: the official journal of the European Society for Medical Oncology / ESMO* 2006;**17**(9):1450-8. [PUBMED: 16801333]

Merckaert I, Libert Y, Delvaux N, Marchal S, Boniver J, Etienne AM, et al. Factors influencing physicians' detection of cancer patients' and relatives' distress: can a communication skills training program improve physicians' detection?. *Psycho-Oncology* 2008;**17**(3):260-9. [DOI: [10.1002/pon.1233](https://doi.org/10.1002/pon.1233)]

Merckaert I, Libert Y, Delvaux N, Marchal S, Boniver J, Etienne AM, et al. Factors that influence physicians' detection of distress in patients with cancer: can a communication skills training program improve physicians' detection?. *Cancer* 2005;**104**(2):411-21. [DOI: [10.1002/cncr.21172](https://doi.org/10.1002/cncr.21172)]

* Razavi D, Merckaert I, Marchal S, Libert Y, Conradt S, Boniver J, et al. How to optimise physicians' communication skills in cancer care: results of a randomised study assessing the usefulness of post-training consolidation workshops. *Journal of Clinical Oncology : official journal of the American Society of Clinical Oncology* 2003;**21**(16):3141-9. [PUBMED: 12915605]

Stewart 2007 {published data only}

Stewart M, Brown JB, Hammerton J, Donner A, Gavin A, Holliday RL, et al. Improving communication between doctors and breast cancer patients. *Annals of Family Medicine* 2007;**5**(5):387-94. [DOI: [10.1370/afm.721](https://doi.org/10.1370/afm.721)]

Tulsky 2011 {published data only}

Koropchak CM, Pollak KI, Arnold RM, Alexander SC, Skinner CS, Olsen MK, et al. Studying communication in oncologist-patient encounters: the SCOPE Trial. *Palliative Medicine* 2006;**20**(8):813-9. [DOI: [10.1177/0269216306070657](https://doi.org/10.1177/0269216306070657)]

Rodriguez KL, Bayliss N, Alexander SC, Jeffreys AS, Olsen MK, Pollak KI, et al. How oncologists and their patients with advanced cancer communicate about health-related quality of life. *Psycho-Oncology* 2010;**19**(5):490-9. [DOI: [10.1002/pon.1579](https://doi.org/10.1002/pon.1579)]

Skinner CS, Pollak KI, Farrell D, Olsen MK, Jeffreys AS, Tulsky JA. Use of and reactions to a tailored CD-ROM designed to enhance oncologist-patient communication: The SCOPE trial intervention. *Patient Education and Counseling* 2009;**77**(1):90-6. [DOI: [10.1016/j.pec.2009.02.010](https://doi.org/10.1016/j.pec.2009.02.010)]

* Tulsky JA, Arnold RM, Alexander SC, Olsen MK, Jeffreys AS, Rodriguez KL, et al. Enhancing communication between oncologists and patients with a computer-based training program: a randomized controlled trial. *Annals of Internal Medicine* Nov 2011;**155**(9):593-601. [DOI: [10.7326/0003-4819-155-9-201111010-00007](https://doi.org/10.7326/0003-4819-155-9-201111010-00007)]

van Weert 2011 {published data only}

van Weert JC, Jansen J, Spreeuwenberg PM, van Dulmen S, Bensing JM. Effects of communication skills training and a Question Prompt Sheet to improve communication with older cancer patients: a randomized controlled trial. *Critical Reviews in Oncology-Hematology* 2011;**80**(1):145-59. [DOI: [10.1016/j.critrevonc.2010.10.010](https://doi.org/10.1016/j.critrevonc.2010.10.010)]

Wilkinson 2008 {published data only}

Wilkinson S, Perry R, Blanchard K, Linsell L. Effectiveness of a three-day communication skills course in changing nurses' communication skills with cancer/palliative care patients: a randomised controlled trial. *Palliative Medicine* 2008;**22**(4):365-75. [DOI: [10.1177/0269216308090770](https://doi.org/10.1177/0269216308090770)]

References to studies excluded from this review
Ades 2001 {published data only}

Ades T, Gansler T, Eyre H. Communicating with patients about quality of life issues. *CA: A Cancer Journal for Clinicians* 2001;**51**(4):211-2. [PUBMED: 11577487]

Alexander 2006 {published data only}

Alexander SC, Keitz SA, Sloane R, Tulsy JA. A controlled trial of a short course to improve residents' communication with patients at the end of life. *Academic Medicine* 2006;**81**(11):1008-12. [DOI: [10.1097/01.ACM.0000242580.83851.ad](https://doi.org/10.1097/01.ACM.0000242580.83851.ad)]

Anderson 1982 {published data only}

Anderson JL. Evaluation of a practical approach to teaching about communication with terminal cancer patients. *Medical Education* 1982;**16**(4):202-7. [DOI: [10.1111/j.1365-2923.1982.tb01249.x](https://doi.org/10.1111/j.1365-2923.1982.tb01249.x)]

Andrew 1998 {published data only}

Andrew M. The dilemmas of experiential teaching: toward an interpretive approach. *Journal of Continuing Education in Nursing* 1998;**29**(2):73-8. [PUBMED: 9582775]

Archer 2004 {published data only}

Archer M, Daniel R, Riley J, Wynburne J. Empowering people with cancer. *Expert Review of Anticancer Therapy* 2004;**4**(3 Suppl. 1):S51-7. [PUBMED: 15230685]

Arranz 2005 {published data only}

Arranz P, Ulla SM, Ramos JL, del Rincón C, López-Fando T. Evaluation of a counselling training program for nursing staff. *Patient Education & Counseling* 2005;**56**(2):233-9. [DOI: [10.1016/j.pec.2004.02.017](https://doi.org/10.1016/j.pec.2004.02.017)]

Arrighi 2010 {published data only}

Arrighi E, Jovell AJ, Navarro MD. Therapeutic value in oncology. Patients', caregivers' and professionals' perspective [El valor terapéutico en oncología. La perspectiva de pacientes, familiares y profesionales]. *Psicooncología* 2010;**2-3**:363-74. [DOI: [10.5209/rev_PSIC.2010.v7.n2.15900](https://doi.org/10.5209/rev_PSIC.2010.v7.n2.15900)]

Aubin-Auger 2014 {published data only}

Aubin-Auger I, Laouénan C, Le Bel J, Mercier A, Baruch D, Lebeau JP, et al. Efficacy of communication skills training on colorectal cancer screening by GPs: a cluster randomised controlled trial. *European Journal of Cancer Care* 2016;**25**(1):18-26. [DOI: [10.1111/ecc.12310](https://doi.org/10.1111/ecc.12310); PUBMED: 25851842]

Back 2005 {published data only}

Back AL. How should physicians communicate the transition to palliative care?. *Nature Clinical Practice Oncology* 2005;**2**(3):136-7. [DOI: [10.1038/ncononc0100](https://doi.org/10.1038/ncononc0100)]

Back 2007 {published data only}

Back AL, Arnold RM, Baile WF, Fryer-Edwards KA, Alexander SC, Barley GE, et al. Efficacy of communication skills training for giving bad news and discussing transitions to palliative care. *Archives of Internal Medicine* 2007;**167**(5):453-60. [DOI: [10.1001/archinte.167.5.453](https://doi.org/10.1001/archinte.167.5.453)]

Baile 1997 {published data only}

Baile WF, Lenzi R, Kudelka AP, Maguire P, Novack D, Goldstein M, et al. Improving physician-patient communication in cancer care: outcome of a workshop for oncologists. *Journal of Cancer Education* 1997;**12**(3):166-73. [DOI: [10.1080/08858199709528481](https://doi.org/10.1080/08858199709528481)]

Baile 1999 {published data only}

Baile WF, Kudelka AP, Beale EA, Gloger GA, Myers EG, Greisinger AJ, et al. Communication skills training in oncology. Description and preliminary outcomes of workshops on breaking bad news and managing patient reactions to illness. *Cancer* 1999;**86**(5):887-97. [PUBMED: 10463990]

Beach 2014 {published data only}

Beach WA, Buller MK, Dozier DM, Buller DB, Gutzmer K. The Conversations About Cancer (CAC) project: assessing feasibility and audience impacts from viewing. *The Cancer Play. Health Communication* 2014;**29**(5):462-72. [DOI: [10.1080/10410236.2013.767874](https://doi.org/10.1080/10410236.2013.767874); PUBMED: 24098921]

Berman 1983 {published data only}

Berman S, Villarreal S. Use of a seminar as an aid in helping interns care for dying children and their families. *Clinical Pediatrics* 1983;**22**(3):175-9. [DOI: [10.1177/000992288302200302](https://doi.org/10.1177/000992288302200302)]

Bernacki 2013 {published data only}

Bernacki RE, Block SD. Serious illness communications checklist. *Virtual Mentor* 2013;**15**(12):1045-9. [DOI: [10.1001/virtualmentor.2013.15.12.stas1-1312](https://doi.org/10.1001/virtualmentor.2013.15.12.stas1-1312)]

Bernacki 2015 {published data only}

Bernacki R, Hutchings M, Vick J, Smith G, Paladino J, Lipsitz S, et al. Development of the Serious Illness Care Program: a randomised controlled trial of a palliative care communication intervention. *BMJ Open* 2015;**5**(10):e009032.

Bernard 2010 {published data only}

Bernard M, de Roten Y, Despland JN, Stiefel F. Communication skills training and clinicians' defences in oncology:

an exploratory, controlled study. *Psycho-Oncology* 2010;**19**(2):209-15. [DOI: [10.1002/pon.1558](https://doi.org/10.1002/pon.1558)]

Bernhard 2012 {published data only}

Bernhard J, Butow P, Aldridge J, Juraskova I, Ribi K, Brown R. Communication about standard treatment options and clinical trials: can we teach doctors new skills to improve patient outcomes?. *Psycho-Oncology* 2012;**21**(12):1265-74. [DOI: [10.1002/pon.2044](https://doi.org/10.1002/pon.2044); PUBMED: 23208837]

Bibila 2014 {published data only}

Bibila S, Rabiee F. Training the powerful: Issues that emerged during the evaluation of a communication skills training programme for senior cancer care professionals. *European Journal of Cancer Care* 2014;**23**(4):531-44. [DOI: [10.1111/ecc.12167](https://doi.org/10.1111/ecc.12167); PUBMED: 24373021]

Bird 1993 {published data only}

Bird J, Hall A, Maguire P, Heavy P. Workshops for consultants on the teaching of communication skills. *Medical Education* 1993;**27**(2):181-5. [DOI: [10.1111/j.1365-2923.1993.tb00250.x](https://doi.org/10.1111/j.1365-2923.1993.tb00250.x)]

Blödt 2016 {published data only}

Blödt S, Mittring N, Schützler L, Fischer F, Holmberg C, Horneber M, et al. A consultation training program for physicians for communication about complementary medicine with breast cancer patients: a prospective, multi-centred, cluster-randomized, mixed-method pilot study. *BMC Cancer* 2016;**16**(1):843. [PUBMED: 27809814]

Booth 1996 {published data only}

Booth K, Maguire PM, Butterworth T, Hillier VF. Perceived professional support and the use of blocking behaviours by hospice nurses. *Journal of Advanced Nursing* 1996;**24**(3):522-7. [PUBMED: 8876412]

Brown 1999 {published data only}

Brown JB, Boles M, Mullooly JP, Levinson W. Effect of clinician communication skills training on patient satisfaction. A randomized, controlled trial. *Annals of Internal Medicine* 1999;**131**(11):822-9. [PUBMED: 10610626]

Brown 2007 {published data only}

Brown RF, Butow PN, Boyle F, Tattersall MH. Seeking informed consent to cancer clinical trials; evaluating the efficacy of doctor communication skills training. *Psycho-Oncology* 2007;**16**(6):507-16. [DOI: [10.1002/pon.1095](https://doi.org/10.1002/pon.1095)]

Brown 2011 {published data only}

Brown R, Bylund CL, Siminoff LA, Slovin SF. Seeking informed consent to Phase I cancer clinical trials: identifying oncologists' communication strategies. *Psycho-Oncology* 2011;**20**(4):361-8. [DOI: [10.1002/pon.1748](https://doi.org/10.1002/pon.1748)]

Brown 2012 {published data only}

Bernhard J, Butow P, Aldridge J, Juraskova I, Ribi K, Brown R. Communication about standard treatment options and clinical trials: can we teach doctors new skills to improve patient outcomes?. *Psycho-Oncology* 2012;**21**(12):1265-74. [DOI: [10.1002/pon.2044](https://doi.org/10.1002/pon.2044); PUBMED: 23208837]

Bernhard J, Butow P, Aldridge J, Ribi K, Juraskova I, Brown R. An international randomized trial of skills training for oncologists concerning communication about standard treatment options and clinical trials with patients with early breast cancer. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria*. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:s76. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Brown R, Butow H, Wilson-Genderson M, Bernhard J, Ribi K, Juraskova I. Meeting breast cancer patients' decision-making preferences in oncology consultations: Impact on decision specific outcomes. *Psycho-Oncology Conference: 13th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Antalya Turkey*. Conference Start: 20111016 Conference End: 20111020. 2011; Vol. 20:61. [DOI: [10.1002/pon.2077](https://doi.org/10.1002/pon.2077)]

* Brown R, Butow P, Wilson-Genderson M, Bernhard J, Ribi K, Juraskova I. Meeting the decision-making preferences of patients with breast cancer in oncology consultations: impact on decision-related outcomes. *Journal of Clinical Oncology* 2012;**30**(8):857-62. [DOI: [10.1200/JCO.2011.37.7952](https://doi.org/10.1200/JCO.2011.37.7952)]

Burgess 2008 {published data only}

Burgess CC, Bish AM, Hunter HS, Salkovskis P, Michell M, Whelehan P, et al. Promoting early presentation of breast cancer: Development of a psycho-educational intervention. *Chronic Illness* 2008;**4**(1):13-27. [DOI: [10.1177/1742395307084404](https://doi.org/10.1177/1742395307084404)]

Butow 2015 {published data only}

Butow P, Brown R, Aldridge J, Juraskova I, Zoller P, Boyle F, et al. Can consultation skills training change doctors' behaviour to increase involvement of patients in making decisions about standard treatment and clinical trials: A randomised controlled trial. *Health Expect* 2015;**18**(6):2570-83. [DOI: [10.1111/hex.12229](https://doi.org/10.1111/hex.12229); PUBMED: 24975503]

Bylund 2010 {published data only}

Bylund CL, Brown R, Gueguen JA, Diamond C, Bianculli J, Kissane DW. The implementation and assessment of a comprehensive communication skills training curriculum for oncologists. *Psycho-Oncology* 2010;**19**(6):583-93. [DOI: [10.1002/pon.1585](https://doi.org/10.1002/pon.1585)]

Bylund 2011a {published data only}

Bylund CL, Brown RF, Bialer PA, Levin TT, Lubrano di Ciccone B, Kissane DW, et al. Developing and implementing an advanced communication training program in oncology at a comprehensive cancer center. *Journal of Cancer Education* 2011;**26**(4):604-11. [DOI: [10.1007/s13187-011-0226-y](https://doi.org/10.1007/s13187-011-0226-y)]

Bylund 2011b {published data only}

Bylund CL, Goytia J, D'Agostino A, Bulone L, Horner J, Li Y, et al. Evaluation of a pilot communication skills training intervention for minority cancer patients. *Journal of Psychosocial Oncology* 2011;**29**(4):347-59. [PUBMED: 21966720]

Cantwell 1997 {published data only}

Cantwell BM, Ramirez AJ. Doctor-patient communication: a study of junior house officers. *Medical Education* 1997;**31**(1):17-21. [PUBMED: 9231119]

Caps 2010 {published data only}

Caps E, Libert Y, Marchal S, Bragard I, Etienne AM, Reynaert CH, et al. Optimizing team members communication skills in radiation therapy: content and feasibility of a Belgian Inter-university curriculum. *Psycho-Oncology*; conference. 2010; Vol. 19 (Suppl 2):S268.

Chandawarkar 2011 {published data only}

Chandawarkar RY, Ruscher KA, Krajewski A, Garg M, Pfeiffer C, Singh R, et al. Pretraining and posttraining assessment of residents' performance in the fourth accreditation council for graduate medical education competency: Patient communication skills. *Archives of Surgery* 2011;**146**(8):916-21. [DOI: [10.1001/archsurg.2011.167](https://doi.org/10.1001/archsurg.2011.167)]

Charlton 1993 {published data only}

Charlton R. Education about death and dying at Otago University Medical School. *New Zealand Medical Journal* 1993;**106**(966):447-9. [PUBMED: 8233175]

Clark 2009 {published data only}

Clark P. Reducing psychological distress in the in-patient oncology treatment setting using FLEX Care: An intervention study. *Psycho-Oncology Conference: 6th Annual Conference of the American Psychosocial Oncology Society, APOS Charlotte, NC United States. Conference Start: 20090205 Conference End: 20090208. 2009; Vol. 18:S4. [DOI: [10.1002/pon.1526](https://doi.org/10.1002/pon.1526)]*

Claxton 2011 {published data only}

Claxton R, Marks S, Buranosky R, Rosielle D, Arnold RM. The educational impact of weekly e-mailed fast facts and concepts. *Journal of Palliative Medicine* 2011;**14**(4):475-81. [DOI: [10.1089/jpm.2010.0418](https://doi.org/10.1089/jpm.2010.0418)]

Clayton 2012 {published data only}

Clayton JM, Adler JL, O'Callaghan A, Martin P, Hynson J, Butow PN, et al. Intensive communication skills teaching for specialist training in palliative medicine: development and evaluation of an experiential workshop. *Journal of Palliative Medicine* 2012;**15**(5):585-91. [DOI: [10.1089/jpm.2011.0292](https://doi.org/10.1089/jpm.2011.0292); PUBMED: 22433021]

Connolly 2010 {published data only}

Connolly M, Perryman J, McKenna Y, Orford J, Thomson L, Shuttleworth J, et al. SAGE & THYME: a model for training health and social care professionals in patient-focussed support. *Patient Education and Counseling* 2010;**79**(1):87-93. [DOI: [10.1016/j.pec.2009.06.004](https://doi.org/10.1016/j.pec.2009.06.004)]

Cooley 2014 {published data only}

Cooley ME, Blonquist T, Catalano P, Lobach D, Braun I, Halpenny B, et al. Point-of-care clinical decision support for cancer symptom management: Results of a group randomised trial. *Journal of Clinical Oncology* 2014;**32**(31 suppl):1-1. [DOI: [10.1200/jco.2014.32.31_suppl.1](https://doi.org/10.1200/jco.2014.32.31_suppl.1)]

Cort 2009 {published data only}

Cort E, Moorey S, Hotopf M, Kapari M, Monroe B, Hansford P, et al. Palliative care nurses' experiences of training in cognitive behaviour therapy and taking part in a randomised controlled trial. *International Journal of Palliative Nursing* 2009;**15**(6):290-8. [DOI: [10.12968/ijpn.2009.15.6.42988](https://doi.org/10.12968/ijpn.2009.15.6.42988)]

Cowan 1997 {published data only}

Cowan DH, Laidlaw JC, Russell ML. A strategy to improve communication between health care professionals and people living with cancer: II. Follow-up of a workshop on the teaching and assessment of communication skills in Canadian Medical Schools. *Journal of Cancer Education* 1997;**12**(3):161-5. [DOI: [10.1080/08858199709528480](https://doi.org/10.1080/08858199709528480)]

Craytor 1978 {published data only}

Craytor JK, Brown JK, Morrow GR. Assessing learning needs of nurses who care for persons with cancer. *Cancer Nursing* 1978;**1**(3):211-20. [PUBMED: 248304]

Crit 2006 {published data only}

No authors listed. The critical need to communicate effectively with the children of cancer patients. *Journal of Supportive Oncology* 2006;**4**(2):75-6. [PUBMED: 16499125]

Curtis 2013 {published data only}

Curtis JR, Back AL, Ford DW, Downey L, Shannon SE, Doorenbos AZ, et al. Effect of communication skills training for residents and nurse practitioners on quality of communication with patients with serious illness: A randomized trial. *JAMA* 2013;**310**(21):2271-81. [DOI: [10.1001/jama.2013.282081](https://doi.org/10.1001/jama.2013.282081); PUBMED: 24302090]

Randall J, Back L, Ford W, Downey L, Shannon E, Doorenbos Z, et al. Effect of communication skills training for residents and nurse practitioners on quality of communication with patients with serious illness: A randomized trial: Correction. *JAMA* 2014;**311**(13):1360. [PUBMED: 24302090]

Das Gracias 2016 {published data only}

Das Graças Silva Matsubara M, De Domenico EBL. Virtual learning environment in continuing education for nursing in oncology: an experimental study. *Journal of Cancer Education* 2016;**31**(4):804-10. [DOI: [10.1007/s13187-015-0889-x](https://doi.org/10.1007/s13187-015-0889-x); PUBMED: 26224242]

de Bie 2011 {published data only}

de Bie RP, Massuger LF, Lenselink CH, Derksen YH, Prins JB, Bekkers RL. The role of individually targeted information to reduce anxiety before colposcopy: a randomised controlled trial. *British Journal of Obstetrics and Gynaecology* 2011;**118**(8):945-50. [DOI: [10.1111/j.1471-0528.2011.02996.x](https://doi.org/10.1111/j.1471-0528.2011.02996.x)]

Delvaux 1997 {published data only}

Delvaux N, Razavi D. Psychological training for health-care professionals in oncology. A way to improve communication skills. *Annals of the New York Academy of Science* 1997;**809**:336-49. [PUBMED: 9103585]

Del Vento 2009 {published data only}

Del Vento A, Bavelas J, Healing S, MacLean G, Kirk P. An experimental investigation of the dilemma of delivering bad news. *Patient Education and Counselling* 2009;**77**(3):443-9. [DOI: [10.1016/j.pec.2009.09.014](https://doi.org/10.1016/j.pec.2009.09.014)]

de Rond 2000 {published data only}

de Rond MEJ, De Wit R, Van Dam FS, Muller MJ. A pain monitoring program for nurses: effects on communication, assessment and documentation of patients' pain. *Journal of Pain & Symptom Management* 2000;**20**(6):424-39. [DOI: [11131261](https://doi.org/10.11131261)]

Ditton-Phare 2016 {published data only}

Ditton-Phare P, Sandhu H, Kelly B, Kissane D, Loughland C. Pilot evaluation of a communication skills training program for psychiatry residents using standardized patient assessment. *Academic Psychiatry* 2016;**40**(5):768-75. [DOI: [10.1007/s40596-016-0560-9](https://doi.org/10.1007/s40596-016-0560-9); PUBMED: 27137767]

Dixon 2001 {published data only}

Dixon H, Hordern A, Borland R. The Breast Cancer Distance Education Program: development and evaluation of a course for specialist breast cancer nurses. *Cancer Nursing* 2001;**24**(1):44-52.

Downar 2017 {published data only}

Downar J, McNaughton N, Abdelhalim T, Wong N, Lapointe-Shaw L, Seccareccia D, et al. Standardized patient simulation versus didactic teaching alone for improving residents' communication skills when discussing goals of care and resuscitation: a randomised controlled trial. *Palliative Medicine* 2017; Vol. 31, issue 2:130-9. [DOI: [10.1177/0269216316652278](https://doi.org/10.1177/0269216316652278)]

Durgahee 1997 {published data only}

Durgahee T. Reflective practice: nursing ethics through story telling. *Nursing Ethics: an International Journal for Health Care Professionals* 1997;**4**(2):135-46. [DOI: [10.1177/096973309700400205](https://doi.org/10.1177/096973309700400205)]

Epnar 2014 {published data only}

Epnar DE, Baile WF. Difficult conversations: Teaching medical oncology trainees communication skills one hour at a time. *Academic Medicine* 2014;**89**(4):578-84. [DOI: [10.1097/ACM.000000000000177](https://doi.org/10.1097/ACM.000000000000177); PUBMED: 24556763]

Fallowfield 1998 {published data only}

Fallowfield L, Lipkin M, Hall A. Teaching senior oncologists communication skills: results from phase I of a comprehensive longitudinal program in the United Kingdom. *Journal of Clinical Oncology* 1998;**16**(5):1961-8. [DOI: [10.1200/JCO.1998.16.5.1961](https://doi.org/10.1200/JCO.1998.16.5.1961)]

Fallowfield 2001 {published data only}

Fallowfield L, Saul J, Gilligan B. Teaching senior nurses how to teach communication skills in oncology. *Cancer Nursing* 2001;**24**(3):185-91. [PUBMED: 11409062]

Fallowfield 2012 {published data only}

Fallowfield LJ, Solis-Trapala I, Jenkins VA. Evaluation of an educational program to improve communication with patients about early-phase trial participation. *Oncologist*

2012;**17**(3):377-83. [DOI: [10.1634/theoncologist.2011-0271](https://doi.org/10.1634/theoncologist.2011-0271); PUBMED: 22382459]

Faulkner 1984 {published data only}

Faulkner A, Maguire P. Teaching ward nurses to monitor cancer patients. *Clinical Oncology* 1984;**10**(4):383-9. [PUBMED: 6509820]

Faulkner 1992 {published data only}

Faulkner A. The evaluation of training programmes for communication skills in palliative care. *Journal of Cancer Care* 1992;**1**(2):75-8.

Favre 2007 {published data only}

Favre N, Despland JN, De Roten Y, Drapeau M, Bernard M, Stiefel F. Psychodynamic aspects of communication skills training: a pilot study. *Supportive Care in Cancer* 2007;**15**(3):333-7. [DOI: [10.1007/s00520-006-0150-6](https://doi.org/10.1007/s00520-006-0150-6)]

Ferrell 1998a {published data only}

Ferrell BR, Virani R, Grant M. HOPE. Home Care Outreach for Palliative Care Education. *Cancer Practice* 1998;**6**(2):79-85. [PUBMED: 9573907]

Ferrell 1998b {published data only}

Ferrell BR, Virani R, Grant M. Improving end-of-life care education in home care. *Journal of Palliative Medicine* 1998;**1**(1):11-9. [DOI: [10.1089/jpm.1998.1.11](https://doi.org/10.1089/jpm.1998.1.11)]

File 2014 {published data only}

File W, Bylund CL, Kesselheim J, Leonard D, Leavey P. Do pediatric hematology/oncology (PHO) fellows receive communication training?. *Pediatric Blood & Cancer* 2014;**61**(3):502-6. [DOI: [10.1002/pbc.24742](https://doi.org/10.1002/pbc.24742); PUBMED: 24039096]

Fineberg 2005 {published data only}

Fineberg IC. Preparing professionals for family conferences in palliative care: evaluation results of an interdisciplinary approach. *Journal of Palliative Medicine* 2005;**8**(4):857-66. [DOI: [10.1089/jpm.2005.8.857](https://doi.org/10.1089/jpm.2005.8.857)]

Finset 2003 {published data only}

Finset A, Ekeberg O, Eide H, Aspegren K. Long term benefits of communication skills training for cancer doctors. *Psycho-Oncology* 2003;**12**(7):686-93. [DOI: [10.1002/pon.691](https://doi.org/10.1002/pon.691)]

Fujimori 2003 {published data only}

Fujimori M, Oba A, Koike M, Okamura M, Akizuki N, Kamiya M, et al. Communication skills training for Japanese oncologists on how to break bad news. *Journal of Cancer Education* 2003;**18**(4):194-201. [DOI: [10.1207/s15430154jce1804_6](https://doi.org/10.1207/s15430154jce1804_6)]

Fukui 2008 {published data only}

Fukui S, Ogawa K, Ohtsuka M, Fukui N. Effect of communication skills training on nurses' detection of patients' distress and related factors after cancer diagnosis: a randomized study. *Psycho-Oncology* 2009;**18**(11):1156-64. [DOI: [10.1002/pon.1429](https://doi.org/10.1002/pon.1429)]

* Fukui S, Ogawa K, Ohtsuka M, Fukui N, Fukui S, Ogawa K, et al. A randomized study assessing the efficacy of communication skill training on patients' psychological distress and coping:

nurses' communication with patients just after being diagnosed with cancer. *Cancer* 2008;**113**(6):1462-70.

Gerhart 2016 {published data only}

Gerhart J, O'Mahony S, Abrams I, Grosse J, Greene M, Levy M. A pilot test of a mindfulness-based communication training to enhance resilience in palliative care professionals. *Journal of Contextual Behavioral Science* 2016;**5**:89-96. [DOI: [10.1016/j.jcbs.2016.04.003](https://doi.org/10.1016/j.jcbs.2016.04.003)]

Gibon 2017 {published data only}

Gibon A-S, Durieux JF, Merckaert I, Delvaux N, Farvacques C, Libert Y, et al. Development of the LaComm 1.0, A French medical communication analysis software: a study assessing its sensitivity to change. *Patient Education and Counseling* 2017;**100**(2):297-304. [DOI: [10.1016/j.pec.2016.08.005](https://doi.org/10.1016/j.pec.2016.08.005)]

Girgis 1997 {published data only}

Girgis A, Sanson-Fisher RW, McCarthy WH. Communicating with patients: surgeons' perceptions of their skills and need for training. *Australia and New Zealand Journal of Surgery* 1997;**67**(11):775-80. [PUBMED: 9396993]

Glimelius 1995 {published data only}

Glimelius B, Birgegård G, Hoffman K, Kvale G, Sjöden PO. Information to and communication with cancer patients: Improvements and psychosocial correlates in a comprehensive care program for patients and their relatives. *Patient Education and Counseling* 1995;**25**(2):171-82. [PUBMED: 7659630]

Golding 2016 {published data only}

Golding E, Lampkin A, Larach MW, Klima L. Effect of a communication skills intervention on resident comfort and knowledge of discussing goals of care and advance care planning. *Journal of Clinical Oncology: Official Journal of the American Society of Clinical Oncology* 2016;**34**(26):50.

Gordon 1995 {published data only}

Gordon GH, Rust K. Evaluating a faculty development course on medical interviewing. In: Lipkin M, Putnam SM, Lazare A editor(s). *The Medical Interview*. New York, NY, USA: Springer-Verlag, 1995:436-47. [DOI: [10.1007/978-1-4612-2488-4_37](https://doi.org/10.1007/978-1-4612-2488-4_37)]

Gorniewicz 2017a {published data only}

Gorniewicz J, Floyd M, Krishnan K, Bishop TW, Tudiver F, Lang F. Breaking bad news to patients with cancer: A randomized control trial of a brief communication skills training module incorporating the stories and preferences of actual patients. *Patient Education and Counseling* 2017; Vol. 100, issue 4:655-66. [DOI: [10.1016/j.pec.2016.11.008](https://doi.org/10.1016/j.pec.2016.11.008); PUBMED: 27876220]

Gouveia 2017 {published data only}

Gouveia L, Janvier A, Dupuis F, Duval M, Sultan S. Comparing two types of perspective taking as strategies for detecting distress amongst parents of children with cancer: a randomised trial. *PLoS One* 2017; Vol. 12, issue 4:e0175342. [DOI: [10.1371/journal.pone.0175342](https://doi.org/10.1371/journal.pone.0175342); PUBMED: 28384315]

Griffiths 2015 {published data only}

Griffiths J, Wilson C, Ewing G, Connolly M, Grande G. Improving communication with palliative care cancer patients at home - A

pilot study of SAGE & THYME communication skills model. *Eur J Oncol Nurs* 2015;**19**(5):465-72. [DOI: [10.1016/j.ejon.2015.02.005](https://doi.org/10.1016/j.ejon.2015.02.005); PUBMED: 25782722]

Gulbrandsen 2013 {published data only}

Gulbrandsen P, Jensen BF, Finset A, Blanch-Hartigan D. Long-term effect of communication training on the relationship between physicians' self-efficacy and performance. *Patient Education and Counseling* 2013;**91**(2):180-5. [DOI: [10.1016/j.pec.2012.11.015](https://doi.org/10.1016/j.pec.2012.11.015); PUBMED: 23414658]

Gutheil 2005 {published data only}

Gutheil IA, Heyman JC. Communication between older people and their health care agents: results of an intervention. *Health & Social Work* 2005;**30**(2):107-16. [DOI: [10.1093/hsw/30.2.107](https://doi.org/10.1093/hsw/30.2.107)]

Hainsworth 1996 {published data only}

Hainsworth DS. The effect of death education on attitudes of hospital nurses toward care of the dying. *Oncology Nursing Forum* 1996;**23**(6):963-7. [PUBMED: 8829166]

Hall 1999 {published data only}

Hall P, Weaver L, Hupe D, Seely JF. Community-based palliative care education: Can it improve care of the terminally ill?. *Academic Medicine* 1999;**74**(Suppl 10):S105-7.

Hallenbeck 1999 {published data only}

Hallenbeck JL, Bergen MR. A medical resident inpatient hospice rotation: experiences with dying and subsequent changes in attitudes and knowledge. *Journal of Palliative Medicine* 1999;**2**(2):197-208. [DOI: [10.1089/jpm.1999.2.197](https://doi.org/10.1089/jpm.1999.2.197)]

Hallford 2011 {published data only}

Hallford DJ, McCabe MP, Mellor D, Davison TE, Goldhammer DL, George K, et al. Intervention for depression among palliative care patients and their families: A study protocol for evaluation of a training program for professional carestaff. *BMC Palliative Care* 2011;**10**:11. [DOI: [10.1186/1472-684X-10-11](https://doi.org/10.1186/1472-684X-10-11); PUBMED: 21668988]

Hamilton 2014 {published data only}

Hamilton G, Ortega R, Hochstetler V, Pierson K, Lin P, Lowes S. Teaching communication skills to hospice teams: comparing the effectiveness of a communication skills laboratory with in-person, second life, and phone role-playing. *American Journal of Hospice & Palliative Care* 2014;**31**(6):611-8. [DOI: [10.1177/1049909113504481](https://doi.org/10.1177/1049909113504481); PUBMED: 24037542]

Heaven 1995 {published data only}

Heaven CM, Maguire GP. Training hospice nurses to elicit patient concerns. *Psycho-Oncology*. Conference proceedings: British Psychosocial Oncology Group 11th Annual Conference. 1995; Vol. 4, issue 2:89.

Heaven 1996 {published data only}

Heaven CM, Maguire P. Training hospice nurses to elicit patient concerns. *Journal of Advanced Nursing* 1996;**23**(2):280-6. [PUBMED: 8708240]

Hellbom 2001 {published data only}

Hellbom M, Brandberg Y, Kurland J, Arving C, Thalén-Lindström A, Glimelius B, et al. Assessment and treatment of psychosocial problems in cancer patients: an exploratory study of a course for nurses. *Patient Education and Counseling* 2001;**45**(2):101-6. [PUBMED: 11687322]

Hendricks-Ferguson 2015 {published data only}

Hendricks-Ferguson VL, Kane JR, Pradhan KR, Shih CS, Gauvain KM, Baker JN, et al. Evaluation of physician and nurse dyad training procedures to deliver a palliative and end-of-life communication intervention to parents of children with a brain tumor. *Journal of Pediatric Oncology Nursing* 2015;**32**(5):337-47. [DOI: [10.1177/1043454214563410](https://doi.org/10.1177/1043454214563410); PUBMED: 25623029]

Henoch 2013 {published data only}

Henoch I, Danielson E, Strang S, Browall M, Melin-Johansson C. Training intervention for health care staff in the provision of existential support to patients with cancer: A randomized, controlled study. *Journal of Pain and Symptom Management* 2013;**46**(6):785-94. [10.1016/j.jpainsymman.2013.01.013; PUBMED: 23764108]

Hietanen 2007 {published data only}

Hietanen PS, Aro AR, Holli KA, Schreck M, Peura A, Joensuu HT. A short communication course for physicians improves the quality of patient information in a clinical trial. *Acta Oncologica* 2007;**46**(1):42-8. [DOI: [10.1080/02841860600849067](https://doi.org/10.1080/02841860600849067)]

Hill 2013 {published data only}

Hill A. Compassionate communication training with cancer patients and caregivers: Empathy, self-compassion, and well-being. Alliant International University. San Francisco: Alliant International University, California School of Professional Psychology, 2012.

Hillen 2014 {published data only}

Hillen MA, de Haes HC, Stalpers LJ, Klinkenbijn JH, Eddes EH, Butow PN, et al. How can communication by oncologists enhance patients' trust? An experimental study. *Annals of Oncology* 2014;**25**(4):896-901. [DOI: [10.1093/annonc/mdu027](https://doi.org/10.1093/annonc/mdu027); PUBMED: 24615411]

Hoffman 2002 {published data only}

Hoffman M, Steinberg M. Development and implementation of a curriculum in communication skills and psycho-oncology for medical oncology fellows. *Journal of Cancer Education* 2002;**17**(4):196-200. [DOI: [10.1080/08858190209528837](https://doi.org/10.1080/08858190209528837)]

Hulsman 1997 {published data only}

Hulsman RL, Ros WJ, Janssen M, Winnubst JA. Interact Cancer. The development and evaluation of a computer-assisted course on communication skills for medical specialists in oncology. *Patient Education & Counseling* 1997;**30**(2):129-41. [PUBMED: 9128615]

Hulsman 2002 {published data only}

Hulsman RL, Ros WJ, Winnubst JA, Bensing JM. The effectiveness of a computer-assisted instruction programme on communication skills of medical specialists in oncology. *Medical Education* 2002;**36**(2):125-34. [DOI: [11869439](https://doi.org/10.1186/9439)]

Hundley 2008 {published data only}

Hundley G. The effectiveness of "delivering unfavourable news to patients diagnosed with cancer" training program for oncologists in Uzbekistan. Dissertation Abstracts International Section A: Humanities and Social Sciences. Orlando, Florida: University of Central Florida, 2008; Vol. 2156, issue 69:6.

* Hundley G. The effectiveness of "delivering unfavourable news to patients diagnosed with cancer" training program for oncologists in Uzbekistan. PhD dissertation 2008; Vol. UMI Number: 3319247:iii-15.

Jefford 2011 {published data only}

Jefford M, Lotfi-Jam K, Baravelli C, Grogan S, Rogers M, Krishnasamy M, et al. Development and pilot testing of a nurse-led posttreatment support package for bowel cancer survivors. *Cancer Nursing* 2011;**34**(3):E1-10. [DOI: [10.1097/NCC.0b013e3181f22f02](https://doi.org/10.1097/NCC.0b013e3181f22f02)]

Johnson 2012 {published data only}

Johnson D, Coulter P, Niemeyer B, Sandstedt E, Paffel A, Dorsey B, et al. Strengthening ambulatory palliative care support: the Advanced Illness Coordinated Care Program (P6). *Journal of Pain and Symptom Management* 2012;**43**(2):317-8. [DOI: [10.1016/j.jpainsymman.2011.12.008](https://doi.org/10.1016/j.jpainsymman.2011.12.008)]

Johnson 2013 {published data only}

Johnson LA, Gorman C, Morse R, Firth M, Rushbrooke S. Does communication skills training make a difference to patients' experiences of consultations in oncology and palliative care services?. *European Journal of Cancer Care* 2013;**22**(2):202-9. [DOI: [10.1111/ecc.12014](https://doi.org/10.1111/ecc.12014); PUBMED: 23121207]

Jors 2016 {published data only}

Jors K, Seibel K, Bardenheuer H, Buchheidt D, Mayer-Steinacker R, Viehrig M, et al. Education in end-of-life care: What Do Experienced Professionals Find Important?. *Journal of Cancer Education* 2016;**31**(2):272-8. [DOI: [10.1007/s13187-015-0811-6](https://doi.org/10.1007/s13187-015-0811-6); PUBMED: 25773135.J]

Ju 2014 {published data only}

Ju M, Berman AT, Hwang WT, Lamarra D, Baffic C, Suneja G, et al. Assessing interpersonal and communication skills in radiation oncology residents: A pilot standardized patient program. *International Journal of Radiation Oncology, Biology, Physics* 2014;**88**(5):1129-35. [DOI: [10.1016/j.ijrobp.2014.01.007](https://doi.org/10.1016/j.ijrobp.2014.01.007); PUBMED: 24661666]

Ke 2008 {published data only}

Ke LS, Chiu TY, Hu WY, Lo SS, Ke LS, Chiu TY, et al. Effects of educational intervention on nurses' knowledge, attitudes, and behavioral intentions toward supplying artificial nutrition and hydration to terminal cancer patients. *Supportive Care in Cancer* 2008;**16**(11):1265-72. [DOI: [10.1007/s00520-008-0426-0](https://doi.org/10.1007/s00520-008-0426-0)]

Keir 2013 {published data only}

Keir A, Wilkinson D. Communication skills training in paediatrics. *Journal of Paediatrics and Child Health* 2013;**49**:624-8. [DOI: [10.1111/jpc.12216](https://doi.org/10.1111/jpc.12216)]

Kelley 2012 {published data only}

Kelley AS, Back AL, Arnold RM, Goldberg GR, Lim BB, Littrivis E, et al. Geritalk: Communication skills training for geriatric and palliative medicine fellows. *Journal of the American Geriatric Society* 2012;**60**(2):332-7. [DOI: [10.1111/j.1532-5415.2011.03787.x](https://doi.org/10.1111/j.1532-5415.2011.03787.x)]

Kinnane 2011 {published data only}

Kinnane NA, Waters T, Aranda S. Evaluation of a pilot 'peer support' training programme for volunteers in a hospital-based cancer information and support centre. *Supportive Care in Cancer* 2011;**19**(1):81-90. [DOI: [10.1007/s00520-009-0791-3](https://doi.org/10.1007/s00520-009-0791-3)]

Kortes-Miller 2016 {published data only}

Kortes-Miller K, Jones-Bonofiglio K, Hendrickson S, Kelley ML. Dying with Carolyn: using simulation to improve communication skills of unregulated care providers working in long-term care. *Journal of Applied Gerontology* 2016;**35**(12):1259-78.

Kruse 2003 {published data only}

Kruse J, Schmitz N, Woller W, Clar B, Meyer E, Grinschgl A, et al. [Effects of a psychosocial education programme to improve doctor-patient interaction with cancer patients]. *Zeitschrift für Psychosomatische Medizin und Psychotherapie* 2003;**49**(3):232-45. [PUBMED: 12964130]

Kubota 2012 {published data only}

Kubota K. Current status and future direction of communication skill training program. Annals of Oncology. 10th Annual Meeting of the Japanese-Society-of-Medical-Oncology (JSMO). 2012; Vol. 23.

Kubota 2015 {published data only}

Kubota Y, Okuyama T, Uchida M, Umezawa S, Nakaguchi T, Sugano K, et al. Effectiveness of a psycho-oncology training program for oncology nurses: A randomized controlled trial. *Psycho-Oncology* 2015;**25**(6):712-8. [DOI: [10.1002/pon.4000](https://doi.org/10.1002/pon.4000)]

Ladouceur 2003 {published data only}

Ladouceur R, Goulet F, Gagnon R, Boulé R, Girard G, Jacques A, et al. Breaking bad news: impact of a continuing medical education workshop. *Journal of Palliative Care* 2003;**19**(4):238-45.

La Monica 1987 {published data only}

La Monica EL, Madea AR, Oberst MT. Empathy and nursing care outcomes. *Scholarly Inquiry for Nursing Practice* 1987;**1**(3):197-213.

Larbig 2009 {published data only}

Larbig WD, David N, Prudlo U, Schlenker P. Psychosocial online counselling in breast cancer patients. Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:S233. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Lenzi 2011 {published data only}

Lenzi R, Baile WF, Costantini A, Grassi L, Parker PA. Communication training in oncology: results of intensive

communication workshops for Italian oncologists. *European Journal of Cancer Care* 2011;**20**(2):196-203. [DOI: [10.1111/j.1365-2354.2010.01189.x](https://doi.org/10.1111/j.1365-2354.2010.01189.x)]

Libert 2003 {published data only}

Libert Y, Janne P, Razavi D, Merckaert I, Scalliet P, Delvaux N, et al. Impact of medical specialists' locus of control on communication skills in oncological interviews. *British Journal of Cancer* 2003;**88**(4):502-9. [DOI: [10.1038/sj.bjc.6600966](https://doi.org/10.1038/sj.bjc.6600966)]

Libert 2016 {published data only}

Libert Y, Canivet D, Menard C, Van Achte L, Farvacques C, Merckaert I, et al. Predictors of physicians' satisfaction with their management of uncertainty during a decision-making encounter with a simulated advanced stage cancer patient. *Patient Education and Counseling* 2016;**99**(7):1121-9. [DOI: [10.1016/j.pec.2016.01.008](https://doi.org/10.1016/j.pec.2016.01.008)]

Linder 1999 {published data only}

Linder JF, Blais J, Enders SR, Melberg SE, Meyers FJ. Palliative education: a didactic and experiential approach to teaching end-of-life care. *Journal of Cancer Education* 1999;**14**(3):154-60. [DOI: [10.1080/08858199909528607](https://doi.org/10.1080/08858199909528607)]

Liu 2007 {published data only}

Liu J, Mok E, Wong T, Xue L, Xu B. Evaluation of an integrated communication skills training program for nurses in cancer care in Beijing, China. *Nursing Research* 2007;**56**(3):202-9. [DOI: [10.1097/01.NNR.0000270030.82736.8c](https://doi.org/10.1097/01.NNR.0000270030.82736.8c)]

Lloyd-Williams 1996 {published data only}

Lloyd-Williams M, Lloyd-Williams F. Communication skills: the House Officer's perception. *Journal of Cancer Care* 1996;**5**(4):151-3.

Loiselle 2011 {published data only}

Loiselle CG. Training the next generation of researchers in psychosocial oncology: Research priorities and future directions. Psycho-Oncology: Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625.. 2009; Vol. 18:S138. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Macauley 2011 {published data only}

Macauley R, Billings JA. Teaching small groups in palliative care. *Journal of Palliative Medicine* 2011;**14**(1):91-5. [DOI: [10.1089/jpm.2010.0215](https://doi.org/10.1089/jpm.2010.0215)]

Madhavan 2011 {published data only}

Madhavan S, Sanders AE, Chou WYS, Shuster A, Boone KW, Dente MA, et al. Pediatric palliative care and eHealth: Opportunities for patient-centered care. *American Journal of Preventative Medicine* 2011;**5** (Suppl 2):S208-216. [DOI: [10.1016/j.amepre.2011.01.013](https://doi.org/10.1016/j.amepre.2011.01.013)]

Maguire 1996a {published data only}

Maguire P, Faulkner A, Booth K, Elliott C, Hillier V. Helping cancer patients disclose their concerns. *European Journal of Cancer* 1996;**32A**(1):78-81. [PUBMED: 8695247]

Maguire 1996b {published data only}

Maguire P, Booth K, Elliott C, Jones B. Helping health professionals involved in cancer care acquire key interviewing skills--the impact of workshops. *European Journal of Cancer* 1996;**32A**(9):1486-9. [PUBMED: 8911106]

Martinez 2009 {published data only}

Martinez LS, Schwartz JS, Freres D, Frazee T, Hornik RC. Patient-clinician information engagement increases treatment decision satisfaction among cancer patients through feeling of being informed. *Patient Education and Counseling* 2009;**77**(3):384-90. [DOI: [10.1016/j.pec.2009.09.008](https://doi.org/10.1016/j.pec.2009.09.008)]

Matrone 1990 {published data only}

Matrone JS. The effect of a staff development program on nursing case management competencies and patient outcomes in the acute care setting. [PhD thesis] 1990; Vol. Boston College, USA.

Medendorp 2017 {published data only}

Medendorp NM, Visser LNC, Hillen MA, de Haes JCJM, Smets EMA. How oncologists' communication improves (analogue) patients' recall of information. A randomised video-vignettes study. *Patient Education and Counseling* 2017;**100**(7):1338-44. [DOI: [10.1016/j.pec.2017.02.012](https://doi.org/10.1016/j.pec.2017.02.012)]

Melo 2011 {published data only}

Melo CG, Oliver D. Can addressing death anxiety reduce health care workers' burnout and improve patient care?. *Journal of Palliative Care* 2011;**27**(4):287-95. [PUBMED: 22372283]

Meystre 2013 {published data only}

Meystre C, Bourquin C, Despland JN, Stiefel F, de Roten Y. Working alliance in communication skills training for oncology clinicians: A controlled trial. *Patient Counseling and Health Education* 2013;**90**(2):233-8. [DOI: [10.1016/j.pec.2012.10.013](https://doi.org/10.1016/j.pec.2012.10.013)]

Morita 2014 {published data only}

Morita T, Tamura K, Kusajima E, Sakai S, Kawa M, Imura C, et al. Nurse education program on meaninglessness in terminally ill cancer patients: A randomized controlled study of a novel two-day workshop. *Journal of Palliative Medicine* 2014;**17**(12):1298-305. [DOI: [10.1089/jpm.2013.0559](https://doi.org/10.1089/jpm.2013.0559)]

Nellis 2016 {published data only}

Nellis ME, Howell JD, Ching K, Bylund C. The use of simulation to improve resident communication and personal experience at end-of-life care. *Journal of Pediatric Intensive Care* 2016;**6**(2):91-7. [DOI: [10.1055/s-0036-1584684](https://doi.org/10.1055/s-0036-1584684)]

O'Connor 2011 {published data only}

O'Connor M, Fisher C, French L, Halkett G, Jiwa M, Hughes J. Exploring the community pharmacist's role in palliative care: Focusing on the person not just the prescription. *Patient Education and Counseling* 2011;**83**(3):458-64. [DOI: [10.1016/j.pec.2011.04.037](https://doi.org/10.1016/j.pec.2011.04.037)]

Parle 1997 {published data only}

Parle M, Maguire P, Heaven C. The development of a training model to improve health professionals' skills, self-efficacy and outcome expectancies when communicating with cancer

patients. *Social Science & Medicine* 1997;**44**(2):231-40. [PUBMED: 9015875]

Patel 2016 {published data only}

Patel RV, Golding E, Lampkin A, Larach MW, Klima L. Effect of a communication skills intervention on resident comfort and knowledge of discussing goals of care and advance care planning. *Journal of Clinical Oncology* 2016;**34**(26_suppl):50-50. [DOI: [10.1200/jco.2016.34.26_suppl.50](https://doi.org/10.1200/jco.2016.34.26_suppl.50)]

Pekmezaris 2011 {published data only}

Pekmezaris R, Walia R, Nouryan C, Katinas L, Zeitoun N, Alano G, et al. The Impact of an end-of-life communication skills intervention on physicians-in-training. *Gerontology & Geriatrics Education* 2011;**32**(2):152-64. [DOI: [10.1080/02701960.2011.572051](https://doi.org/10.1080/02701960.2011.572051)]

Pelayo 2011 {published data only}

Pelayo M, Cebrian D, Areosa A, Agra Y, Izquierdo JV, Buendia F. Effects of online palliative care training on knowledge, attitude and satisfaction of primary care physicians. *BMC Family Practice* 2011;**12**:37. [DOI: [10.1186/1471-2296-12-37](https://doi.org/10.1186/1471-2296-12-37)]

Pieterse 2006 {published data only}

Pieterse AH, van Dulmen AM, Beemer FA, Ausems MG, Bensing JM. Tailoring communication in cancer genetic counseling through individual video-supported feedback: a controlled pretest-post test design. *Patient Education and Counseling* 2006;**60**(3):326-35. [DOI: [10.1016/j.pec.2005.06.009](https://doi.org/10.1016/j.pec.2005.06.009)]

Rangachari 2014 {published data only}

Rangachari D, Donehower RC. Across the cancer continuum: A communication skills curriculum for oncology fellows. *Journal of Clinical Oncology* 2014;**32** (suppl)(15):1. [DOI: [10.1200/jco.2014.32.15_suppl.e20556](https://doi.org/10.1200/jco.2014.32.15_suppl.e20556)]

Rask 2009 {published data only}

Rask MT, Jensen ML, Andersen J, Zachariae R. Effects of an intervention aimed at improving nurse-patient communication in an oncology outpatient clinic. *Cancer Nursing* 2009;**32**(1):E1-11. [DOI: [10.1097/01.NCC.0000343365.13871.12](https://doi.org/10.1097/01.NCC.0000343365.13871.12)]

Razavi 1991 {published data only}

Razavi D, Delvaux N, Farvacques C, Robaye E. Brief psychological training for health professionals dealing with cancer patients: a one-year assessment. *General Hospital Psychiatry* 1991;**13**:253-60.

Razavi 2000 {published data only}

Razavi D, Delvaux N, Marchal S, De Cock M, Farvacques C, Slachmuylder JL. Testing health care professionals' communication skills: the usefulness of highly emotional standardized role-playing sessions with simulators. *Psycho-Oncology* 2000;**9**(4):293-302. [DOI: [10960927](https://doi.org/10.1096/0927)]

Razavi 2009 {published data only}

Razavi D. Physicians, team work and the cancer patient: The acquisition of communication skills as a promoter of care quality and as a professional stress antidote. Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria.

Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:S6. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]

Rose 2008 {published data only}

Rose JH, Radziewicz R, Bowmans KF, O'Toole EE. A coping and communication support intervention tailored to older patients diagnosed with late-stage cancer. *Clinical Interventions in Aging* 2008;**3**(1):77-95.

Rosenbloom 2007 {published data only}

Rosenbloom SK, Victorson DE, Hahn EA, Peterman AH, Cella D. Assessment is not enough: a randomised controlled trial of the effects of HRQL assessment on quality of life and satisfaction in oncology clinical practice. *Psycho-Oncology* 2007;**16**(12):1069-79.

Roter 1995 {published data only}

Roter DL, Hall JA, Kern DE, Barker LR, Cole KA, Roca RP. Improving physicians' interviewing skills and reducing patients' emotional distress. A randomized clinical trial. *Archives of Internal Medicine* 1995;**155**(17):1877-84. [DOI: [10.1001/archinte.1995.00430170071009](https://doi.org/10.1001/archinte.1995.00430170071009)]

Rush 2015 {published data only}

Rush CL, Darling M, Elliott MG, Febus-Sampayo I, Kuo C, Munoz J, et al. Engaging Latina cancer survivors, their caregivers, and community partners in a randomized controlled trial: Nueva Vida intervention. *Quality of Life Research* 2015;**24**(5):1107-18. [DOI: [10.1007/s11136-014-0847-9](https://doi.org/10.1007/s11136-014-0847-9).]

Rushton 2006 {published data only}

Rushton CH, Reder E, Hall B, Comello K, Sellers DE, Hutton N. Interdisciplinary interventions to improve pediatric palliative care and reduce health care professional suffering. *Journal of Palliative Medicine* 2006;**9**(4):922-33. [DOI: [10.1089/jpm.2006.9.922](https://doi.org/10.1089/jpm.2006.9.922)]

Rutter 1996 {published data only}

Rutter DR, Iconomou G, Quine L. Doctor-patient communication and outcome in cancer patients: An intervention. *Psychology & Health* 1996;**12**(1):57-71.

Schenker 2015 {published data only}

Schenker Y, White D, Rosenzweig M, Chu E, Moore C, Ellis P, et al. Care management by oncology nurses to address palliative care needs: A pilot trial to assess feasibility, acceptability, and perceived effectiveness of the CONNECT intervention. *Journal of Palliative Medicine* 2015;**18**(3):232-40. [DOI: [10.1089/jpm.2014.0325](https://doi.org/10.1089/jpm.2014.0325)]

Schmitz 2016 {published data only}

Schmitz CC, Braman JP, Turner N, Heller S, Radosevich DM, Yan Y, et al. Learning by (video) example: a randomized study of communication skills training for end-of-life and error disclosure family care conferences. *American Journal of Surgery* 2016; Vol. 212, issue 5:996-1004. [DOI: [10.1016/j.amjsurg.2016.02.023](https://doi.org/10.1016/j.amjsurg.2016.02.023); PUBMED: 27474496]

Schulman-Green 2003 {published data only}

Schulman-Green D. How do physicians learn to provide palliative care?. *Journal of Palliative Care* 2003;**19**(4):246-52.

Shannon 2011 {published data only}

Shannon SE, Long-Sutehall T, Coombs M. Conversations in end-of-life care: Communication tools for critical care practitioners. *Nursing in Critical Care* 2011;**16**(3):124-30. [DOI: [10.1111/j.1478-5153.2011.00456.x](https://doi.org/10.1111/j.1478-5153.2011.00456.x)]

Shields 2010 {published data only}

Shields CG, Ziner KW, Bourff SA, Schilling K, Zhao Q, Monahan P, et al. An intervention to improve communication between breast cancer survivors and their physicians. *Journal of Psychosocial Oncology* 2010;**28**(6):610-29. [DOI: [10.1080/07347332.2010.516811](https://doi.org/10.1080/07347332.2010.516811)]

Shipman 2008 {published data only}

Shipman C, Burt J, Ream E, Beynon T, Richardson A, Addington-Hall J. Improving district nurses' confidence and knowledge in the principles and practice of palliative care. *Journal of Advanced Nursing* 2008;**63**(5):494-505. [DOI: [10.1111/j.1365-2648.2008.04729.x](https://doi.org/10.1111/j.1365-2648.2008.04729.x)]

Shorr 2000 {published data only}

Shorr AF, Niven AS, Katz DE, Parker JM, Eliasson AH. Regulatory and educational initiatives fail to promote discussions regarding end-of-life care. *Journal of Pain & Symptom Management* 2000;**19**(3):168-73.

Singy 2012 {published data only}

Singy P, Bourquin C, Sulstarova B, Stiefel F. The impact of communication skills training in oncology: A linguistic analysis. *Journal of Cancer Education* 2012;**27**(3):404-8. [DOI: [10.1007/s13187-012-0385-5](https://doi.org/10.1007/s13187-012-0385-5)]

Smith 1991 {published data only}

Smith RC, Osborn G, Hoppe RB, Lyles JS, Egeren LV, Henry R, et al. Efficacy of a one-month training block in psychosocial medicine for residents: a controlled study. *Journal of General Internal Medicine* 1991;**6**(6):535-43. [DOI: [10.1007/BF02598223](https://doi.org/10.1007/BF02598223)]

Smith 2010 {published data only}

Smith MY, DuHamel KN, Egert J, Winkel G. Impact of a brief intervention on patient communication and barriers to pain management: results from a randomised controlled trial. *Patient Education and Counseling* 2010;**81**(1):79-86. [DOI: [10.1016/j.pec.2009.11.02](https://doi.org/10.1016/j.pec.2009.11.02)]

Song 2013 {published data only}

Song L, Bensen JT, Zimmer C, Sleath B, Blackard B, Fonham E, et al. Patient-health care provider communication among patients with newly diagnosed prostate cancer: Findings from a population-based survey. *Patient Education and Counseling* 2013;**91**(1):79-84. [DOI: [10.1016/j.pec.2012.12.002](https://doi.org/10.1016/j.pec.2012.12.002)]

Street 2010 {published data only}

Street RL, Slee C, Kalauokalani DK, Dean DE, Tancredi DJ, Kravitz RL. Improving physician-patient communication about cancer pain with a tailored education-coaching intervention. *Patient Education and Counseling* 2010;**80**(1):42-7. [DOI: [10.1016/j.pec.2009.10.009](https://doi.org/10.1016/j.pec.2009.10.009)]

Szmuiłowicz 2010 {published data only}

Szmuiłowicz E, el-Jawahri A, Chiappetta L, Kamdar M, Block S. Improving residents' end-of-life communication skills with a short retreat: a randomized controlled trial. *Journal of Palliative Medicine* 2010;**13**(4):439-52. [DOI: [10.1089/jpm.2009.0262](https://doi.org/10.1089/jpm.2009.0262)]

Tannen 2014 {published data only}

Tannen A. Communication skills training for health professionals working with people who have cancer. *Cancer Nursing* 2014;**37**(6):476-7. [DOI: [10.1097/NCC.0000000000000210](https://doi.org/10.1097/NCC.0000000000000210)]

Timmermans 2006 {published data only}

Timmermans LM, van der Maazen RW, Leer JW, Kraaiaam FW. Palliative or curative treatment intent affects communication in radiation therapy consultations. *Psycho-Oncology* 2006;**15**(8):713-25. [DOI: [10.1002/pon.1008](https://doi.org/10.1002/pon.1008)]

* Timmermans LM, van der Maazen RW, van Spaendonck KP, Leer JW, Kraaiaam FW. Enhancing patient participation by training radiation oncologists. *Patient Education and Counseling* 2006;**63**(1-2):55-63. [DOI: [10.1016/j.pec.2005.08.010](https://doi.org/10.1016/j.pec.2005.08.010)]

Ullrich 2011 {published data only}

Ullrich P, Wollbruck D, Danker H, Singer S. Evaluation of psycho-social training for speech therapists in oncology. Impact on general communication skills and empathy. A qualitative pilot study. *Journal of Cancer Education* 2011;**26**(2):294-300. [DOI: [10.1007/s13187-010-0148-0](https://doi.org/10.1007/s13187-010-0148-0)]

Vadaparampil 2016 {published data only}

Vadaparampil ST, Gwede CK, Meade C, Kelvin J, Reich RR, Reinecke J, et al. ENRICH: a promising oncology nurse training program to implement ASCO clinical practice guidelines on fertility for AYA cancer patients. *Patient Education and Counseling* 2016; Vol. 99, issue 11:1907-10. [DOI: [10.1016/j.pec.2016.05.013](https://doi.org/10.1016/j.pec.2016.05.013)]

Von Gunten 1998 {published data only}

von Gunten CF, Martinez J, Neely KJ, Twaddle M, Preodor M. Clinical experience in hospice and palliative medicine for clinicians in practice. *Journal of Palliative Medicine* 1998;**1**(3):249-55. [DOI: [10.1089/jpm.1998.1.249](https://doi.org/10.1089/jpm.1998.1.249)]

Walter 2016 {published data only}

Walter J, Shah P, Odeniyi F, Madrigal V, Feudtner C. Teaching paediatric intensive care physicians communication skills: The enduring effects. *Journal of Pain and Symptom Management* 2016;**51**(2):431-2. [DOI: [10.1016/j.jpainsymman.2015.12.048](https://doi.org/10.1016/j.jpainsymman.2015.12.048)]

Wetzel 2011 {published data only}

Wetzel CM, George A, Hanna GB, Athanasiou T, Black SA, Kneebone RL, et al. Stress management training for surgeons—a randomized, controlled, intervention study. *Annals of Surgery* 2011;**253**(3):488-94. [DOI: [10.1097/SLA.0b013e318209a594](https://doi.org/10.1097/SLA.0b013e318209a594)]

Wilkinson 1998 {published data only}

Wilkinson S, Roberts A, Aldridge J. Nurse-patient communication in palliative care: an evaluation of a communication skills programme. *Palliative Medicine* 1998;**12**(1):13-22. [DOI: [10.1191/026921698675034697](https://doi.org/10.1191/026921698675034697)]

Wilkinson 1999 {published data only}

Wilkinson S, Bailey K, Aldridge J, Roberts A. A longitudinal evaluation of a communication skills programme. *Palliative Medicine* 1999;**13**(4):341-8. [DOI: [10.1191/026921699672159169](https://doi.org/10.1191/026921699672159169)]

Wilkinson 2003 {published data only}

Wilkinson SM, Leliopoulou C, Gambles M, Roberts A. Can intensive three-day programmes improve nurses' communication skills in cancer care?. *Psycho-Oncology* 2003;**12**(8):747-59. [DOI: [10.1002/pon.698](https://doi.org/10.1002/pon.698)]

Wittenberg 2016 {published data only}

Wittenberg E, Ferrell B, Goldsmith J, Ragan SL, Paice J. Assessment of a statewide palliative care team training course: COMFORT Communication for Palliative Care Teams. *Journal of Palliative Medicine* 2016;**19**(7):746-52. [DOI: [10.1089/jpm.2015.0552](https://doi.org/10.1089/jpm.2015.0552); PUBMED: 27285175]

Wong 2001 {published data only}

Wong FK, Lee WM, Mok E. Educating nurses to care for the dying in Hong Kong: a problem-based learning approach. *Cancer Nursing* 2001;**24**(2):112-21.

Wuensch 2011 {published data only}

* Wuensch A, Goelz T, Bertz H, Wirsching M, Fritzsche K. Disclosing information about randomised controlled trials in oncology: training concept and evaluation of an individualised communication skills training for physicians COM-ON-rct. *European Journal of Cancer Care* 2011;**20**(5):570-6.

Wuensch A, Goelz T, Ihorst G, Terris DD, Bertz H, Bengel J, et al. Effects of individualised communication skills training on physicians' discussion of clinical trials in oncology: results from a randomised controlled trial. Unpublished manuscript 2011.

Wuensch AG, Goelz T, Bertz H, Fritzsche K. Individualised communication skills training for randomised clinical trials and therapy options in oncology. Training concept and results of a RCT. *Psycho-Oncology Conference: 11th World Congress of Psycho-Oncology of the International Psycho-Oncology Society, IPOS Vienna Austria. Conference Start: 20090621 Conference End: 20090625. 2009; Vol. 18:S61. [DOI: [10.1002/pon.1594](https://doi.org/10.1002/pon.1594)]*

Wuensch 2014 {published data only}

Wuensch A, DeFigueiredo M, Golz T, Ihorst G, Bertz H, Fritzsche K. Individualised communication skills training for randomised clinical trials in oncology. Final results of a RCT. *Oncology Research and Treatment* 2014;**37**:27-8.

Yildirim 2013 {published data only}

Yildirim NK, Terakye G, Ozbas AA. Communication skills of nurses caring for oncology patients: A multicentric study. *Psycho-Oncology* 2013;**22**:130.

References to studies awaiting assessment
Brock 2017 {published data only}

Brock KE, Cohen HJ, Sourkes BM, Good JJ, Halamek LP. Training Pediatric Fellows in Palliative Care: a pilot comparison of simulation training and didactic education. *Journal of Palliative Medicine* 2017;**20**(10):1074-84.

Coltoff 2018 {published data only}

Coltoff A, Lindenberger E, Kelley A, Gelfman L, Morrison L, Bickell N, et al. Efficacy of a novel communication skills intervention for practicing oncologists. *Journal of Pain and Symptom Management* 2018;**55**(2):675-6.

Smith C, Annadurai V, Adelson K, Pintova S, Gonsky J, Egorova N, et al. Goals of care conversations in advanced cancer: patient perceptions versus reality. *Journal of Pain and Symptom Management* 2018;**55**(2):604-5.

Henselmans 2018 {published data only}

Henselmans I, Smets EMA, de Haes JCJM, Dijkgraaf MGW, de Vos FY, van Laarhoven HWM. A randomised controlled trial of a skills training for oncologists and a communication aid for patients to stimulate shared decision making about palliative systemic treatment (CHOICE): study protocol. *BMC Cancer* 2018;**18**(1):55.

Scholl 2018 {published data only}

Scholl I, Hahlweg P, Lindig A, Bokemeyer C, Coym A, Hanken H, et al. Evaluation of a program for routine implementation of shared decision-making in cancer care: study protocol of a stepped wedge cluster randomised trial. *Implementation Science* 2018;**13**(1):51.

References to ongoing studies
Berger-Höger 2015 {published data only}

Berger-Höger B, Liethmann K, Mühlhauser I, Haastert B, Steckelberg A. Informed shared decision-making supported by decision coaches for women with ductal carcinoma in situ: study protocol for a cluster randomised controlled trial. *Trials* 2015;**16**(1):452.

De Figueiredo 2015 {published data only}

De Figueiredo MN, Rodolph B, Bylund CL, Goelz T, Heußner P, Sattel H, et al. ComOn Coaching: Study protocol of a randomized controlled trial to assess the effect of a varied number of coaching sessions on transfer into clinical practice following communication skills training. *BMC Cancer* 2015;**15**(1):503.

De Figueiredo MN, Rudolph B, Bylund CL, Goelz T, Heußner P, Sattel H, et al. Erratum to: ComOn Coaching: study protocol of a randomised controlled trial to assess the effect of a varied number of coaching sessions on transfer into clinical practice following communication skills training. *BMC Cancer* 2015;**15**:596.

Libert 2017 {published data only}

Libert Y, Peternelj L, Bragard I, Liénard A, Merckaert I, Reynaert C, et al. Communication about uncertainty and hope: A randomised controlled trial assessing the efficacy of a communication skills training program for physicians caring for cancer patients. *BMC Cancer* 2017;**17**(1):476.

Parker 2016 {published data only}

Parker PA, Banerjee SC, Matasar MJ, Bylund CL, Franco K, Li Y, et al. Protocol for a cluster randomised trial of a communication

skills intervention for physicians to facilitate survivorship transition in patients with lymphoma. *BMJ* 2016;**6**:e011581.

Additional references
Aaronson 1993

Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European Organization for Research and Treatment of Cancer QLQ-C30: A Quality-of-Life Instrument for Use in International Clinical Trials in Oncology. *Journal of the National Cancer Institute* 1993;**85**(5):365-76.

ACGME 2009

ACGME (Accreditation Council for Graduate Medical Education). Common Program Requirements. ACGME 2009. Available from: http://www.acgme.org/acWebsite/dutyHours/dh_dutyhoursCommonPR07012007.pdf.

Adamo 2003

Adamo G. Simulated and standardized patients in OSCEs: achievements and challenges 1992-2003. *Medical Teacher* 2003;**25**(3):262-70.

Alvarez 2006

Alvarez MP, Agra Y. Systematic review of educational interventions in palliative care for primary care physicians. *Palliative Medicine* 2006;**20**(7):673-83.

Arraras 2015

Arraras JI, Kuljanic K, Sztankay M, Wintner LM, Costantini A, Chie WC, et al. Initial phases in the development of a European Organisation for Research and Treatment of Cancer communication-specific module. *Psycho-Oncology* 2015;**24**(2):236-40.

Ashworth 1984

Ashworth CD, Williamson P, Montano D. A scale to measure physician beliefs about psychosocial aspects of patient care. *Social Science & Medicine* 1984;**19**(11):1235-8.

Aspegren 1999

Aspegren K. BEME guide No. 2: Teaching and learning communication skills in medicine: a review with quality grading of articles. *Medical Teaching* 1999;**21**(6):563-70.

Back 2003

Back AL, Arnold RM, Quill TE. Hope for the best, and prepare for the worst. *Annals of Internal Medicine* 2003;**138**(5):439-43.

Barth 2011

Barth JL. Efficacy of communication skills training courses in oncology: A systematic review and meta-analysis. *Annals of Oncology* 2011;**22**(5):1030-40.

Blanchard 1986

Blanchard CG, Ruckdeschel JC, Fletcher BA, Blanchard EB. The impact of oncologists' behaviors on patient satisfaction with morning rounds. *Cancer* 1986;**58**(2):387-93.

Booth 1991

Booth K, Maguire P. Development of a rating system to assess interaction between cancer patients and health professionals. Report to Cancer Research Campaign 1991:37.

Brandes 2015

Brandes K, Linn AJ, Butow PN, van Weert JC. The characteristics and effectiveness of Question Prompt List interventions in oncology: a systematic review of the literature. *Psycho-Oncology* 2015;**24**(3):245-52.

Brown 1995

Brown J Stewart M Tessier S. Assessing Communication between Patients and doctors: A Manual for scoring Patient Centered Communication. Centre for studies in Family Medicine and Thames Valley Family Practice Research Unit 1995; Vol. Working paper Series:95-102.

Bylund 2009

Bylund CL, Brown RF, Lubrano di CB, Diamond C, Eddington J, Kissane DW. Assessing facilitator competence in a comprehensive communication skills training programme. *Medical Education* 2009;**43**(4):342-9.

CanMEDS 2011

Royal College of Physicians and Surgeons of Canada. CanMEDS: better standards, better physicians, better care. Available at: <http://www.royalcollege.ca/public/resources/aboutcanmeds> 2011.

Cegala 2002

Cegala DJ, Lenzmeier Broz S. Physician communication skills training: a review of theoretical backgrounds, objectives and skills. *Medical Education* 2002;**36**(11):1004-16.

Cella 1993

Cella DF, Tulsky DS, Gray G, Sarafian B, Linn E, Bonomi A, et al. The Functional Assessment of Cancer Therapy scale: development and validation of the general measure. *Journal of Clinical Oncology* 1993;**11**(3):570-9.

Chant 2002

Chant S, Jenkinson T, Randle J, Russell G. Communication skills: some problems in nursing education and practice. *Journal of Clinical Nursing* 2002;**11**(1):12-21.

Cohen 1995

Cohen SR, Mount BM, Strobel MG, Bui F. The McGill Quality of Life Questionnaire: a measure of quality of life appropriate for people with advanced disease. A preliminary study of validity and acceptability. *Palliative Medicine* 1995;**9**(3):207-19.

Deeks 2001

Deeks JJ, Altman DG, Bradburn MJ. Statistical methods for examining heterogeneity and combining results from several studies in meta-analysis. In: Egger M, Davey Smith G, Altman DG editor(s). *Systematic Reviews in Health Care: Meta-Analysis in Context*. 2nd Edition. London: BMJ Publication Group, 2001.

Del Piccolo 2011

Del Piccolo L, de Haes H, Heaven C, Jansen J, Verheul W, Bensing J, et al. Development of the Verona coding definitions of emotional sequences to code health providers' responses (VR-CoDES-P) to patient cues and concerns. *Patient Education and Counseling* 2011;**82**(2):149-55.

Derogatis 1977

Derogatis I. Administration, Scoring and Procedures Manual for the Revised Version of Other Instruments of the Psychopathology Rating Scale Series. Baltimore: Baltimore Md: Clinical Psychometrics Research Unit, John Hopkins University of Medicine, 1977.

DerSimonian 1986

DerSimonian R, Laird N. Meta-analysis in clinical trials. *Controlled Clinical Trials* 1986;**7**(Pt A):177-88.

Dickson 2012

Dickson RP, Engelberg RA, Back AL, Ford DW, Curtis JR. Internal medicine trainee self-assessments of end-of-life communication skills do not predict assessments of patients, families, or clinician-evaluators. *Journal of Palliative Medicine* 2012;**15**(4):418-26.

Donovan-Kicken 2011

Donovan-Kicken E, Caughlin JP. Breast cancer patients' topic avoidance and psychological distress: the mediating role of coping. *Journal of Health Psychology* 2011;**16**(4):596-606.

Dowsett 2000

Dowsett SM, Saul JL, Butow PN, Dunn SM, Boyer MJ, Findlow R, et al. Communication styles in the cancer consultation: preferences for a patient-centred approach. *Psycho-Oncology* 2000;**9**(2):147-56.

Fallowfield 1990

Fallowfield LJ, Hall A, Maguire GP, Baum M. Psychological outcomes of different treatment policies in women with early breast cancer outside a clinical trial. *BMJ* 1990;**301**(6752):575-80.

Fallowfield 1995

Fallowfield, L. Communication skills for oncologists. *Clinical Medicine* 1995;**5**(1):99-103.

Fallowfield 2004

Fallowfield L, Jenkins V. Communicating sad, bad, and difficult news in medicine. *Lancet* 2004;**363**(9405):24.

Ford 2000

Ford S, Hall A, Ratcliffe D, Fallowfield L. The Medical Interaction Process System (MIPS): an instrument for analysing interviews of oncologists and patients with cancer. *Social Science & Medicine* 2000;**50**(4):553-66.

Fujimori 2007

Fujimori M, Akechi T, Morita T, Inagaki M, Akizuki N, Sakano Y, et al. Preferences of cancer patients regarding the disclosure of bad news. *Psycho-Oncology* 2007;**16**(6):573-81.

Fujimori 2009

Fujimori M, Uchitomi Y. Preferences of cancer patients regarding communication of bad news: a systematic literature review. *Japanese Journal of Clinical Oncology* 2009;**39**(4):201-16.

Gattellari 2001

Gattellari M, Butow PN, Tattersall MH. Sharing decisions in cancer care. *Social Science & Medicine* 2001;**52**(12):1865-78.

Gibon 2010

Gibon AS, Durieux JF. Development of the Lacomme, a French medical communication analysis software: A study assessing its sensitivity to change. *Psycho-Oncology*. <http://www.lacomme.be/index.php>, 2010; Vol. 19(Suppl.2):Oral Abstracts S133.

Girgis 2009

Girgis A, Breen S, Stacey F, Lecathelinais C. Impact of two supportive care interventions on anxiety, depression, quality of life, and unmet needs in patients with non localized breast and colorectal cancers. *Journal of Clinical Oncology* 2009;**27**(36):6180-90.

GMC 2009

General Medical Council. Tomorrow's Doctors. Available from: http://www.gmc-uk.org/education/undergraduate/tomorrows_doctors_2009.asp.

Gray-Toft 1981

Gray-Toft P, Anderson J. The Nursing Stress Scale: Development of an instrument. *Journal of Behavioral Assessment* 1981;**3**(1):11-23.

Gyawali 2015

Gyawali B, Tsukuura H, Honda K, Shimokata T, Ando Y. Some questions on the randomised controlled trial of communication skills training for oncologists. *Journal of Clinical Oncology* 2015;**33**(2):22.

Gysels 2004

Gysels M, Richardson A, Higginson IJ. Communication training for health professionals who care for patients with cancer: a systematic review of effectiveness (Provisional abstract). *Supportive Care in Cancer* 2004;**12**(10):692-700.

Hack 2005

Hack TF, Degner LF, Parker PA. The communication goals and needs of cancer patients: a review. *Psycho-Oncology* 2005;**14**(10):831-45.

Hack 2012

Hack TF, Ruether JD, Pickles T, Bultz BD, Chateau D, Degner LF. Behind closed doors II: systematic analysis of prostate cancer patients' primary treatment consultations with radiation oncologists and predictors of satisfaction with communication. *Psycho-Oncology* 2012;**21**(8):807-17. [DOI: [10.1002/pon.1984](https://doi.org/10.1002/pon.1984)]

Hagerty 2005

Hagerty RG, Butow PN, Ellis PM, Dimitry S, Tattersall MH. Communicating prognosis in cancer care: a systematic review of the literature. *Annals of Oncology* 2005;**16**(7):1005-53.

Heaven 2001

Heaven C. The role of clinical supervision in communication skills. Vol. **PhD thesis**, Manchester: University of Manchester, 2001.

Henbest 1990

Henbest RJ, Stewart M. Patient-centredness in the consultation. 2: Does it really make a difference?. *Family Practice* 1990;**7**(1):28-33.

Higgins 2003

Higgins JPT, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. *BMJ* 2003;**327**:557-60.

Higgins 2011

Higgins JPT, Green S (editors). Cochrane Handbook for Systematic Reviews of Interventions. Version 5.1.0 [updated March 2011]. Available from www.cochrane-handbook.org, 2011.

Hjermstad 1995

Hjermstad MJ, Fossa SD, Bjordal K, Kaasa S. Test/retest study of the European Organization for Research and Treatment of Cancer Core Quality-of-Life Questionnaire. *Journal of Clinical Oncology* 1995;**13**(5):1249-54.

Hubbard 2008

Hubbard G, Kidd L, Donaghy E. Preferences for involvement in treatment decision making of patients with cancer: a review of the literature. *European Journal of Oncology Nursing* 2008;**12**(4):299-318.

Ishikawa 2002

Ishikawa H, Takayama T, Yamazaki Y, Seki Y, Katsumata N, Aoki Y. The interaction between physician and patient communication behaviors in Japanese cancer consultations and the influence of personal and consultation characteristics. *Patient Education and Counseling* 2002;**46**(4):277-85.

Jansen 2008

Jansen J, van Weert J, van der Meulen N, van Dulmen S, Heeren T, Bensing J. Recall in older cancer patients: measuring memory for medical information. *Gerontologist* 2008;**48**(2):149-57.

Julian 2011

Julian LJ. Measures of anxiety: State-Trait Anxiety Inventory (STAI), Beck Anxiety Inventory (BAI), and Hospital Anxiety and Depression Scale-Anxiety (HADS-A). *Arthritis Care Research* 2011;**63**(Suppl 11):S467-72.

Kinnersley 2007

Kinnersley P, Edwards A, Hood K, Cadbury N, Ryan R, Prout H, et al. Interventions before consultations for helping patients address their information needs. *Cochrane Database of Systematic Reviews* 2007, Issue 3. [DOI: [10.1002/14651858.CD004565.pub2](https://doi.org/10.1002/14651858.CD004565.pub2)]

Kissane 2012

Kissane DW, Bylund CL, Banerjee SC, Bialer PA, Levin TT, Maloney EK, et al. Communication skills training for oncology professionals. *Journal of Clinical Oncology* 2012;**30**(11):1242-7.

Kurtz 2005

Kurtz S, J Silverman, Draper J. Teaching and Learning Communication Skills in Medicine. Radcliffe Medical Press, 2005.

LaComm

La Comm, A French Communication Analysis Software. <http://www.lacomm.be/Ressources/documents/htmlPosterVenise1.php> Accessed 21/09/2012:1-3.

Lang 2004

Lang F, McCord R, Harvill L, Anderson DS. Communication assessment using the common ground instrument: psychometric properties.. *Family Medicine* 2004;**36**(3):189-98.

Langendam 2013

Langendam MW, Akl EA, Dahm P, Glasziou P, Guyatt G, Schunemann HJ. Assessing and presenting summaries of evidence in Cochrane Reviews. *Systematic Reviews* 2013;**23**(2):81.

Levinson 1997

Levinson W, Roter DL, Mulhooly JP, Dull V, Frankel R. Physician-patient communication: the relationship with malpractice claims among primary care physicians and surgeons. *JAMA: the Journal of the American Medical Association* 1997;**277**(7):553-9.

Lussier 2005

Lussier MT, Richard C. Doctor-patient communication: complaints and legal actions. *Canadian Family Physician* 2005;**51**:37-9.

Mack 2009

Mack JW, Block SD, Nilsson M, Wright A, Trice E, Friedlander R, et al. Measuring therapeutic alliance between oncologists and patients with advanced cancer: the Human Connection Scale. *Cancer* 2009;**115**(14):3302-11.

Maly 1998

Maly RC, Frank JC, Marshall GN, DiMatteo MR, Reuben DB. Perceived efficacy in patient-physician interactions (PEPPI): validation of an instrument in older persons. *Journal of the American Geriatrics Society* 1998;**46**(7):889-94.

Meador 2014

Meador N, King K, Llewellyn A, Norman G, Brown J, Rodgers M, et al. A checklist designed to aid consistency and reproducibility of GRADE assessments: development and pilot validation. *Systematic Reviews* 2014;**3**:82.

Moore 2011

Moore P, Vargas A, Nunez S, Macchiavello S. [A study of hospital complaints and the role of the doctor-patient communication]. *Revista Medica de Chile* 2011;**139**(7):880-5.

Nestel 2007

Nestel D, Tierney T. Role-play for medical students learning about communication: guidelines for maximising benefits. *BMC Medical Education* 2007;**7**:3.

Ong 1998

Ong LM, Visser MR, Kruijver IP, Bensing JM, van den Brink-Muinen, Stouthard JM, et al. The Roter Interaction Analysis System (RIAS) in oncological consultations: psychometric properties. *Psycho-Oncology* 1998;**7**(5):387-401.

Paul 2009

Paul CL, Clinton-McHarg T, Sanson-Fisher RW, Douglas H, Webb G. Are we there yet? The state of the evidence base for guidelines on breaking bad news to cancer patients. *European Journal of Cancer* 2009;**45**(17):2960-6.

Poinsot 2006

Poinsot R, Altmeyer A, Conroy T, Savignoni A, Asselain B, Léonard I, et al. Multisite validation study of questionnaire assessing out-patient satisfaction with care questionnaire in ambulatory chemotherapy or radiotherapy treatment. *Bulletin du Cancer* 2006;**93**(3):315-27.

Ramirez 1995

Ramirez AJ, Graham J, Richards MA, Cull A, Gregory WM, Leaning MS, et al. Burnout and psychiatric disorder among cancer clinicians. *British Journal of Cancer* 1995;**71**(6):1263-9.

Roberts 1994

Roberts CS, Cox CE, Reintgen DS, Baile WF, Gibertini M. Influence of physician communication on newly diagnosed breast patients' psychologic adjustment and decision-making. *Cancer* 1994;**74**(1 Suppl):336-41.

Roter 2002

Roter D, Larson S. The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Education and Counselling* 2002;**46**(4):243-51.

Salmon 2017

Salmon P, Young B. A new paradigm for clinical communication: critical review of literature in cancer care. *Medical Education* 2017;**51**(3):258-68.

Sanson-Fisher 2000

Sanson-Fisher R, Grigis A, Boyes A, Bonevski B, Burton L, Cook P. Supportive Care Review Group. The unmet supportive care needs of patients with cancer. *Cancer* 2000;**88**(1):226-37.

Schaulell 1993

Schaulell WB, van Dierendonk. The construct validity of two burnout measures. *Journal of Organizational Behaviour* 1993;**14**(7):631-47.

Sepucha 2010

Sepucha K, Ozanne EM. How to define and measure concordance between patients' preferences and medical treatments: A systematic review of approaches and recommendations for standardization. *Patient Education and Counselling* 2010;**78**(1):12-23.

Shields 2009

Shields CG, Coker CJ, Poulsen SS, Doyle JM, Fiscella K, Epstein RM, et al. Patient-centered communication and prognosis discussions with cancer patients. *Patient Education and Counseling* 2009;**77**(3):437-42.

Silberfarb 1980

Silberfarb PM, Levine PM. Psychosocial aspects of neoplastic disease. III. Group support for the oncology nurse. *General Hospital Psychiatry* 1980;**2**(3):192-7.

Silverman 2005

Silverman J, Kurtz S, Draper J. Skills for Communicating with Patients. 2nd Edition. Oxford: Radcliffe Medical Press, 2005.

Silverman 2017

Silverman J, van Weel-Baumgarten E, Butow P, Fallowfield L, Bylund C, Deveugele M, et al. A new paradigm or a misrepresentation of current communication research and teaching?. *Medical Education* 2017;**51**(12):1289-90.

Snaith 1986

Snaith RP, Zigmond AS. The hospital anxiety and depression scale. *BMJ (Clinical Research and Education)* 1986;**292**(6516):344.

Solomon 2017

Solomon R, Smith C, Kallio J, Fenollosa A, Benerofe B, Jones L, et al. Speaking Up: How patient and physician voices shaped a trial to improve goals-of-care discussions. *Patient* 2017;**10**(4):489-501.

Speilberger 1983

Spielberger CD, Gorsuch RL, Lushene PR, Vagg PR, Jacobs GA. Manual for the State-Trait Anxiety Inventory. Palo Alto, CA: Consulting Psychologists Press, Inc, 1983.

Stewart 1989

Stewart MA, Brown JB, Weston WW. Patient-centred interviewing part III: Five provocative questions. *Canadian Family Physician* 1989;**35**:159-61.

Stewart 1996

Stewart MA. Effective physician-patient communication and health outcomes: a review. *Canadian Medical Association Journal* 1996;**152**(9):1423-33.

Stiefel 2010

Stiefel F, Barth J, Bensing J, Fallowfield L, Jost L, Razavi D, et al. Communication skills training in oncology: a position paper based on a consensus meeting among European experts in 2009. *Annals of Oncology* 2010;**21**(2):204-7.

Street 2003

Street RL Jr, Krupat E, Bell RA, Kravitz RL, Haidet P. Beliefs about control in the physician-patient relationship: effect on communication in medical encounters. *Journal of the American Geriatrics Society* 2003;**18**(8):609-16.

Street 2007

Street RL Jr, Gordon H, Haidet P. Physicians' communication and perceptions of patients: is it how they look, how they talk, or is it just the doctor?. *Social Science & Medicine* 2007;**65**(3):586-98.

Stubenrauch 2012

Stubenrauch S, Schneid EM, Wunsch A, Helmes A, Bertz H, Fritzsche K, et al. Development and evaluation of a checklist assessing communication skills of oncologists: the COM-ON-Checklist. *Journal of Evaluation in Clinical Practice* 2012;**18**(2):225-30.

Tariman 2010

Tariman JD, Berry DL, Cochrane B, Doorenbos A, Schepp K. Preferred and actual participation roles during health care decision making in persons with cancer: a systematic review. *Annals of Oncology* 2010;**21**(6):1145-51.

Taylor 2011

Taylor J. The moral aesthetics of simulated suffering in standardized patient performances. *Culture, Medicine and Psychiatry* 2011;**35**(2):134-62.

Turnberg 1997

Turnberg L. Improving Communication between Doctors and Patients. Royal College of Physicians 1997.

Uitterhoeve 2010

Uitterhoeve RJ, Bensing JM, Grol RP, Demulder PHM, Van Achterberg T. The effect of communication skills training on patient outcomes in cancer care: a systematic review of the literature. *European Journal of Cancer Care* 2010;**19**(4):442-57.

Vail 2011

Vail L, Sandhu H, Fisher J, Cooke H, Dale J, Barnett M. Hospital consultants breaking bad news with simulated patients: an analysis of communication using the Roter Interaction Analysis System. *Patient Education and Counselling* 2011;**83**(2):185-94.

van Weert 2009

van Weert JC, Jansen J, de Bruijn GJ, Noordman J, van DS, Bensing JM. QUOTEchemo: a patient-centred instrument to measure quality of communication preceding chemotherapy treatment through the patient's eyes. *European Journal of Cancer* 2009;**45**(17):2967-76.

Vogel 2009

Vogel BA, Leonhart R, Helmes AW. Communication matters: the impact of communication and participation in decision making on breast cancer patients' depression and quality of life. *Patient Education and Counselling* 2009;**77**(3):391-7.

Ware 1983

Ware JE Jr, Snyder MK, Wright WR, Davies AR. Defining and measuring patient satisfaction with medical care. *Evaluation and Program Planning* 1983;**6**(3-4):247-63.

Wilkinson 1991

Wilkinson S. Factors influencing nurses' verbal communication with cancer patients. Vol. **PhD Thesis**, Manchester: University of Manchester, 1991.

Williams 1988

Williams P. A Users' guide to the general health questionnaire. Windsor, Berks: NFER-Nelson, 1988.

Williams 1998

Williams GC, Rodin GC, Ryan RM, Grolnick WS, Deci EL. Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychology* 1998;**17**(3):269-76.

Zimmermann 2011

Zimmermann C, Del Piccolo L, Bensing J, Bergvik S, De Haes H, Eide H, et al. Coding patient emotional cues and concerns in medical consultations: the Verona coding definitions of emotional sequences (VR-CoDES). *Patient Education and Counseling* 2011;**82**(2):141-8.

References to other published versions of this review

Fellowes 2002

Fellowes D, Wilkinson SSM, Moore PM. Communication skills training for health care professionals working with cancer patients, their families and/or carers. *Cochrane Database of Systematic Reviews* 2003, Issue 2. [DOI: [10.1002/14651858.CD003751](https://doi.org/10.1002/14651858.CD003751)]

Moore 2004

Moore PM, Wilkinson SSM, Rivera Mercado S. Communication skills training for health care professionals working with cancer patients, their families and/or carers. *Cochrane Database of Systematic Reviews* 2004, Issue 2. [DOI: [10.1002/14651858.CD003751.pub2](https://doi.org/10.1002/14651858.CD003751.pub2)]

Moore 2013

Moore PM, Rivera Mercado S, Grez Artigues M, Lawrie TA. Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database of Systematic Reviews* 2013, Issue 3. [DOI: [10.1002/14651858.CD003751.pub3](https://doi.org/10.1002/14651858.CD003751.pub3)]

* Indicates the major publication for the study

CHARACTERISTICS OF STUDIES

Characteristics of included studies [ordered by study ID]

Butow 2008

Methods	RCT
Participants	30 medical and radiation oncologists from 6 Australian teaching hospitals. Age = 36.5 to 51 years; years of experience = 7.5 to 24.3 years. 343 cancer patients (60% women) answered questionnaires post-consultation
Interventions	1.5 day workshop with 3 to 6 participants, followed by four 1.5 hour video conferences incorporating role-play of doctor-generated scenarios. Workshop included DVD modelling ideal behaviour; role-play and feedback with an SP using standardised cases and from own experience, booklet summarising evidence, video of own role-play. Emphasis on how to establish a collaborative framework, and how to respond to anxiety, depression, distress and anger
Outcomes	HCP (oncologist) outcomes on video of SP interview at baseline, immediately post-intervention and 6 months post-intervention (or equivalent timings for control group) <ul style="list-style-type: none"> communication skills (2 major categories: creating environment and responding to specific emotions) in SP encounters immediately and 6 months post-intervention. HCP (oncologist). 'burnout' measured using MBI* Patient outcomes: <ul style="list-style-type: none"> QOL (EORTC QLQ C30)*, Anxiety and Depression (HADS*) and perceived needs (SCNS*) measured by telephone interview 1 week and 3 months post-consultation.
Notes	There was a trend for training to be successful in increasing some HCP communication skills, however, no changes were statistically significant.

Butow 2008 (Continued)

Anxiety was reduced in patients interviewed by oncologists from the intervention group one week later ($P = 0.021$) No other statistically significant differences were found in patient outcomes.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomised at individual level using random number tables and Excel software
Allocation concealment (selection bias)	Low risk	Allocated centrally by research team
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No description of total number of HCP measured post-intervention. Low attrition in HCP and patient questionnaires
Selective reporting (reporting bias)	Low risk	All prespecified outcomes reported
Other bias	Low risk	Baseline characteristics of the two groups were similar

Epstein 2017

Methods	Cluster-RCT
Participants	<p>38 medical oncologists from 7 community hospitals and clinics and 3 academic centres in USA; mean age 44 years, 71% male</p> <p>130 patients with advanced cancer received coaching</p> <p>383 community-dwelling adult patients with advanced cancer participated in audio-recorded consultations (3 to 4 per oncologist prior to intervention and up to 10 per oncologist post-intervention) and 265 of these patients answered questionnaires.</p>
Interventions	<p>2 sessions (total 1.75 hours) of in-office physician training. Training included video and feedback from SP consultations</p> <p>1-hour patient and caregiver coaching sessions plus 3 follow-up phone calls. Coaching included a question prompt list to help bring their concerns to the attention of the oncologist at their office visits.</p> <p>Both interventions focused on 4 key domains of patient-centred communication: engaging, responding, informing, balanced framing</p>
Outcomes	<p>HCP (oncologists) outcome on audio-recording of real patient interviews at baseline and post-intervention</p> <ul style="list-style-type: none"> communication skills (4 major categories: engaging, responding to patients emotions, informing about prognosis and treatment and balanced framing of decisions). <p>Patient Outcomes:</p> <ul style="list-style-type: none"> patient perception of patient-physician relationship -measured immediately after consultation with oncologist;

Epstein 2017 (Continued)

- QOL average of 5z-scored subscales measured at baseline and then 3 monthly intervals for 3 years.

Notes

The composite communication score has an estimated adjusted intervention effect of 0.34 (CI, 0.06 to 0.62, $P = 0.02$) corresponding to 5.7 additional "engaging" statements (44% increase); 0.6 additional response to emotion (71% increase) 1.4 additional statements regarding prognosis and treatment choices (38% increase). Only 1 of the individual communication components (engaging) was statistically significant. There was no statistically significant difference in the other outcomes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	A stratified block-randomisation scheme is used to assure balanced assignment by clinic site and cancer focus. Oncologists are grouped into a site according to their health centre, clinic, or practice of employment
Allocation concealment (selection bias)	Low risk	Only study statisticians were aware of random number sequence and treatment assignment
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Transcriptionists, coders and abstractors all blinded
Incomplete outcome data (attrition bias) All outcomes	Low risk	Minimal loss (7%/5%) in patients, no loss in doctors
Selective reporting (reporting bias)	Unclear risk	Protocol clear, details of all patient questionnaires not reported
Other bias	Low risk	None

Fallowfield 2002

Methods	RCT Written feedback followed by course, or course alone, or written feedback alone, or control
Participants	160 medical, surgical and radiation oncologists from 34 cancer centres in the UK; 69% men. 640 cancer patients (60% women) participated in the videotaped consultations (2 video-tapes per oncologist at baseline and 3 months post-intervention). 1816 cancer patients answered questionnaires.
Interventions	Cancer Research UK Communication Skills Program. Intensive 3-day residential course and/or feedback pack
Outcomes	HCP (oncologist) outcomes on video of RP interviews at baseline, and 3 months post-intervention (or equivalent timings for control group): <ul style="list-style-type: none"> • communication skills as assessed in 2 videotapes per oncologist of RP encounters, before and 3 months post-intervention, rated using MIPS*; • attitudes and beliefs 3 months post-intervention, rated using PPSB*. Patient outcomes: <ul style="list-style-type: none"> • patient satisfaction with communication (PSCQ*) measured immediately after consultation with oncologist pre- and 3 months post-intervention.

Fallowfield 2002 (Continued)

Notes CST group had a statistically significant improvement in oncologists' attitudes to psychosocial issues ($P = 0.002$) and a non-significant positive effect on patient satisfaction. Follow-up for 12 months revealed no demonstrable attrition in most of the skills improvement, some new skills, but a decline in expressions of empathy

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not fully described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Video raters blinded as far as possible for time point of assessment and group
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Low risk on HCP behaviour outcomes; 21% attrition for patient outcomes; only intervention group followed up at 12 months
Selective reporting (reporting bias)	Low risk	All prespecified outcomes were described
Other bias	Low risk	Baseline characteristics of two groups were similar

Fujimori 2014

Methods	RCT
Participants	30 oncologists from 2 Japanese hospitals: average age 35.5 (range 30 to 50) 13% female 1181 cancer outpatients answered questionnaires
Interventions	A 2 day CST workshop (intervention) or 'no CST' (control). Workshop based on SHARE model of Breaking bad news using didactic material and video, 8 hours of role-play with pre-designed scenarios and SP in small groups (4 participants, 2 facilitators, 1 SP)
Outcomes	HCP outcomes: <ul style="list-style-type: none"> communication skills measured in 4 video-recorded SP encounters pre and 1 week post-intervention using 27-item SHARE categories; self-perception of self-confidence in communicating with patients. Patient outcomes: <ul style="list-style-type: none"> distress using HADS; satisfaction with doctor's communication during the consultation on 11-item scale; trust in oncologist 11-item scale. Assessed at baseline, 1 week post-CST or 2 weeks post-baseline in controls
Notes	The intervention group showed more appropriate behaviour/skills over time in 3 of 4 composite scores: setting a supportive environment $P = 0.002$; considering how to break news $P = 0.001$; ability to deliver information; providing reassurance $P = 0.011$ In 3 of 27 categories. The intervention group showed

Fujimori 2014 (Continued)

more appropriate skills: greeting the patient cordially; not beginning bad news delivery without preambles; accepting patients expressions of emotions all $P = <0.01$.

HADS depression score was significantly lower ($P = 0.027$) and Trust score significantly higher ($P = 0.009$) in patients seen by the oncologists in the intervention group. No difference was found in HADS anxiety score, HADS total score or patient satisfaction

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	'Randomly assigned'
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described
Incomplete outcome data (attrition bias) All outcomes	Low risk	100% follow-up
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes reported
Other bias	Low risk	Only 20% of the invited oncologists responded (although 46% of the female oncologists invited responded) Patients who completed the questionnaires were not selected on a bad news scenario and included patients newly diagnosed and those in follow-up Baseline characteristics of two groups were similar

Goelz 2011

Methods	RCT conducted from June 2007 - Feb 2009
Participants	41 doctors (39 from Department of Haematology/Oncology, one from Gynaecology, one from Surgery)
Interventions	CST in the form of COM-ON-p (communication challenges in oncology related to the transition to palliative care training program), including a one hour pre-assessment with SPs, an 11-hour training course (main focus practice with SPs using cases of participants) plus a half-hour individual coaching session two weeks later. The courses were run in groups of 8/9 participants by two experienced facilitators.
Outcomes	HCP (doctors communication skills in video-recorded SP consultations pre-intervention and five weeks post-intervention using COM-ON-checklist included: <ul style="list-style-type: none"> • specific skills for palliative care; • general communication skills; • involvement of significant other; • 2 global scores on "global communication skills" and "global involvement of significant other".
Notes	The average overall estimate of effect favoured the intervention group ($P = 0.0007$). There was a statistically significant difference between intervention and control group in all sections in favour of the inter-

Goelz 2011 (Continued)

vention group including: specific palliative communication skills (P value < 0.0026); general communication skills (P value < 0.0078); and involvement of significant others (P value < 0.0051)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated randomisation to two groups in blocks of 8 by an 'external statistician'
Allocation concealment (selection bias)	Unclear risk	Allocation by Fax
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Outcome assessors blinded to group allocation
Incomplete outcome data (attrition bias) All outcomes	Low risk	100% follow-up
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes reported
Other bias	High risk	Doctors in the intervention group had significantly more professional (P = 0.02) experience compared with those in the control group

Gorniewicz 2017

Methods	RCT
Participants	38 family and internal medicine first-year residents: average age 29.6; 53% male; from 1 university in USA
Interventions	60-minute On-line training in breaking bad news using didactic material, quizzes and videos of semi-structured interviews with patients who described challenging communication situations, and of interviews between simulated doctors and patients. Five-step patient-centred model
Outcomes	HCP (residents) communication skills in video-recorded SP consultations of colon cancer patient pre-intervention and 31 days post-intervention using Breaking bad news (BBN) skills checklist and Common Ground Assessment Summary form (CGA): <ul style="list-style-type: none"> specific skills for BBN; general communication skills.
Notes	Two of five items on BBN scale (BBN P = 0.004, communication related to emotions P = 0.034), and 4 of five items on CGA were significantly higher (P < 0.01) in intervention group

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described

Gorniewicz 2017 (Continued)

Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Raters were blinded to the participant's level of education, the OSCE interview sequence (baseline or follow-up), and group status (intervention or control)
Incomplete outcome data (attrition bias) All outcomes	Low risk	No loss of participants
Selective reporting (reporting bias)	Unclear risk	No protocol available
Other bias	Low risk	Residents evaluated before and after intervention with same simulated patient scenario Study also included students but data were analysed separately

Heaven 2006

Methods	RCT
Participants	61 UK nurses, all of whom received basic 3-day CST training prior to randomisation: 68% working in palliative care; mean age 42 years; all but one female; 41% worked in community only, 21% hospital only, 38% hospital and community 449 RP encounters (75% women, mean age 61 years) 122 SP encounters
Interventions	Four 3-hour supervision sessions plus feedback on video of interview with RPs. Both intervention and control groups had basic training prior to baseline
Outcomes	HCP (nurses) communication skills assessed in audio-recording of SP and RP interviews at 1 and 3 months post-intervention, rated using MIARS: <ul style="list-style-type: none"> • 10 key interviewing skills; • psychological exploration; • overall communication profile.
Notes	Some communication behaviours were enhanced in the intervention group after supervision, including psychological exploration ($P = 0.039$)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Data collectors and judges were blinded to time and group

Heaven 2006 (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	84% follow-up at 3 months
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported
Other bias	Low risk	Baseline characteristics of two groups were similar except the control group had more communication skills training (P = 0.037)

Kruijver 2001

Methods	RCT.
Participants	53 nurses from 11 wards in 3 Dutch hospitals: mean age was 32 years, 83% women; mean of 5 years' experience in oncology 265 recently diagnosed cancer patients admitted for treatment had their admission interview with the nurse video-recorded and 258 of these patients answered questionnaires (55% women, mean age 55 years)
Interventions	Six 3-hour sessions with 10-15 participants run by two trainers with experience in clinical patient care. CST included theory, demonstration of skills, and feedback on role-playing
Outcomes	HCP (nurses) communication skills assessed on video recordings of SP interviews (one month post-intervention) and 5 RP admission interviews between 1 to 7 months post-intervention using RIAS*: <ul style="list-style-type: none">instrumental communication (information collecting and giving);affective communication (psychosocial and emotional topics). Nurses' 'burnout' was measured using MBI Patients outcomes: <ul style="list-style-type: none">satisfaction with care (PSQ-C)*; quality of life (EORTC QLQ-C30)* were measured after the video taped interview, at discharge and 3 months after discharge.

Notes

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	53 participants " randomised at ward level"
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Independent rater but blinded status not described
Incomplete outcome data (attrition bias) All outcomes	Low risk	83% to 86% follow-up; no published data of the RP video-recordings

Kruijver 2001 (Continued)

Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported
Other bias	Low risk	Baseline characteristics of two groups were similar

Lienard 2010

Methods	RCT
Participants	<p>113 Belgian residents who had been, or were, working with cancer patients</p> <p>1124 hospitalised patients were audio-recorded during the clinical round and 731 of these patients answered questionnaires</p> <p>88 patient encounters analysed (56% women; mean age 55 years)</p>
Interventions	40-hour training programme (17 hours on two-person interview skills, 10 hours on three-person interviews, 10 hours on stress management, 3 hours on integration of skills), bimonthly over an 8-month period. Small groups (maximum 7 participants). Comprised a one-hour theoretical session, role-plays of pre-defined cases, and cases from participants with immediate feedback.
Outcomes	<p>HCP (residents) communication skills were analysed in audio-tapes of 1 SP encounter pre- and post-intervention or at 8 months (control group) and 1 RP interview during a clinical round post-intervention or at 8 months (control group) using LaComm*:</p> <ul style="list-style-type: none"> • type of question; • supportiveness; • information giving and negotiation. <p>Also time spent on the 3 phases of breaking bad news and precision of the delivery of diagnosis.</p> <p>Residents' burnout' was measured pre- and post-intervention using MBI.</p> <p>Residents' physiological arousal was measured during the SP interviews</p> <p>Patient outcomes:</p> <ul style="list-style-type: none"> • satisfaction was measured on a three-item questionnaire using a visual analogue scale patients seen on a half-day clinical round per resident, pre- and post-intervention (mean of 4.5 patients per round).
Notes	Statistically significant improvement was found in 2 of 12 items of HCP skills with RPs. No effect on empathy or supportive skills in RPs. Significant increase in open questions, empathy, and concise precise diagnoses in SPs, but significant decrease in other information with SP

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Computer-generated
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Assessor blinded to time assessment and group allocation

Lienard 2010 (Continued)

Incomplete outcome data (attrition bias) All outcomes	High risk	Trained residents took part in an average of 25 hours (62%) of a training program (range 8 to 40 hours). 77% follow-up in RPs; 86% follow-up in SPs
Selective reporting (reporting bias)	Unclear risk	Subgroup analysis of % training attendance
Other bias	High risk	Selection of interview for HCP communication analysis unclear. Number of people with cancer : < 40% of patient interviews analysed and numbers are unclear in 'patient satisfaction' outcome

Merckaert 2015

Methods	RCT
Participants	<p>96 participants of 4 radiotherapy teams comprising secretaries (16%), physicists (7.5%), nurses (49%), doctors (27.5 %)</p> <p>237 breast cancer patients participated in radiotherapy sessions and answered questionnaires</p> <p>96 of these patients had their first and last radiotherapy planning sessions audio-recorded and were included in the analysis.</p>
Interventions	38 hours of CST over a 4-month period; 2 modules: 16h patient orientated communication skills module (12 hours in mono-disciplinary groups) and 22 hours team-resource-orientated communication skills module
Outcomes	<p>HCP communication skills rated using the scale LaComm* on 1 audio-recording of the first and last radiotherapy planning sessions with a patient with recently operated breast cancer and on audio-recordings of simulated anxious breast cancer patient (SP) interview at baseline and post-intervention (or equivalent timings for control group):</p> <ul style="list-style-type: none"> • assessment (open questions); • support (acknowledgement, empathy, reassurance); • information (setting information, negotiation). <p>Patient outcomes:</p> <ul style="list-style-type: none"> • Satisfaction with the care of the radiotherapy team was measured on a 38-item questionnaire on the last day of treatment
Notes	<p>With RP the Intervention group has significantly more appropriate behaviour for some communication skill outcomes (First planning session: open and open directive questions $P = 0.003$; setting information $P = 0.010$. Last session: checking $P = 0.029$).</p> <p>With SP the intervention group had significantly more appropriate behaviours/skills: team-orientated focus ($P = 0.023$), empathy ($P = 0.037$) and emotional words ($P = 0.030$).</p>

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described

Merckaert 2015 (Continued)

Blinding of outcome assessment (detection bias) All outcomes	Unclear risk	Not described
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Difference in number of participants between different publications All teams completed all assessments. 83% participants completed SP assessment 10% of patients did not complete the patient satisfaction scale
Selective reporting (reporting bias)	Unclear risk	No protocol available; HADS results have not yet been published
Other bias	High risk	Some differences in baseline characteristics of two groups including work experience in oncology, full-time occupation, and % of non-professionals (higher proportion of non HCP (secretaries and physicists) in intervention group (31% versus 10%)). Team size very variable 2 teams (65 participants) in intervention, 2 teams (31 participants) in control. Not all team members agreed to participate in training programme, but all team members were evaluated

Razavi 1993

Methods	RCT
Participants	72 oncology nurses from 4 hospitals in France and Belgium participated
Interventions	24-hour training program taught in 8 weekly, 3-hour sessions
Outcomes	HCP (nurses) communication skills in first 5 minutes of video-taped SP interviews, pre- and 2 months post-training, rated using CRCWEM* (Cancer Research Campaign Workshop Evaluation Manual): <ul style="list-style-type: none"> • information collecting skills; • creating relationship skills; • structure; • control of session. Nurses' attitudes (SDAQ*), occupational stress (NSS*) and self-perception
Notes	Trained group were assessed as 'more in control of the interview' than the untrained group during the follow-up interview (P = 0.02).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Twelve participants per institution were "randomly assigned" to two groups
Allocation concealment (selection bias)	Low risk	Allocation by sealed envelopes
Blinding of outcome assessment (detection bias)	Unclear risk	Video raters blinded for group; questionnaire assessors not blinded

Razavi 1993 (Continued)

All outcomes

Incomplete outcome data (attrition bias) All outcomes	Low risk	Low attrition rates: one dropout, three incomplete data sets out of 72 participants
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported
Other bias	Low risk	Baseline characteristics of two groups were similar

Razavi 2002

Methods	RCT
Participants	116 oncology nurses from 33 hospitals in Belgium 114 cancer patients during first week of hospitalisation
Interventions	105-hour communications skills workshop with 10 participants, run by psychologist, taught over 3 months for one week per month
Outcomes	HCP (nurses) communication skills in video-taped SP interviews and audio-taped RP interviews pre- and post-intervention (or equivalent timings for control group), and three months later rated using CRCWEM* (Cancer Research Campaign Workshop Evaluation Manual), plus dictionaries (HPSD* and MRID*) and LACOMM* and PainComCode: <ul style="list-style-type: none"> collecting information; creating relationships, including empathy and depth of emotional words. Nurses' Stress (NSS*) and Attitudes (SDAQ*) Patient outcomes: <ul style="list-style-type: none"> expression of affect (CRCWEM*); quality of life; satisfaction with interview (PSIAQ).
Notes	Patients interviewed by trained nurses used more emotional words associated with 'distress' than did those seen by untrained nurses ($P = 0.005$). There was a positive training effect on patient satisfaction (P value < 0.01). In SP interviews, nurses asked more questions about the emotional component of pain and used less inhibitory communication strategies

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	Randomisation was performed every time there were 20 nurses enrolled
Allocation concealment (selection bias)	High risk	Randomisation was performed every time there were 20 nurses enrolled
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Raters blinded by time and group

Razavi 2002 (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	86% follow-up for HCP behavioural outcome in RP and SP interviews
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported
Other bias	Low risk	Baseline characteristics were similar in both groups

Razavi 2003

Methods	RCT of follow-up consolidation sessions after both groups had basic training	
Participants	<p>63 physicians (62% oncologists) from Belgium hospitals, age 43+/-7, 55% men, with average 14 years of experience in oncology and 43% no prior CST. All had participated in a 19-hour CST workshop (consisting of two, 8-hour/day sessions and one, 3-hour evening session).</p> <p>59 cancer patients, undergoing a 'breaking news' interview (67% women mean age 58 years).</p> <p>53 cancer patients (65% women mean age 60 years) in encounters with relatives (48% women mean age 57 years)</p>	
Interventions	Six, 3-hour per evening, bimonthly, consolidation sessions over three months	
Outcomes	<p>HCP (doctors) outcomes:</p> <ul style="list-style-type: none"> communication skills: assessment skills (collecting information), information (giving) skills and supportive skills (empathy and emotional depth) were measured in audio-taped SP 'breaking bad news' interviews and video-taped RP interviews, rated using CRCWEM* before basic training and 5 months after training. Some interviews with accompanying significant other; ability to detect distress (10-point visual analogue scale). <p>Patient outcomes:</p> <ul style="list-style-type: none"> anxiety (STAI); anxiety and depression (HADS); perception of interview (PIQ). <p>Significant other outcomes:</p> <ul style="list-style-type: none"> anxiety (STAI); anxiety and depression (HADS). 	
Notes	There was no effect of consolidation workshops on doctors' ability to detect patient distress	

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	72 participants "randomly assigned"
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias)	Low risk	Raters blinded for time (pre/post) and group

Razavi 2003 (Continued)

All outcomes

Incomplete outcome data (attrition bias) All outcomes	Unclear risk	81% follow-up for SP and RP; and 77% follow-up for RP interview with significant other
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported
Other bias	Low risk	Baseline characteristics of the two HCP groups were similar. Baseline scores of patient anxiety were markedly higher in patients seen by the control group.

Stewart 2007

Methods	RCT
Participants	51 doctors (18 oncologists, 17 family doctors and 16 surgeons) from 3 towns in Canada. 102 cancer patients who attended outpatient clinics of oncologists and surgeons.
Interventions	6-hour intensive CST course including literature, physicians and patients perspectives, video modelling poor and better behaviour, role-play, video and feedback with SP using standardised cases. Emphasis on exploring patients perspectives. Control group received the standard 2-hour small group discussion triggered by video of interview between physician and breast cancer standardised patient.
Outcomes	HCP (doctors) communication skills in video-taped SP interviews at baseline and after intervention. Rated using PCCM*: <ul style="list-style-type: none">• overall estimate of effect;• 7 subscores including validation of patient-expressed experiences, expression of support, building relationships, sharing information, control and mastering whole person experience. Patient outcomes (measured only for surgeons and oncologists in both groups): <ul style="list-style-type: none">• patient distress (BSI*);• perception of interview (CDIS*; PPPC*);• a single item ('Feel better?').
Notes	Training had a positive impact on patients' satisfaction (P = 0.03) and "feeling better" (P = 0.02).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random number table
Allocation concealment (selection bias)	Low risk	Randomized done by project co-ordinator
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Raters and patients were blinded

Stewart 2007 (Continued)

Incomplete outcome data (attrition bias) All outcomes	Low risk	100% for HCP behaviour outcome; 44.3% patient response rate to patient questionnaire
Selective reporting (reporting bias)	Low risk	Subgroup analysis (family physicians) on selected outcomes
Other bias	Low risk	Baseline characteristics were similar in both groups of HCP

Tulsky 2011

Methods	Single-blind RCT; stratified by site, gender and oncologist speciality.
Participants	48 oncologists (medical, gynaecological and radiation), all of whom received a one-hour lecture on communication skills. 264 patients with advanced cancer (65% women mean age 60 years).
Interventions	Computerised intervention (interactive CD-ROM) organised in five 15-minute modules and included principles of effective communication, recognising and responding to empathic opportunities, conveying prognosis and answering difficult questions. Included tailored feedback from oncologists' own recorded conversations.
Outcomes	HCP (oncologists) outcomes: <ul style="list-style-type: none">communication skills (empathic statements and empathetic response to patient expression of emotions) in audio-taped RP encounters at one month post-intervention. Patient outcomes (measured one week after the encounter by telephone survey): <ul style="list-style-type: none">trust; perception of doctors' communication skills (empathy, knowledge of patient, therapeutic alliance).
Notes	CST aimed to influence a limited number of skills. Median time of training program = 64 minutes (58 to 99).

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Balanced randomisation in a 1:1 ratio by site, sex and speciality. Statistician performed minimisation method of randomisation to ensure balanced groups
Allocation concealment (selection bias)	Low risk	Statistician revealed the randomisation results only to project co-ordinator and principal investigators
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Single-blind. Patients were blinded to their oncologists' group allocation, as were the two audio-coders
Incomplete outcome data (attrition bias) All outcomes	Low risk	21/24 used CD-ROM in intervention, but all included in evaluation. 4/264 encounters could not be assessed due to technical problems. Overall missing data < 20%
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes were reported

Tulsky 2011 (Continued)

Other bias	Low risk	Baseline characteristics comparable except for fewer Caucasian doctors in the intervention group (76% vs 92%). Unclear if scales/questionnaires used were validated
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van Weert 2011

Methods	Cluster-RCT conducted in inpatients
Participants	58 hospital nurses providing patient education about chemotherapy. 210 older cancer patients receiving chemotherapy (35% women, mean age 72 years).
Interventions	Individualised web-based video feedback; a 1-day CST conducted in groups of 6-11 nurses focusing on patient education about chemotherapy; observation and feedback of colleagues interviews; and a half-day follow-up session and booklet.
Outcomes	HCP (nurses) outcomes: <ul style="list-style-type: none"> communication skills (67 communication aspects in seven dimensions) coded from video-recordings of RP interviews pre- and post-intervention, rated by QUOTE*. Patient outcomes: <ul style="list-style-type: none"> number of questions asked; recall of information immediately post-intervention.
Notes	Improvements in "discussing patient expectations", checking, and some affective responses. Patients asked more questions in intervention group. Limited effect on patient recall (marginally significant improvement on overall recall)

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	Not described
Allocation concealment (selection bias)	Unclear risk	Not described
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Independent observers of videos were blinded to group
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No description of the number of nurses who participated in the videos analysed post-treatment
Selective reporting (reporting bias)	Low risk	All 7 dimensions of communication reported
Other bias	Low risk	Baseline characteristics comparable

Wilkinson 2008

Methods	Multi-centre RCT
Participants	172 nurses (94% women) from hospices (60%) and community (30%) in UK. 312 cancer patients (85% women, mean age 32 years)
Interventions	A 3-day course for max. 12 participants run by 2 co-facilitators. Course included literature, nurses perspectives, video-modelling ideal behaviour, audio-recording with RPs and role-play with SPs using standardised and participant cases, both with feedback. Emphasis on exploring nurses individual difficulties.
Outcomes	HCP (nurses) outcomes (coded from audio-tapes of RP admittance interviews and 12 weeks' post-intervention; rated using CSRS*): <ul style="list-style-type: none">communication skills (structure, facilitating behaviours, blocking behaviours, depth of assessment);interview content (physical and psychosocial assessment of patient). Patient outcomes: <ul style="list-style-type: none">anxiety (STAI-s);general health (GHQ-12);satisfaction (PSCQ).
Notes	Tendency to improve patient satisfaction and general health. No statistical difference in mean change of patients' anxiety.

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomisation using computer-generated numbers
Allocation concealment (selection bias)	Low risk	Statistician performed randomisation before the study commenced and kept the results in sealed envelopes in the central research department
Blinding of outcome assessment (detection bias) All outcomes	Low risk	Raters blinded
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	90% follow-up but missing data stated
Selective reporting (reporting bias)	Low risk	All pre-specified outcomes described
Other bias	High risk	Higher professional grades in control group

Abbreviations:

CI: confidence interval; **CST:** communication skills training; **EORTC:** European Organization for Research and Treatment of Cancer; **HADS:** Hospital Anxiety and Depression Scale; **HCP:** healthcare professional; **MBI:** Maslach Burnout Inventory; **QOL:** quality of life; **RIAS:** Roter interaction analysis system; **RCT:** randomised controlled trial; **RP:** real patient; **SP:** simulated patient;

* See [Table 4](#); [Table 1](#); and [Table 3](#) for key to scale abbreviations.

Characteristics of excluded studies [ordered by study ID]

Study	Reason for exclusion
Ades 2001	Not an RCT. No CST.
Alexander 2006	Not an RCT. Case-control study of a course to improve residents' communication skills with patients at end of life.
Anderson 1982	Not an RCT. No controls, post-CST course measurement only.
Andrew 1998	Not an RCT. Qualitative study of CST in palliative care.
Archer 2004	Not an RCT, no objective behavioural outcome measurement.
Arranz 2005	Not an RCT. Post-intervention assessment counselling course for nurses. No objective measurements of skills.
Arrighi 2010	Not an RCT. Exploratory study conducted in patients not HCPs.
Aubin-Auger 2014	Not patients with cancer
Back 2005	Not an RCT. Questionnaire survey of bereaved relatives.
Back 2007	Not an RCT. Pre-post cohort study of a 4-day residential workshop in oncology fellows with objective measurements of HCP behaviour.
Baile 1997	Not an RCT. Pre-post cohort study of a 3-day CST. Only subjective measurement of behavioural change reported.
Baile 1999	Not an RCT. Pre-post cohort study of a 2.5-day CST. Only subjective measurement of behavioural change reported.
Beach 2014	Not an RCT
Berman 1983	Not an RCT. Post-study subjective measurement of behavioural change of an annual seminar for interns on caring for dying patients.
Bernacki 2013	No objective HCP behavioural change measured
Bernacki 2015	No objective HCP behavioural change measured
Bernard 2010	Not an RCT. Case-control study of a course for medical oncologists and nurses with pre-post measurements of HCP skills and defence mechanisms.
Bernhard 2012	Not an RCT
Bibila 2014	Not an RCT
Bird 1993	Not an RCT. Post-study subjective measurement of behavioural change of 2.5-day residential workshop.
Blödt 2016	No objective HCP behavioural change measured
Booth 1996	Not an RCT. Pre-post cohort study of a 6-session CST course for hospice nurses measuring HCP skills in audio-taped interviews.
Brown 1999	An RCT of CST in ambulatory care, not in cancer care. No objective measure of HCP skills.

Study	Reason for exclusion
Brown 2007	Not an RCT. A course of communication skills training for oncologists involved in conducting clinical trials in oncology. Training was aimed at improving patient understanding and acceptance of clinical trials.
Brown 2011	Not an RCT. Study of oncologists communication during interviews when recruiting patients for Phase 1 trials.
Brown 2012	HCP communication skills were not assessed.
Burgess 2008	Not an RCT.
Butow 2015	CST was aimed at facilitating recruitment of patients to trials
Bylund 2010	Not an RCT. Pre-post study of CST course for oncologists.
Bylund 2011a	Not an RCT. Description of implementation of CST curriculum and impressions of participants.
Bylund 2011b	Not an RCT. Before-after assessment of a non-controlled study of CST for patients.
Cantwell 1997	Not an RCT. A qualitative study of junior doctors opinion of undergraduate communication skills in relation to patients with cancer.
Caps 2010	Not an RCT.
Chandawarkar 2011	Not an RCT. Pre-post assessment using simulated patients of CST for surgical residents.
Charlton 1993	Not an RCT.
Clark 2009	An RCT of patients with cancer receiving patient-centred care or usual care.
Claxton 2011	An RCT of email education for residents about palliative care. Not specifically communication skills. No objective measurement of skills reported.
Clayton 2012	Not an RCT
Connolly 2010	Not an RCT. Post course measurement of "Sage and Thyme" communication course. No objective measurement of skills reported.
Cooley 2014	Not CST
Cort 2009	RCT studying the effect of a course on cognitive behaviour therapy. No objective measurement of behavioural change reported.
Cowan 1997	Not an RCT. Measured changes in attitudes/knowledge, not behaviour. No separate control group.
Craytor 1978	Not an RCT. Measured changes in attitudes/knowledge, not behaviour. No separate control group.
Crit 2006	Not an RCT.
Curtis 2013	CST in HCPs < 60% of whom did not work specifically in cancer care
Das Gracas 2016	Not CST
de Bie 2011	Not CST. Trial involved training patients to reduce anxiety prior to colonoscopy.

Study	Reason for exclusion
de Rond 2000	Quasi-RCT on training nurses about pain management. Only subjective measurement of behavioural change.
Del Vento 2009	Not an RCT. Qualitative study of how experienced doctors give good and bad news.
Delvaux 1997	Not an RCT. Psychological training programme.
Ditton-Phare 2016	Not an RCT
Dixon 2001	Not an RCT. Pre-post study of 12 week distance education for nurses working in breast cancer care. Only subjective measurement of behavioural change reported.
Downar 2017	CST in HCPs who did not work specifically in cancer care
Durgahee 1997	Not an RCT. 5 years experience of reflection through story-telling for students of palliative care.
Epner 2014	Not an RCT
Fallowfield 1998	Not an RCT. Cohort of 178 senior oncologists who assisted 1.5- or 3-day CST. Only subjective measurement of behavioural change reported.
Fallowfield 2001	Not an RCT. Cohort of 129 nurses. Only subjective measurement of behavioural change reported.
Fallowfield 2012	Not an RCT.
Faulkner 1984	Not an RCT. Cohort of 8 nurses working in cancer who assisted CST.
Faulkner 1992	Not an RCT. Evaluation of training programmes for communication skills in palliative care.
Favre 2007	Not an RCT. Pre-post defence mechanism assessment of CST for oncologists.
Ferrell 1998a	Not an RCT. Pre-post assessment of HOPE course for HCP in palliative care. Only subjective measurement of behavioural change reported.
Ferrell 1998b	Not an RCT. Pre-post assessment of HOPE course for HCP in palliative care. Only subjective measurement of behavioural change reported.
File 2014	Not an RCT
Fineberg 2005	Not an RCT. Quasi-experimental design with pre-post assessment of a course on family communication in palliative care for interdisciplinary students. Only subjective measurement of behavioural change reported.
Finset 2003	Not an RCT. Pre-post assessment of CST for HCP. Only subjective measurement of behavioural change reported.
Fujimori 2003	Not an RCT. Post course assessment of CST for oncologists. Only subjective measurement of behavioural change reported.
Fukui 2008	RCT of CST for nurses in cancer care. No objective measurement of behavioural change reported. Patient outcomes were only measured in the intervention group, not in the control group.
Gerhart 2016	Not an RCT
Gibon 2017	Not an RCT

Study	Reason for exclusion
Girgis 1997	Not an RCT. Measured change in attitude/knowledge not skills, not behaviour.
Glimelius 1995	Not an RCT.
Golding 2016	Not an RCT
Gordon 1995	Not an RCT. Post course assessment of 2.5-day or 5-day course of CST. Only subjective measurement of behavioural change reported.
Gorniewicz 2017a	CST in HCPs < 60% of whom worked specifically in cancer care
Gouveia 2017	No objective HCP behavioural change measured
Griffiths 2015	Not an RCT
Gulbrandsen 2013	CST in HCPs who did not work specifically in cancer care
Gutheil 2005	Not an RCT. Patients not HCPs trained in communication skills.
Hainsworth 1996	RCT of a course for nurses on death education. Not specifically for nurses working in cancer care. Only subjective measurement of behavioural change reported.
Hall 1999	Not an RCT
Hallenbeck 1999	Not an RCT. A questionnaire of interns before and after their rotation in palliative care.
Hallford 2011	Not CST
Hamilton 2014	No objective HCP behavioural change measured
Heaven 1995	Not an RCT. A 10-week CST for hospice nurses with assessment of ability to elicit patient concerns.
Heaven 1996	Not an RCT. A 10-week CST for hospice nurses with assessment of ability to elicit patient concerns.
Hellbom 2001	Not an RCT. Post course assessment of a 4-session CST course. Only subjective measurement of behavioural change reported.
Hendricks-Ferguson 2015	Not an RCT
Henoch 2013	No objective HCP behavioural change measured
Hietanen 2007	Not an RCT. Case-control study of a course on communication skills training for physicians involved in conducting clinical trials in oncology. Training was aimed at improving patient understanding and acceptance of clinical trials.
Hill 2013	Not an RCT
Hillen 2014	Not CST
Hoffman 2002	Not an RCT. Description of CST course for oncology residents and their views about the course.
Hulsman 1997	Not an RCT. Pre-post assessment of a computer-assisted CST for doctors in cancer care. Only subjective measurement of behavioural change reported.

Study	Reason for exclusion
Hulsman 2002	Not an RCT. Pre-post assessment of a computer assisted CST for doctors in cancer care using video-tapes of real patient encounter.
Hundley 2008	An RCT of a course of delivering bad news. Only subjective measurement of behavioural change reported.
Jefford 2011	Not an RCT. Patients received care package.
Johnson 2012	Not an RCT
Johnson 2013	Not an RCT
Jors 2016	Not an RCT
Ju 2014	Not an RCT
Ke 2008	An RCT of 50-minute CST lecture for nurses. Only subjective measurement of behavioural change reported.
Keir 2013	Not an RCT
Kelley 2012	Not an RCT
Kinnane 2011	Not an RCT. Study conducted in volunteers not HCPs.
Kortes-Miller 2016	Not an RCT
Kruse 2003	Not an RCT. Pre-post assessment of a comparison between 6-hour and 24-hour CST programs.
Kubota 2012	Not an RCT
Kubota 2015	No objective HCP behavioural change measured
La Monica 1987	Not an RCT. Study of 4-week session on responding to empathy.
Ladouceur 2003	Not an RCT. Post course assessment of course of breaking bad news. Only subjective measurement of behavioural change reported.
Larbig 2009	Not an RCT. On-line counselling for patients.
Lenzi 2011	Not an RCT. Pre- and post-assessment of a 3-day CST workshop in a cohort of 57 Italian oncologists. Only subjective measurement of behavioural change reported.
Libert 2003	Not an RCT. A cohort of physicians were assessed with regard to their communication skills.
Libert 2016	Not an RCT
Linder 1999	Measured change in attitude/knowledge not skills, not behaviour.
Liu 2007	Not an RCT. Quasi-experimental study of CST in nurses.
Lloyd-Williams 1996	Not an RCT. Measured change in attitude/knowledge not skills, not behaviour.
Loiselle 2011	Not an RCT.

Study	Reason for exclusion
Macauley 2011	Not an RCT.
Madhavan 2011	Not an RCT.
Maguire 1996a	Not an RCT. Pre-post assessment of a 3-5-day course on key communication skills for HCP in cancer care. Measurement with simulated and real patient encounters.
Maguire 1996b	Not an RCT. Similar to Maguire 1996a .
Martinez 2009	Not an RCT, a survey of patient satisfaction with communication/information.
Matrone 1990	Not an RCT.
Medendorp 2017	Not an RCT
Melo 2011	Not an RCT. A case-control study of a course on communication, spiritual advice and death for HCP. Only subjective measurements of behaviour change and measurement of burnout.
Meystre 2013	Not an RCT
Morita 2014	No objective HCP behavioural change measured
Nellis 2016	Not an RCT
O'Connor 2011	Not an RCT. A survey of focus groups including pharmacists, nurses and doctors.
Parle 1997	Not an RCT. Post-course assessment of a 3-day workshop on difficult situations. Only subjective assessment of behavioural change reported.
Patel 2016	Not an RCT
Pekmezaris 2011	Not an RCT. Pre-post assessment of a course for residents about end of life care. Only subjective measurement of behavioural change are reported.
Pelayo 2011	RCT of on-line course on palliative care. Only subjective measurement of behavioural change reported.
Pieterse 2006	Not an RCT. Pre- and post-test study of CST for genetic counsellors.
Rangachari 2014	Not an RCT
Rask 2009	RCT of a 33-hour CST course for nurses. No objective measurement of behaviour change reported. Assessment of patient perception of HCP's skills.
Razavi 1991	Not an RCT. Study of a brief psychological training for HCP working with terminal cancer patients. Only subjective measurements of behaviour and attitude change reported.
Razavi 2000	Not an RCT. Study comparing different simulated patients to measure behavioural change after CST.
Razavi 2009	Not an RCT, a summary of research.
Rose 2008	Not an RCT. A review of psycho-oncology interventions for patients with cancer.

Study	Reason for exclusion
Rosenbloom 2007	RCT of an intervention for patients with cancer comparing nurse assessment of quality of life compared to normal care.
Roter 1995	RCT of CST for primary care physicians. Study not primarily related to cancer care. Assessment using audio-tapes of encounters with distressed and non-distressed real and simulated patients.
Rush 2015	Not an RCT
Rushton 2006	Not an RCT
Rutter 1996	Not an RCT
Schenker 2015	Not an RCT
Schmitz 2016	CST in HCPs who did not work specifically in cancer care
Schulman-Green 2003	Not an RCT. Qualitative study of how HCP learn about caring for the dying.
Shannon 2011	Not an RCT. Post-assessment study of a brief CST for nurses. Only subjective assessment of change reported.
Shields 2010	An RCT of coaching for survivors of breast cancer
Shipman 2008	Not an RCT
Shorr 2000	Not an RCT. Cohort study of invention to help HCP discuss end of life issues with patients, not specifically limited to cancer care.
Singy 2012	Not an RCT
Smith 1991	Not an RCT. Case-controlled study of a 1-month CST for residents. Only subjective measurement of change reported.
Smith 2010	An RCT of an intervention comparing a pain/communication session to normal care for patients with cancer.
Song 2013	Not an RCT
Street 2010	RCT of CST training (tailored education-coaching) for patients with cancer.
Szmuiłowicz 2010	An RCT of CST in HCPs who did not work specifically in cancer care.
Tannen 2014	Not an RCT. Summary of the first update of this review
Timmermans 2006	Not an RCT. Pre-post study of CST training for radiation oncologists. Assessment of oncologists and patient communication in audiotapes of real patient encounters.
Ullrich 2011	Not an RCT. Pre-post quasi-RCT of CST for speech therapists. Only subjective measurement of change were reported.
Vadaparampil 2016	Not an RCT
Von Gunten 1998	Not an RCT. Measured change in attitude/knowledge not skills, not behaviour.
Walter 2016	Not an RCT

Study	Reason for exclusion
Wetzel 2011	RCT of training in stress management for surgeons, not communication training. Not limited to cancer care.
Wilkinson 1998	Not an RCT. Cohort study with pre-post assessment of 26-hour CST (including knowledge, attitude and skills training) for nurses. Audiotaped patient encounters measured behavioural change.
Wilkinson 1999	Not an RCT. Long-term follow-up of cohort study.
Wilkinson 2003	Not an RCT. Cohort study with pre-post assessment of 3-day CST for nurses. Audiotaped patient encounters measured behavioural change.
Wittenberg 2016	Not RCT
Wong 2001	Not an RCT. Post-assessment of a course on death education for nurses. Only subjective measurement of changes reported.
Wuensch 2011	RCT of communication skills training for physicians involved in conducting clinical trials in oncology. Training was aimed at improving patient understanding and acceptance of clinical trials.
Wuensch 2014	CST was aimed at facilitating recruitment of patients to trials
Yildirim 2013	Not an RCT

CST: communication skills training; **HCP:** healthcare professional; **RCT:** randomised controlled trial

Characteristics of studies awaiting assessment [ordered by study ID]

Brock 2017

Methods	RCT pilot study
Participants	Thirty-five paediatric doctors in post-graduate training in cardiology, critical care, haematology/oncology, and neonatology at two institutions
Interventions	Intervention group participants participated in a two-day program over three months (three simulations and videotaped PC panel). Control group participants received written education designed to be similar in content and time
Outcomes	External reviewers rated simulation-group encounters on nine communication domains.
Notes	Nonsustained improvement in four domains: relationship building ($P = 0.01$), opening discussion ($P = 0.03$), gathering information ($P = 0.01$), and communicating accurate information ($P = 0.04$)

Coltoff 2018

Methods	RCT
Participants	solid tumour oncologists from four hospitals
Interventions	Intervention group participated in an interactive 2-hour training session and then four coaching sessions in their actual practice environment

Coltoff 2018 *(Continued)*

Outcomes	Communication skills were coded from recordings of goal of care interviews before and after the intervention
Notes	The intervention group used significantly more communication skills during the post-intervention interviews

Henselmans 2018

Methods	RCT with four parallel arms
Participants	Oncologists randomised to intervention or usual care; Patients with metastatic or unresectable cancer with a median life expectancy <12 months randomised to intervention or usual care
Interventions	<p>The oncologist training consists of a reader, two group sessions (3.5 hour including modelling videos and role-play), a booster feedback session (1 hour) and a consultation room tool.</p> <p>The patient communication aid consists of a home-sent question prompt list and a value clarification exercise to prepare patients for Shared Decision Making (SDM) in the consultation</p>
Outcomes	<p>The primary outcome is observed SDM in audio-recorded consultations with real and standardised patients. SDM will be measured using two instruments: the validated Observing Patient Involvement (OPTION) tool and 4SDM, a new tool.</p> <p>Secondary outcomes include patient and oncologist evaluation of communication and decision-making, the decision made, quality of life, potential adverse outcomes such as anxiety and hopelessness, and consultation duration immediately after the consultation and at 3 and 6 months</p>
Notes	Protocol

Scholl 2018

Methods	Stepped wedge cluster-randomised trial
Participants	HCPs (Physicians and Nurses) from three clinical teams from one university cancer centre in Germany
Interventions	The HCPs will receive SDM training and individual coaching. The patients will receive a patient activation strategy and patient information material and decision aids. The outcome evaluation will consist of four measurement points. The primary outcome is adoption of SDM, measured by the 9-item Shared Decision Making Questionnaire. A range of other implementation outcomes will be assessed (i.e. acceptability, readiness for implementing change, appropriateness, penetration). The implementation process will be evaluated using stakeholder interviews and field notes. This will allow adapting interventions if necessary
Outcomes	The primary outcome will measure adoption of SDM in audio-taped interviews, measured by the 9-item Shared Decision Making Questionnaire
Notes	Protocol

HCP: healthcare professionals; **RCT:** randomised controlled trial; **SDM:** shared decision making

Characteristics of ongoing studies *[ordered by study ID]*

Berger-Höger 2015

Trial name or title	Informed shared decision-making supported by decision coaches for women with ductal carcinoma in situ: study protocol for a cluster randomised controlled trial
Methods	Multi-centred cluster RCT CST for doctors and nurses focusing on shared decision-making together with the use of decision aids for patients
Participants	Doctors and nurses from 16 breast cancer centres; breast cancer patients
Interventions	CST for doctors (2 hours) and nurses (4 days) focusing on shared decision-making together with the use of decision aids for patients
Outcomes	Patients' involvement in shared decision-making as assessed by the MAPPIN-Odyad (Multifocal approach to the 'sharing' in shared decision-making: observer instrument dyad). Secondary endpoints include the sub-measures of the MAPPIN-inventory (MAPPIN-Onurse, MAPPIN-Ophysician, MAPPIN-Opatient, MAPPIN-Qnurse, MAPPIN-Qpatient and MAPPIN-Qphysician), informed choice, decisional conflict and the duration of encounters
Starting date	Currently, the recruitment of breast care centres is ongoing. Patients will be recruited from July 2015 until March 2016
Contact information	Birte.Berger-Hoeger@uni-hamburg.de University of Hamburg, MIN-Faculty, Unit of Health Sciences and Education, Martin-Luther-King-Platz 6, D-20146 Hamburg, Germany. 2mediStatistica Neuenrade, Lambertusweg 1b, D-58809 Neuenrade, Germany.
Notes	Protocol

De Figueiredo 2015

Trial name or title	ComOn Coaching: Study protocol of a randomised controlled trial to assess the effect of a varied number of coaching sessions on transfer into clinical practice following communication skills training
Methods	RCT
Participants	Physicians of two German medical centres will participate in a workshop for communication skills
Interventions	One coaching session compared to 4 coaching sessions after workshop for communication skills
Outcomes	Primary Outcome measures of changes in HCP communication using video-recordings of real patients at three time points Secondary outcomes: HCP self evaluation of communication, evaluations of the consultation by HCP and patients
Starting date	Unclear
Contact information	marcelo.de.figueiredo@uniklinik-freiburg.de Department of Psychosomatic Medicine and Psychotherapy, Freiburg University Medical Center, Hauptstr. 8, D-79104, Freiburg, Germany
Notes	Protocol

Libert 2017

Trial name or title	Communication about uncertainty and hope: A randomised controlled trial assessing the efficacy of a communication skills training program for physicians caring for cancer patients
Methods	RCT
Participants	Physician participants will be randomly assigned in groups to a 30-hour CST program (experimental group) or to a waiting list (control group).
Interventions	The training program will include learner-centred, skills focused, practice-oriented techniques
Outcomes	HCP communication will be measured in simulated patient encounters at baseline and after CST or after 4 months for control group. Outcomes include communicational, psychological and physiological measures
Starting date	Unclear
Contact information	yves.libert@bordet.be; livia.peternelj@bordet.be Université Libre de Bruxelles, Faculté des Sciences Psychologiques et de l'Éducation, Av. F. Roosevelt, 50 (CP 191), 1050 Brussels, Belgium
Notes	Protocol

Parker 2016

Trial name or title	Protocol for a cluster randomised trial of a communication skills intervention for physicians to facilitate survivorship transition in patients with lymphoma
Methods	Multicentred RCT
Participants	Physicians Patients who have achieved complete remission after completion of first-line therapy
Interventions	CST in survivorship planning consultation skills compared to training in wellness rehabilitation
Outcomes	Primary outcome: HCP communication skills measured in RP encounters Other outcomes: Patient knowledge and adherence to plan; perceptions of the doctor-patient relationship, decreased cancer worry and depression, QOL, satisfaction of care, usage of health system
Starting date	Unclear
Contact information	Dr Patricia Parker; Parkerp@mskcc.org
Notes	Protocol

CST: communication skills training; **HCP:** healthcare professionals; **QOL:** quality of life; **RCT:** randomised controlled trial; **RP:** real patient

DATA AND ANALYSES

Comparison 1. CST vs no CST: HCP communication skills

Outcome or sub-group title	No. of studies	No. of participants	Statistical method	Effect size
1 Used open questions	5	796	Std. Mean Difference (IV, Random, 95% CI)	0.25 [0.02, 0.48]
1.1 Simulated patients	5	422	Std. Mean Difference (IV, Random, 95% CI)	0.38 [-0.01, 0.76]
1.2 Real patients	4	374	Std. Mean Difference (IV, Random, 95% CI)	0.08 [-0.12, 0.28]
2 Showed empathy	6	844	Std. Mean Difference (IV, Random, 95% CI)	0.18 [0.05, 0.32]
2.1 Simulated patients	5	422	Std. Mean Difference (IV, Random, 95% CI)	0.26 [0.07, 0.45]
2.2 Real patients	5	422	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.08, 0.30]
3 Gave facts only	5	780	Std. Mean Difference (IV, Random, 95% CI)	-0.26 [-0.51, -0.01]
3.1 Simulated patients	5	406	Std. Mean Difference (IV, Random, 95% CI)	-0.42 [-0.77, -0.06]
3.2 Real patients	4	374	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.38, 0.22]
4 Elicited concerns	3	221	Std. Mean Difference (IV, Random, 95% CI)	0.24 [-0.12, 0.60]
4.1 Simulated patients	3	163	Std. Mean Difference (IV, Random, 95% CI)	0.17 [-0.33, 0.67]
4.2 Real patients	1	58	Std. Mean Difference (IV, Random, 95% CI)	0.40 [-0.12, 0.93]
5 Gave appropriate information	4	489	Std. Mean Difference (IV, Random, 95% CI)	-0.08 [-0.26, 0.10]
5.1 Simulated patients	3	203	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.42, 0.14]
5.2 Real patients	3	286	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.27, 0.19]
6 Clarified and/or summarised	3	422	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.30, 0.49]
6.1 Simulated patients	3	253	Std. Mean Difference (IV, Random, 95% CI)	0.32 [-0.18, 0.81]
6.2 Real patients	2	169	Std. Mean Difference (IV, Random, 95% CI)	-0.20 [-0.50, 0.11]
7 Negotiation	3	503	Std. Mean Difference (IV, Random, 95% CI)	0.12 [-0.08, 0.32]
7.1 Simulated patients	3	240	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.12, 0.39]
7.2 Real patients	3	263	Std. Mean Difference (IV, Random, 95% CI)	0.13 [-0.25, 0.51]

Analysis 1.1. Comparison 1 CST vs no CST: HCP communication skills, Outcome 1 Used open questions.

Study or subgroup	Experimental		Control		Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)			
1.1.1 Simulated patients							
<div style="display: flex; justify-content: space-between; align-items: center;"> Favours control -1 -0.5 0 0.5 1 Favours experimental </div>

Analysis 1.2. Comparison 1 CST vs no CST: HCP communication skills, Outcome 2 Showed empathy.

Analysis 1.3. Comparison 1 CST vs no CST: HCP communication skills, Outcome 3 Gave facts only.

Analysis 1.4. Comparison 1 CST vs no CST: HCP communication skills, Outcome 4 Elicited concerns.

Analysis 1.5. Comparison 1 CST vs no CST: HCP communication skills, Outcome 5 Gave appropriate information.

Analysis 1.6. Comparison 1 CST vs no CST: HCP communication skills, Outcome 6 Clarified and/or summarised.

Analysis 1.7. Comparison 1 CST vs no CST: HCP communication skills, Outcome 7 Negotiation.

Comparison 2. CST vs no CST: HCP communication skills: doctors only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Used open questions	2	306	Std. Mean Difference (IV, Random, 95% CI)	0.27 [0.05, 0.50]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.1 Simulated patients	2	160	Std. Mean Difference (IV, Random, 95% CI)	0.34 [0.03, 0.66]
1.2 Real patients	2	146	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.13, 0.52]
2 Showed empathy	3	354	Std. Mean Difference (IV, Random, 95% CI)	0.22 [0.01, 0.43]
2.1 Simulated patients	2	160	Std. Mean Difference (IV, Random, 95% CI)	0.27 [-0.05, 0.60]
2.2 Real patients	3	194	Std. Mean Difference (IV, Random, 95% CI)	0.18 [-0.12, 0.49]
3 Clarified and/or summarised	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Elicited concerns	2	150	Std. Mean Difference (IV, Random, 95% CI)	0.09 [-0.25, 0.43]
4.1 Simulated patients	2	92	Std. Mean Difference (IV, Random, 95% CI)	-0.10 [-0.51, 0.31]
4.2 Real patients	1	58	Std. Mean Difference (IV, Random, 95% CI)	0.40 [-0.12, 0.93]
5 Gave appropriate information	2	150	Std. Mean Difference (IV, Random, 95% CI)	-0.01 [-0.34, 0.31]
5.1 Simulated patients	2	92	Std. Mean Difference (IV, Random, 95% CI)	0.02 [-0.39, 0.43]
5.2 Real patients	1	58	Std. Mean Difference (IV, Random, 95% CI)	-0.07 [-0.59, 0.44]
6 Gave facts only	2	306	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.74, 0.37]
6.1 Simulated patients	2	160	Std. Mean Difference (IV, Random, 95% CI)	-0.50 [-1.36, 0.35]
6.2 Real patients	2	146	Std. Mean Difference (IV, Random, 95% CI)	0.16 [-0.17, 0.49]

Analysis 2.1. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 1 Used open questions.

Analysis 2.2. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 2 Showed empathy.

Analysis 2.3. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 3 Clarified and/or summarised.

Analysis 2.4. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 4 Elicited concerns.

Analysis 2.5. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 5 Gave appropriate information.

Analysis 2.6. Comparison 2 CST vs no CST: HCP communication skills: doctors only, Outcome 6 Gave facts only.

Comparison 3. CST vs no CST: HCP communication skills: nurses only

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Used open questions	2	293	Std. Mean Difference (IV, Random, 95% CI)	0.41 [-0.23, 1.06]
1.1 Simulated patients	2	182	Std. Mean Difference (IV, Random, 95% CI)	0.65 [-0.07, 1.37]
1.2 Real patients	1	111	Std. Mean Difference (IV, Random, 95% CI)	-0.04 [-0.42, 0.33]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
2 Clarified and/or summarised	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3 Elicited concerns	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Showed empathy	2	293	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.04, 0.42]
4.1 Simulated patients	2	182	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.06, 0.53]
4.2 Real patients	1	111	Std. Mean Difference (IV, Random, 95% CI)	0.11 [-0.27, 0.48]
5 Gave appropriate information	2	342	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.31, 0.12]
5.1 Simulated patients	2	173	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.46, 0.14]
5.2 Real patients	2	169	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.32, 0.28]
6 Gave facts only	2	293	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.65, 0.17]
6.1 Simulated patients	2	182	Std. Mean Difference (IV, Random, 95% CI)	-0.31 [-0.98, 0.37]
6.2 Real patients	1	111	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.47, 0.28]

Analysis 3.1. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 1 Used open questions.

Study or subgroup	Experimental		Control		Std. Mean Difference Random, 95% CI	Weight	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)			
3.1.1 Simulated patients							
Razavi 1993	35	3.7 (3)	36	2.7 (4.1)		32.09%	0.27[-0.19,0.74]
Razavi 2002	54	13.9 (7.5)	57	7.3 (5.3)		33.7%	1.01[0.61,1.4]
Subtotal ***	89		93			65.79%	0.65[-0.07,1.37]
Heterogeneity: Tau ² =0.22; Chi ² =5.49, df=1(P=0.02); I ² =81.79%

Analysis 3.2. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 2 Clarified and/or summarised.

Analysis 3.3. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 3 Elicited concerns.

Analysis 3.4. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 4 Showed empathy.

Analysis 3.5. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 5 Gave appropriate information.

Analysis 3.6. Comparison 3 CST vs no CST: HCP communication skills: nurses only, Outcome 6 Gave facts only.

Comparison 4. CST vs no CST: subgrouped by HCP type

Outcome or sub-group title	No. of studies	No. of participants	Statistical method	Effect size
1 Used open questions	4	599	Std. Mean Difference (IV, Random, 95% CI)	0.34 [0.07, 0.61]
1.1 Doctors	2	306	Std. Mean Difference (IV, Random, 95% CI)	0.27 [0.05, 0.50]
1.2 Nurses	2	293	Std. Mean Difference (IV, Random, 95% CI)	0.41 [-0.23, 1.06]
2 Clarified and/or summarised	2	342	Std. Mean Difference (IV, Random, 95% CI)	0.01 [-0.47, 0.48]
2.1 Doctors	1	120	Std. Mean Difference (IV, Random, 95% CI)	-0.30 [-0.66, 0.06]
2.2 Nurses	1	222	Std. Mean Difference (IV, Random, 95% CI)	0.28 [-0.45, 1.02]
3 Elicited concerns	2	191	Std. Mean Difference (IV, Random, 95% CI)	0.31 [-0.10, 0.72]
3.1 Doctors	1	120	Std. Mean Difference (IV, Random, 95% CI)	0.15 [-0.33, 0.63]
3.2 Nurses	1	71	Std. Mean Difference (IV, Random, 95% CI)	0.61 [0.14, 1.09]
4 Showed empathy	5	647	Std. Mean Difference (IV, Random, 95% CI)	0.21 [0.05, 0.36]
4.1 Doctors	3	354	Std. Mean Difference (IV, Random, 95% CI)	0.22 [0.01, 0.43]
4.2 Nurses	2	293	Std. Mean Difference (IV, Random, 95% CI)	0.19 [-0.04, 0.42]
5 Gave appropriate information	2	342	Std. Mean Difference (IV, Random, 95% CI)	-0.09 [-0.31, 0.12]
5.1 Doctors	1	120	Std. Mean Difference (IV, Random, 95% CI)	-0.02 [-0.38, 0.34]
5.2 Nurses	1	222	Std. Mean Difference (IV, Random, 95% CI)	-0.13 [-0.40, 0.14]

Outcome or sub-group title	No. of studies	No. of participants	Statistical method	Effect size
6 Gave facts only	4	599	Std. Mean Difference (IV, Random, 95% CI)	-0.21 [-0.54, 0.12]
6.1 Doctors	2	306	Std. Mean Difference (IV, Random, 95% CI)	-0.19 [-0.74, 0.37]
6.2 Nurses	2	293	Std. Mean Difference (IV, Random, 95% CI)	-0.24 [-0.65, 0.17]

Analysis 4.1. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 1 Used open questions.

Analysis 4.2. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 2 Clarified and/or summarised.

Analysis 4.3. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 3 Elicited concerns.

Analysis 4.4. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 4 Showed empathy.

Analysis 4.5. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 5 Gave appropriate information.

Analysis 4.6. Comparison 4 CST vs no CST: subgrouped by HCP type, Outcome 6 Gave facts only.

Comparison 5. CST vs no CST: Other HCP outcomes

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Emotional exhaustion: Maslach Burnout Inventory:	3	202	Std. Mean Difference (IV, Random, 95% CI)	-0.16 [-0.44, 0.12]
2 Personal accomplishment: Maslach Burnout Inventory	3	202	Std. Mean Difference (IV, Random, 95% CI)	0.24 [-0.04, 0.52]
3 Depersonalisation	1	96	Mean Difference (IV, Random, 95% CI)	0.5 [-1.50, 2.50]

Analysis 5.1. Comparison 5 CST vs no CST: Other HCP outcomes, Outcome 1 Emotional exhaustion: Maslach Burnout Inventory:.

Analysis 5.2. Comparison 5 CST vs no CST: Other HCP outcomes, Outcome 2 Personal accomplishment: Maslach Burnout Inventory.

Analysis 5.3. Comparison 5 CST vs no CST: Other HCP outcomes, Outcome 3 Depersonalisation.

Comparison 6. CST vs no CST: Patient outcomes

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Patient psychiatric morbidity (GHQ 12)	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2 Patient anxiety	3	770	Std. Mean Difference (IV, Random, 95% CI)	0.17 [-0.24, 0.59]
3 Patient perception of HCPs communication skills	2	170	Std. Mean Difference (IV, Random, 95% CI)	-0.14 [-0.44, 0.16]
4 Patient satisfaction with communication	2	429	Std. Mean Difference (IV, Random, 95% CI)	0.20 [-0.23, 0.63]

Analysis 6.1. Comparison 6 CST vs no CST: Patient outcomes, Outcome 1 Patient psychiatric morbidity (GHQ 12).

Analysis 6.2. Comparison 6 CST vs no CST: Patient outcomes, Outcome 2 Patient anxiety.

Analysis 6.3. Comparison 6 CST vs no CST: Patient outcomes, Outcome 3 Patient perception of HCPs communication skills.

Analysis 6.4. Comparison 6 CST vs no CST: Patient outcomes, Outcome 4 Patient satisfaction with communication.

Comparison 7. Follow-up CST vs no follow-up CST: HCP communication skills

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Used open questions	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
1.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2 Clarified and/or summarised	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
2.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
2.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3 Elicited concerns	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
3.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
3.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
4 Showed empathy	2	168	Std. Mean Difference (IV, Random, 95% CI)	0.23 [-0.07, 0.54]
4.1 Simulated patients	1	62	Std. Mean Difference (IV, Random, 95% CI)	0.07 [-0.43, 0.57]
4.2 Real patients	2	106	Std. Mean Difference (IV, Random, 95% CI)	0.33 [-0.06, 0.72]
5 Gave appropriate information	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
5.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
5.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
6 Gave facts only	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
6.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
6.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
7 Negotiation	1		Std. Mean Difference (IV, Random, 95% CI)	Totals not selected
7.1 Simulated patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]
7.2 Real patients	1		Std. Mean Difference (IV, Random, 95% CI)	0.0 [0.0, 0.0]

Analysis 7.1. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 1 Used open questions.

Study or subgroup	Experimental		Control		Std. Mean Difference Random, 95% CI	Std. Mean Difference Random, 95% CI
	N	Mean(SD)	N	Mean(SD)		
7.1.1 Simulated patients						
Razavi 2003	29	7.6 (4.5)	33	5.8 (4.2)		0.4[-0.1,0.91]
7.1.2 Real patients						
Razavi 2003	28	2 (1.6)	30	1.7 (1)		0.28[-0.24,0.79]
					-5 -2.5 0 2.5 5	
					Favours control Favours experimental	

Analysis 7.2. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 2 Clarified and/or summarised.

Study or subgroup	Experimental		Control		Std. Mean Difference	Std. Mean Difference
	N	Mean(SD)	N	Mean(SD)	Random, 95% CI	Random, 95% CI
7.2.1 Simulated patients						
Razavi 2003	29	7.3 (3.7)	33	8.3 (5)		-0.21[-0.71,0.29]
7.2.2 Real patients						
Razavi 2003	28	7.9 (3.2)	30	9.6 (4.9)		-0.41[-0.93,0.11]

Favours control -5 -2.5 0 2.5 5 Favours experimental

Analysis 7.3. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 3 Elicited concerns.

Study or subgroup	Experimental		Control		Std. Mean Difference	Std. Mean Difference
	N	Mean(SD)	N	Mean(SD)	Random, 95% CI	Random, 95% CI
7.3.1 Simulated patients						
Razavi 2003	29	7.4 (4.9)	33	7.9 (6.5)		-0.09[-0.58,0.41]
7.3.2 Real patients						
Razavi 2003	28	2.4 (2.9)	30	1.4 (1.9)		0.4[-0.12,0.93]

Favours control -5 -2.5 0 2.5 5 Favours experimental

Analysis 7.4. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 4 Showed empathy.

Study or subgroup	Experimental		Control		Std. Mean Difference	Weight	Std. Mean Difference
	N	Mean(SD)	N	Mean(SD)	Random, 95% CI		Random, 95% CI
7.4.1 Simulated patients							
Razavi 2003	29	2.4 (2.2)	33	2.2 (2.2)		37.26%	0.07[-0.43,0.57]
Subtotal ***	29		33			37.26%	0.07[-0.43,0.57]
Heterogeneity: Not applicable							
Test for overall effect: Z=0.27(P=0.79)							
7.4.2 Real patients							
Tulsky 2011	24	0.4 (1)	24	0.3 (0.7)		28.94%	0.11[-0.45,0.68]
Razavi 2003	28	0.5 (1)	30	0.1 (0.3)		33.8%	0.51[-0.01,1.04]
Subtotal ***	52		54			62.74%	0.33[-0.06,0.72]
Heterogeneity: Tau ² =0; Chi ² =1.02, df=1(P=0.31); I ² =2.08%							
Test for overall effect: Z=1.65(P=0.1)							
Total ***	81		87			100%	0.23[-0.07,0.54]
Heterogeneity: Tau ² =0; Chi ² =1.68, df=2(P=0.43); I ² =0%							
Test for overall effect: Z=1.49(P=0.14)							
Test for subgroup differences: Chi ² =0.65, df=1 (P=0.42), I ² =0%							

Favours control -5 -2.5 0 2.5 5 Favours experimental

Analysis 7.5. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 5 Gave appropriate information.

Analysis 7.6. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 6 Gave facts only.

Analysis 7.7. Comparison 7 Follow-up CST vs no follow-up CST: HCP communication skills, Outcome 7 Negotiation.

ADDITIONAL TABLES

Table 1. Scales used to measure HCP communication skills

Abbreviation	Name of scale	Studies included in review that used scale	Validation reference (if any)
APPC	Active Patient Participating Coding	Epstein 2017	Street 2003 ; Street 2007
BBN	Breaking Bad News Skills rating form checklist	Gorniewicz 2017	

Table 1. Scales used to measure HCP communication skills (Continued)

CGAS	Common Ground Assessment Summary form	Gorniewicz 2017	Lang 2004
Com-on	COM munication challenges in ON cology	Goelz 2011	Stubenrauch 2012
CRCWEM	Cancer Research Campaign Workshop Evaluation Manual	Razavi 1993; Razavi 2002; Razavi 2003	Booth 1991
CSRS	Communication Skills Rating Scale	Wilkinson 2008	Wilkinson 1991
HPSD	Harvard Third Psychosociological Dictionary	Razavi 2002	
LaComm	LaComm	Merckaert 2015; Lienard 2010; Razavi 2002	Gibon 2010 http://www.lacomm.be/index.php
MIARS	Medical Interview Aural Rating Scale	Heaven 2006	Heaven 2001
MIPS	Medical Interaction Process System	Fallowfield 2002	Ford 2000
MRID	Martindale Regressive Imagery Dictionary	Razavi 2002	
PCCM	Patient Centred Communication Measure	Stewart 2007	Brown 1995
PTCC	Prognostic and Treatment Choices	Epstein 2017	Back 2003; Shields 2009
QUOTE	Quality of Care through Patient's Eyes	van Weert 2011	van Weert 2009
RIAS	Roter Interaction Analysis System	Kruijver 2001; Fujimori 2014	http://www.riasworks.com/background.html Roter 2002; Ong 1998; Ishikawa 2002
SHARE		Fujimori 2014	Fujimori 2007
Verona	Verona VR-CoDES System	Epstein 2017	Del Piccolo 2011; Zimmermann 2011

Table 2. Types of HCP communication skills *

Outcome	Definition	Examples
Information gathering skills		
Open questioning techniques	Questions or statements designed to introduce an area of inquiry without unduly shaping or focusing the content of the response	"How are you doing?"; "Tell me how you've been getting on since we last met..."
Half-open questioning techniques	Questions that limit the response to a more precise field	"What makes your headaches better or worse?"

Table 2. Types of HCP communication skills * (Continued)

Closed questioning technique	Questions for which a specific often one-word answer such as yes or no is expected, limiting the response to a narrow field set by the questioner	"Do you have nausea?"; "How many days have you had the headaches for?"
Eliciting concerns	A combination of open and closed questions to make a precise assessment of the patients perspective	"Tell me more about it from the beginning..."; "What worries you the most?"; "What do you think might be happening?"
Clarifying/summarising	Checking out statements that are vague or need amplification and summarising (the deliberate step of making an explicit verbal summary to verify ones understanding of what the patient said)	"Could you explain what you mean by light headed?" "Can I just see if I have got it right? You have had headaches before, but over the last two week you have had a different sort of pain . . . "
Explanation and Planning		
Giving appropriate information	The correct amount and type of information (procedural, medical, psychological) to address patient needs and facilitate understanding	"There are three important things I want to explain today. First I want to tell you what I think is wrong, second what tests we should do, and third what treatment options are available"
Checking understanding	Checking patients understanding by direct questions or asking the patient to restate in own words	"Do you understand what I mean?"
Negotiating	Negotiating procedure or future arrangements by taking into account the patient's concerns	"Do you mind if I examine you today? Would you prefer it if your husband came with you?"
Supportive or relationship building skills		
Acknowledging concerns	Verbalising the thoughts and concerns expressed by the patient, and express acceptance	"I can see that you are worried by all this"; "I sense that you feel uneasy about having to come to see me - that's ok, many people feel that way when they first come here"
Showing empathy	Verbalising the feelings and emotions expressed by the patient	"I can sense how angry you have been feeling about your illness. I can understand that it must be frightening to think the pain will come back"
Reassurance	To reassure appropriately about a potential discomfort or uncertainty without providing false reassurance	"I will do my best to help you"

*Adapted from [Silverman 2005](#) and [LaComm](#).

Table 3. Scales used for other HCP outcomes

Abbreviation	Name of scale	Studies included in review that used scale	Validation reference (if any)
MBI	Masslach Burnout inventory	Butow 2008 ; Fujimori 2014 ; Kruijver 2001 ; Lienard 2010 ; Razavi 2003	Schaulell 1993

Table 3. Scales used for other HCP outcomes (Continued)

NSS	Nursing Stress Scale	Razavi 1993; Razavi 2002	Gray-Toft 1981
PPSB	Physician Psychosocial Belief questionnaire;	Fallowfield 2002	Ashworth 1984
SDAQ	Semantic Differential Attitude Questionnaire	Razavi 1993; Razavi 2002	Silberfarb 1980

Table 4. Scales for measuring patient outcomes

Abbreviation	Name of scale	Studies included in review that used scale	Validation reference (if any)
BSI	Brief Symptom Inventory	Stewart 2007	Derogatis 1977
CDIS	Cancer Diagnostic Interview Scale	Stewart 2007	Roberts 1994
EORTC QLQ-C30:	European Organisation for Research and Treatment of Cancer, Quality of Life Questionnaire-Core 30	Butow 2008; Kruijver 2001	Aaronson 1993; Hjermstad 1995
EORTCR	European Organisation of research and treatments of Cancer Outpatient Satisfaction with Care Questionnaire	Merckaert 2015	Poinsot 2006
FACT	Functional Assessment of Cancer Therapy scale	Epstein 2017	Cella 1993
GHQ-12	General health Questionnaire	Fallowfield 2002; Wilkinson 2008	Williams 1988
HADS	Hospital Anxiety and Depression Scale	Butow 2008; Fujimori 2014; Merckaert 2015; Razavi 2003	Julian 2011; Snaith 1986
HCCQ	Health Care Climate Questionnaire	Epstein 2017	Williams 1998
McGill QOL	McGill Quality of Life Questionnaire	Epstein 2017	Cohen 1995
NPIRQ	Netherlands Patient Information Recall Questionnaire	van Weert 2011	Jansen 2008
PEPPI	Perceived Efficacy in Patient.Physician Interactions scale	Epstein 2017	Maly 1998
PIQ	Perception of Interview Questionnaire	Razavi 2003	
PPPC	Patients perception of patient centeredness	Stewart 2007	Henbest 1990
PSCQ	Patient Satisfaction with Communication Questionnaire	Fallowfield 2002; Wilkinson 2008	Ware 1983
PSIAQ	Patient Satisfaction with Interview Assessment Questionnaire	Razavi 2002	
PSQ-C	Patient Satisfaction Questionnaire (PSQ-C)	Kruijver 2001	Blanchard 1986
SCNS	Supportive Care needs survey (Boyes)	Butow 2008	Sanson-Fisher 2000

Table 4. Scales for measuring patient outcomes (Continued)

STAI-S	State Trait Anxiety Inventory-State	Razavi 2003; Wilkinson 2008	Speilberger 1983 http://www.theaaceonline.com/stai.pdf Julian 2011
	Single item (Feel better?)	Stewart 2007	Henbest 1990
THC	The Human Connection scale	Epstein 2017	Mack 2009

APPENDICES

Appendix 1. Definition of a simulated patient

A simulated patient (SP) in health education is an individual who is trained to act as a real patient in order to simulate a set of symptoms or problems. An individual SP is typically selected on the basis of gender, body habitus (physical characteristics), previous surgeries, past medical history and sometimes level of education and/or language. She/he is matched to a case requirement and trained to reliably portray (and often to accurately recall) details of what was said and done in a medical encounter. SPs may also be trained to provide accurate, written and objective reports by means of checklists. In addition, SPs can be trained to provide patient-centred, subjective rating and descriptive evaluation of examinee behaviour. This can provide a basis for constructive verbal or written post-encounter feedback to the student or doctor by the SP (Adamo 2003).

Appendix 2. CENTRAL search strategy

- #1 MeSH descriptor Medical Oncology explode all trees
- #2 MeSH descriptor Oncologic Nursing, this term only
- #3 MeSH descriptor Neoplasms explode all trees
- #4 MeSH descriptor Palliative Care, this term only
- #5 (terminal* or palliat* or cancer* or oncol* or hospice*)
- #6 (#1 OR #2 OR #3 OR #4 OR #5)
- #7 MeSH descriptor Education, Medical, Continuing, this term only
- #8 MeSH descriptor Education, Nursing, Continuing, this term only
- #9 MeSH descriptor Programmed Instruction as Topic explode all trees
- #10 (train* or educat* or workshop* or module* or teach* or curricul* or learn*)
- #11 (#7 OR #8 OR #9 OR #10)
- #12 MeSH descriptor Communication explode all trees
- #13 communicat* or interview*
- #14 (#12 OR #13)
- #15 evaluat* or assess* or critique* or measure* or outcome* or effect* or change* or result* or trial* or prospective* or followup or follow-up
- #16 (#6 AND #11 AND #14 AND #15)

Appendix 3. MEDLINE (Ovid) search strategy

- 1 exp Medical Oncology/
- 2 Oncologic Nursing/
- 3 exp Neoplasms/
- 4 Palliative Care/
- 5 (terminal* or palliat* or cancer* or oncol* or hospice*).mp.
- 6 1 or 2 or 3 or 4 or 5
- 7 Education, Medical, Continuing/
- 8 Education, Nursing, Continuing/
- 9 exp Programmed Instruction as Topic/
- 10 (train* or educat* or workshop* or module* or teach* or curricul* or learn*).mp.
- 11 7 or 8 or 9 or 10
- 12 exp Communication/

13 (communicat* or interview*).mp.
14 12 or 13
15 (evaluat* or assess* or critique* or measure* or outcome* or effect* or change* or result* or trial* or prospective* or followup or follow-up).mp.
16 6 and 11 and 14 and 15
17 randomised controlled trial.pt.
18 controlled clinical trial.pt.
19 randomized.ab.
20 placebo.ab.
21 clinical trials as topic.sh.
22 randomly.ab.
23 trial.ti.
24 17 or 18 or 19 or 20 or 21 or 22 or 23
25 16 and 24

key: mp=title, original title, abstract, name of substance word, subject heading word, unique identifier

Appendix 4. Embase (Ovid) search strategy

1 exp oncology/
2 exp oncology nursing/
3 exp neoplasm/
4 exp palliative therapy/
5 (terminal* or palliat* or cancer* or oncol* or hospice*).mp.
6 1 or 2 or 3 or 4 or 5
7 exp medical education/
8 exp nursing education/
9 exp continuing education/
10 (train* or educat* or workshop* or module* or teach* or curricul* or learn*).mp.
11 7 or 8 or 9 or 10
12 exp interpersonal communication/
13 (communicat* or interview*).mp.
14 12 or 13
15 (evaluat* or assess* or critique* or measure* or outcome* or effect* or change* or result* or trial* or prospective* or followup or follow-up).mp.
16 6 and 11 and 14 and 15
17 crossover procedure/
18 double blind procedure/
19 randomised controlled trial/
20 single blind procedure/
21 random*.mp.
22 factorial*.mp.
23 (crossover* or cross over* or cross-over*).mp.
24 placebo*.mp.
25 (doubl* adj blind*).mp.
26 (singl* adj blind*).mp.
27 assign*.mp.
28 allocat*.mp.
29 volunteer*.mp.
30 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29
31 16 and 30

key: mp=title, abstract, subject headings, heading word, drug trade name, original title, device manufacturer, drug manufacturer

Appendix 5. Assessment of the Risk of bias for Included studies

We assessed the risk of bias as follows.

(1) Method of randomisation

Methodological quality of randomisation was classified as follows.

- Low risk of bias (any truly random process, e.g. random number table; computer random number generator)
- High risk of bias (any non-random process, e.g. odd or even date of birth; hospital or clinic record number) or

- Unclear risk of bias (no details provided)

(2) Allocation concealment

- Low risk of bias e.g. telephone or central randomisation; consecutively numbered sealed opaque envelopes)
- High risk of bias (open random allocation; unsealed or non-opaque envelopes, alternation; date of birth)
- Unclear risk of bias

(3) Blinding

In studies of communication skills training, both the participants and the providers of the training would be aware of study arm allocation, therefore it was not possible to assess 'performance bias'. However, the outcome assessment could be blinded, therefore we assessed blinding of outcome assessment (Protection against 'detection bias') as:

- Low, high or unclear risk of bias

(4) Incomplete outcome data

We described for each included study, and for each outcome or class of outcomes, the completeness of data including attrition and exclusions from the analysis. We stated whether attrition and exclusions were reported and the numbers included in the analysis at each stage (compared with the total randomised participants), reasons for attrition or exclusion where reported, and whether missing data were balanced across groups or were related to outcomes.

We assessed methods as:

- low risk of bias (e.g. less than 20% missing outcome data; missing outcome data balanced across groups);
- high risk of bias (e.g. numbers or reasons for missing data imbalanced across groups; 'as treated' analysis done with substantial departure of intervention received from that assigned at randomisation);
- unclear risk of bias.

(5) Selective reporting

We described for each included study how we investigated the possibility of selective outcome reporting bias and what we found. We assessed the methods as:

- low risk of bias (where it was clear that all of the study's pre-specified outcomes and all expected outcomes of interest to the review had been reported);
- high risk of bias (where not all the study's pre-specified outcomes were reported; one or more reported primary outcomes were not prespecified; outcomes of interest were reported incompletely and so could not be used; study failed to include results of a key outcome that would have been expected to have been reported);
- unclear risk of bias.

(6) Other bias (checking for bias due to problems not covered by 1 to 5 above)

We described for each included study any important concerns we had about other possible sources of bias. We assessed whether each study was free of other problems that could put it at risk of bias, as follows:

- low risk of other bias;
- high risk of other bias;
- unclear whether there is risk of other bias.

Appendix 6. Search results for the original review

For the original 2001 review, 48 studies identified by the search were classified as follows.

- Included (2)
- Excluded (46)

The included studies were [Fallowfield 2002](#) and [Razavi 1993](#).

The 46 excluded studies that had warranted further consideration were excluded for methodological reasons. Most (27) were excluded as they measured changes in attitudes and/or knowledge, rather than skills ([Anderson 1982](#); [Baile 1997](#); [Baile 1999](#); [Berman 1983](#); [Bird 1993](#); [Cantwell 1997](#); [Cowan 1997](#); [Craytor 1978](#); [Delvaux 1997](#); [Dixon 2001](#); [Durgahee 1997](#); [Fallowfield 1998](#); [Fallowfield 2001](#); [Ferrell 1998a](#); [Girgis 1997](#); [Gordon 1995](#); [Hainsworth 1996](#); [Hall 1999](#); [Hallenbeck 1999](#); [Hulsman 1997](#); [Linder 1999](#); [Lloyd-Williams 1996](#); [Parle 1997](#); [Razavi 1991](#); [Smith 1991](#); [Von Gunten 1998](#); [Wong 2001](#)). Many of these studies would also have been excluded for not having a separate control

group. A further 14 studies were excluded as they had no separate control group, although they were longitudinal ([Booth 1996](#); [Charlton 1993](#); [Faulkner 1984](#); [Faulkner 1992](#); [Glimelius 1995](#); [Heaven 1995](#); [Heaven 1996](#); [Maguire 1996a](#); [Maguire 1996b](#); [Matrone 1990](#); [Razavi 2000](#); [Rutter 1996](#); [Wilkinson 1998](#); [Wilkinson 1999](#)). Five were excluded due to the subjective nature of their evaluation of communication skills (largely based on perceived improvement by the participant) ([Andrew 1998](#); [de Rond 2000](#); [Ferrell 1998b](#); [La Monica 1987](#); [Shorr 2000](#)) Only one of this latter group included a separate control group of non-trained staff ([de Rond 2000](#)).

In November 2003, three further studies were added to the review; one was included ([Razavi 2002](#)) and the remaining two were excluded ([Finset 2003](#); [Libert 2003](#)). Therefore, in total, three studies were included and 48 were excluded.

WHAT'S NEW

Date	Event	Description
23 July 2018	New citation required but conclusions have not changed	Two additional studies included and 57 excluded. Conclusions unchanged.
23 July 2018	New search has been performed	Literature searches updated.

HISTORY

Protocol first published: Issue 3, 2002

Review first published: Issue 2, 2003

Date	Event	Description
19 February 2013	New search has been performed	Review updated to include 15 RCTs.
18 February 2013	New citation required but conclusions have not changed	We found more evidence to show that CSTs may be helpful in improving some HCP outcomes.
6 August 2012	New search has been performed	Out of 119 potentially eligible records identified by the updated searches, we included 12 additional studies (Butow 2008 , Merck-aert 2015 , Goelz 2011 , Heaven 2006 , Kruijver 2001 , Razavi 2002 , Razavi 2003 , Stewart 2007 , Lienard 2010 , Tulsky 2011 , Wilkinson 2008 ; Fujimori 2014) (33 records) and we identified six records relating to the three previously included studies. Therefore, from the updated search, we included 39 new records relating to 15 studies. We excluded 80 newly identified records (70 studies).
24 February 2012	New search has been performed	Search updated producing 358 records.
9 September 2011	New search has been performed	Search updated producing 411 records including 37 duplicates. Three potentially eligible studies identified.
21 January 2011	New search has been performed	Search updated producing 2,508 records including 43 duplicates. Thirty potentially eligible studies/reports identified.

CONTRIBUTIONS OF AUTHORS

PM, SR, GB, CO sifted and screened the retrieved titles/abstracts. At least two review authors (PM, SR, GB, CO) classified the studies and extracted data from included studies. The original review was written by Deborah Fellowes (DF). PM and TL wrote the first draft of the first update. PM wrote the first draft of the second update. All five current review authors read and agreed the final version.

DECLARATIONS OF INTEREST

- Philippa M Moore: none known
- Solange Rivera: none known
- Gonzalo A Bravo-Soto: none known
- Camila Olivares: none known
- Theresa A Lawrie: none known

SOURCES OF SUPPORT

Internal sources

- No sources of support supplied

External sources

- National Institute for Health Research (NIHR), UK.

NIHR Cochrane Incentive Scheme 2017 award. Reference number 17/62/36

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

The original review was a narrative review that included two studies ([Fallowfield 2002](#); [Razavi 1993](#)). Whereas the protocol and original review included pre-test/post-test study designs in the [Types of studies](#) for consideration, for the updated review we included only randomised controlled trials (RCTs).

For the protocol and original version of the review, we defined [Types of outcome measures](#) as follows: 'Outcomes were changes in behaviour or skills measured using objective and validated scales.' For the 2013 update, we attempted to specify [Types of outcome measures](#) more clearly, in accordance with the *Cochrane Handbook for Systematic Reviews of Interventions* ([Higgins 2011](#)).

In this update we have included text in [Data extraction and management](#) section related to the development of the 'Summary of findings' table.

INDEX TERMS

Medical Subject Headings (MeSH)

*Communication; Anxiety [prevention & control]; Caregivers [*education] [psychology]; Empathy; Health Personnel [*education] [psychology]; Medical Oncology [*education]; Neoplasms [psychology] [*therapy]; Oncology Nursing [education]; Professional-Patient Relations; Randomized Controlled Trials as Topic; Stress, Psychological [*prevention & control]

MeSH check words

Humans