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The effect of communication skills training on patient outcomes in cancer care: a systematic review of the literature

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ABSTRACT

The objective of this review was to determine whether communication training for healthcare professionals (HCP), including nurses and medical doctors, in cancer care improves patient outcomes. Eligible studies with a focus on patient outcomes and a controlled or single group pretest–posttest design were identified according to Cochrane Collaboration Guidelines. Seven studies, encompassing 10 papers and involving five randomised controlled trials, were included. Studies involved 411 HCP, including a total of 1677 encounters with adult cancer patients. Forty-nine papers were excluded, primarily because no patient outcomes were reported. Regarding patient satisfaction outcomes, estimated effects in favour of communication training ranged from 0.07 (95% CI: −0.30 to 0.44) for *satisfaction with information and support* to 0.70 (95% CI: 0.16 to 1.24) for *satisfaction with assessment of concerns*. No evidence was found for the effectiveness of communication training on patient distress outcomes. We concluded that the current review reveals inconclusive evidence to prove the effectiveness of communication training on patient satisfaction and patient distress. More high-quality studies are needed.

There is much agreement on the importance of effective communication in cancer care. It has been demonstrated that effective communication can reduce stress, feelings of anxiety and uncertainty in patients. Conversely, ineffective communication can have adverse effects on patient compliance and can leave patients feeling anxious, uncertain and generally dissatisfied with their care (Maguire *et al*. 1996a; Butow *et al*. 2002a). Yet, it is frequently observed that the quality of communication with patients is insufficient. In a recent descriptive study (Uitterhoeve *et al*. 2003), which aimed to identify problem areas in the care for patients receiving chemotherapy, professional caregivers (medical oncologists and

oncology nurses) and patients alike reported that affective communication in particular is in need of improvement. Patients expressed the opinion that the level of discussion of psychosocial aspects of their disease is far from adequate. In addition, professional caregivers acknowledged that this specific area of communication should be improved. This is supported by other findings, indicating that nurses overlook patients' social and emotional needs and focus on physical care instead. It has been observed that only 40–55% of existing patient concerns are adequately identified, which are predominantly concerns related to physical symptoms (Heaven & Maguire 1997; Heaven 2001; Hill *et al*. 2003; Farrell *et al*. 2005). Nurses often use blocking behaviour (ranging from 55% to 75% of the occasions), thus avoiding subjects that are emotionally charged, rather than stimulating patients to express their concern (Wilkinson 1991; Dennison 1995; Ford *et al*. 1996; Maguire *et al*. 1996b; Suchman *et al*. 1997; Andersen & Adamsen 2001). Other studies (Bensing 1991; Ong *et al*. 2000) suggest that it is especially important to improve the emotional dimension of provider–patient communication, as patient outcomes, i.e. satisfaction with care and quality of life, are most affected by the emotional dimension of communication.

In recent years, there has been a greater emphasis on communication skills training for healthcare professionals (HCP) who care for patients with cancer. Reviews of the literature (Kruijver *et al*. 2000; Fellowes *et al*. 2004; Gysels *et al*. 2004) demonstrate that HCP can be trained to communicate more effectively with patients who have cancer. Currently, questions remain as to whether improvement of HCP communication has a beneficial effect on patient outcomes. Patient-rated emotional measures and patient satisfaction are recognised to be important endpoints of studies evaluating health care. These measures will also be used as primary outcome measures for this review. A secondary outcome of this is the actual performance of HCP communicative behaviour in real patient encounters. This review aims to evaluate the effectiveness of communication skills training programmes for HCP working in cancer care on patient outcomes.

METHODS

Search strategy and selection criteria

First, computerised databases of Medline (1989–2007), PsycInfo (1989–2007) and Cinahl (1982–2007) were searched using the following procedure. Subject-specific keywords used to describe the evaluation of training programmes to improve communication of HCP in oncology were selected by using the thesaurus function of the databases. The selected subject-specific keywords for HCP in oncology and communication training were separately combined (using the Boolean operator 'OR') with relevant free text words. The two searches were then combined (using the Boolean operator 'AND'). The search was then combined (using the Boolean operator 'AND') with a database-specific methodological filter limiting the search to controlled studies and studies with a single group pretest–posttest design. The search was then limited to papers published between 1990 and 2007 (Table 1).

Second, references of all relevant papers were checked to identify additional papers. Third, to identify additional relevant studies, the Science Citation Index was used to search for studies that have cited located, relevant papers. Fourth, leaders in the field were contacted to locate relevant but currently unpublished studies or suggest others who possibly know of unpublished work.

Retrieved studies were independently assessed for inclusion by two reviewers (R.U. and T.v.A.) and included if all of the inclusion criteria were met. Inclusion and exclusion criteria are summarised in Table 2. Disagreement over inclusion between the reviewers was resolved through discussion.

[TABLE 1] AND [TABLE 2]

Data extraction

Data were extracted from eligible papers and included: the sample (inclusion/exclusion criteria, patients' socio-demographic data and the socio-professional data of HCP), the setting (inpatient, outpatient, type of conversation/discussion), details of the training programme (time frame of training programme, content, e.g. supervisory support), HCP outcome (assessment of communicative behaviours) and patient outcomes (anxiety, satisfaction with communication, quality of life). Two reviewers (R. U. and T. v. A.) independently assessed the methodological quality of the included studies using the criteria of the Cochrane EPOC Group (http://www.epoc.cochrane.org/). Disagreement among the reviewers was resolved by discussion. To ensure standardised scoring of study quality and data

extraction, a pilot-tested predesigned table was used.

Statistical analyses

A meta-analysis was not feasible for the studies identified, because of heterogeneity of the content and design of the training programmes evaluated, as well as the outcome measures used. Furthermore, the presentation of outcomes made accurate extraction of raw data impossible, and the pooling of results was therefore neither possible nor appropriate. The characteristics of studies were tabulated and results qualitatively synthesised. Where studies reported adequate data, statistical analyses were performed using the random effects model. Results were expressed as relative risks (RRs) for dichotomous outcomes and standardised mean differences (SMD) for continuous outcomes with 95% confidence intervals (CI), using the means and standard deviations of treatment and control groups in the formula of Cohen's $d = (M_1 - M_2)/\sigma_{pooled}$, where $\sigma_{pooled} = \sqrt{[(\sigma_1^2 + \sigma_2^2)/2]}$ (Hall & Rosenthal 1995). For effect sizes, a score of 0 indicates no difference between intervention and control. For the RR, this is indicated by a score of 1. To control for possible baseline differences between control and training group, we also calculated effect sizes between the groups at baseline.

To determine the clinical significance of effects that were expressed as RR, the number needed to treat (NNT) with 95% CI was calculated. When expressed as SMD with 95% CI, the point-, and interval-estimate was compared with the criterion that a difference of 0.5 or more is considered clinically relevant (Cohen 1988).

RESULTS

A total of seven studies were identified for inclusion in the review. The search of Medline, PsychInfo and Cinahl databases provided a total of 4010 citations. After adjusting for duplicates, 3952 were discarded because after reviewing the abstracts, it appeared that these papers did not meet the criteria. No additional studies were identified by checking references of located, relevant papers or searching for studies that cited the located, relevant papers. One unpublished study (Kruijver *et al*. 2001b) was obtained. The full text versions of the remaining 59 papers were examined in more detail. It appeared that 49 papers did not meet the inclusion criteria as described. Reasons for exclusion are summarised in Table 3. In the Method section of two papers (Heaven & Maguire 1996; Fallowfield *et al*. 2002), it was reported that patient outcomes were measured; however, these outcomes were not presented or retrieved.

[TABLE 3]

Ten papers (Kruijver *et al*. 2001b; Jenkins & Fallowfield 2002; Hulsman *et al*. 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Brown *et al*. 2007; Lienard *et al*. 2008) were included in this review. The papers by Jenkins and Fallowfield (2002) and Shilling *et al*. (2003) reported on the same study; Shilling *et al*. reported the effect of a communication training programme on patient outcomes and Jenkins and Fallowfield reported the effect of the same training programme on the communicative behaviour of the HCP. The papers by Delvaux *et al*. (2005) and Lienard *et al*. (2008) also reported on the same study; Delvaux *et al*. reported the effect of a training programme on the communicative behaviour of the HCP in a three-person interview (HCP, patient and relative) and patient satisfaction, while Liénard *et al*. reported the effect of the same communication training programme on patient distress.

Another two papers (Razavi *et al*. 2003; Liénard *et al*. 2006) also reported outcomes regarding one study; Razavi *et al*. (2003) published HCP communicative behaviour and patient satisfaction outcomes, while Liénard *et al*. (2006) reported the outcomes on patient distress. The 10 included papers thus represented seven studies.

Description of included studies

Characteristics of the seven included studies are shown in Table 4. Five studies (Kruijver *et al*. 2001b; Jenkins & Fallowfield 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2004, 2005;Liénard *et al*. 2006; Lienard *et al*. 2008) used a randomisation procedure to allocate the training programme, one study (Brown *et al*. 2007) used a pre-test, post-test design and one study (Hulsman *et al*. 2002) used a repeated measurement design.

[TABLE 4]

Methodological quality of the studies

Concealment of allocation was found to be inadequate for two studies (Kruijver *et al*. 2001b; Delvaux *et al*. 2004) and unclear on the basis of the information provided for the other studies. The five randomised studies had similar groups at baseline for the key HCP performance and patient outcome measures. The dropout of HCP was considered acceptable, i.e. 20% or less or comparable between groups, in five studies (Kruijver *et al*. 2001b; Hulsman *et al*. 2002; Razavi *et al*. 2003; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Lienard *et al*. 2008) and unclear for one study (Jenkins & Fallowfield 2002; Shilling *et al*. 2003). Protection against contamination between intervention and control group was considered inadequate for one study (Delvaux *et al*. 2004) and unclear for four studies (Kruijver *et al*. 2001b; Jenkins & Fallowfield 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Lienard *et al*. 2008). HCP performance outcomes were blindly assessed in six studies (Jenkins & Fallowfield 2002; Hulsman *et al*. 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Brown *et al*. 2007; Lienard *et al*. 2008). In the study of Kruijver *et al*. (2001b), HCP performance outcomes were not blindly assessed. Patient outcomes in the included studies were assessed by self-report questionnaires.

Sample characteristics

In five studies (Jenkins & Fallowfield 2002; Hulsman *et al*. 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Brown *et al*. 2007; Lienard *et al*. 2008), participants of the training programmes were oncologists and in two studies (Kruijver *et al*. 2001b; Delvaux *et al*. 2004) oncology nurses. In each study HCP participated on a voluntary basis. No studies with combined groups of nurses and oncologists were included. A total of 411 HCP participated in the studies, with a mean of 59 HCP (range 10–115 HCP). The mean number of HCP allocated to the training groups was 37 HCP (range 10–57 HCP). HCP communicative behaviour was assessed in a total of 1677 encounters with adult cancer patients. The patient outcome data were collected from a total of 3003 adult cancer patients ranging from 112 to 1816 patients.

Setting

Two studies (Kruijver *et al*. 2001b; Delvaux *et al*. 2004) were conducted in an inpatient setting. Two studies (Razavi *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Lienard *et al*. 2008) were conducted in a combination of in- and outpatient setting. Three studies (Hulsman *et al*. 2002; Jenkins & Fallowfield 2002; Shilling *et al*. 2003; Brown *et al*. 2007) were conducted in an outpatient setting.

Training programme

Six training programmes (Kruijver *et al*. 2001b; Jenkins & Fallowfield 2002; Razavi *et al*. 2003; Shilling *et al*. 2003; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Brown *et al*. 2007, Lienard *et al*. 2008) involved real-time training. The median duration of these programmes was 30.5 h (range 18–105 h). Role-playing exercises with regular feedback were part of these training programmes. The group size ranged from three to 15 participants, the latter being quite large. All but one study (Jenkins & Fallowfield 2002; Shilling *et al*. 2003), explicitly mentioned theoretical education as a teaching strategy of the training. One training programme (Hulsman *et al*. 2002) involved computer-assisted instruction consisting of four modules; basic communication skills, breaking bad news, effectively providing information and how to deal with patient's emotions. Each module consisted of video examples of poor and adequate communication, with practice questions about the video and immediate feedback. Each module of this programme could be completed within an hour.

Three studies (Kruijver *et al*. 2001b; Razavi *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Lienard *et al*. 2008) targeted the transfer of learned communication skills to the daily workplace. In the study of Kruijver *et al*. (Kruijver *et al*. 2001b), one follow-up meeting was given 2 months after the training. Trainees were given the opportunity to exercise communication skills by role-play. In the remaining two studies (Razavi *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Lienard *et al*. 2008),

considerably more attention was paid to the transfer of acquired skills. Especially since these studies aimed to assess the efficacy of six 3-h consolidation workshops after a basic training programme. The consolidation workshops consisted of role-plays, with systematic feedback based on clinical problems brought up by the trainees, opportunities to evaluate difficulties of transferring acquired skills to the workplace and stimulating the use of those skills.

Outcome measurement

The communicative behaviour of HCP was measured in real patient encounters. The number of patient interviews each HCP conducted at each assessment point ranged from one interview (Razavi *et al*. 2003; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Lienard *et al*. 2008) to six interviews in the study of Kruijver *et al*. (2001b). Patient interviews were audio-, or video-recorded. Video-recordings were used in three studies (Kruijver *et al*. 2001b; Hulsman *et al*. 2002; Jenkins & Fallowfield 2002; Shilling *et al*. 2003).

Five different observational instruments were used to code and analyse interactions between HCP and cancer patients, i.e. the Cancer Research Campaign Interview Rating Manual (CRCIRM) (Razavi *et al*. 2003; Caris-Verhallen *et al*. 2004; Delvaux *et al*. 2004, 2005; Liénard *et al*. 2006; Lienard *et al*. 2008), the Roter Interaction Analysis System (Kruijver *et al*. 2001b; Roter & Larson 2002; Caris-Verhallen *et al*. 2004), the Medical Interaction Process System (MIPS) (Ford *et al*. 2000; Jenkins & Fallowfield 2002; Shilling *et al*. 2003; Ford & Hall 2004), the Communication Rating System (Hulsman *et al*. 2002) and a system to code oncologists communicative behaviours to gain informed consent for trial participation (Brown *et al*. 2004, 2007). The smallest number of categories of the described observational instruments that were used in the included studies was four in the study by Brown *et al*. (2007) and the Jenkins & Shilling study (Jenkins & Fallowfield 2002; Shilling *et al*. 2003). The latter, who selected four a priori behaviours of interest from the MIPS, namely appropriate responses to patient cues, psychosocial probing, empathic statements and use of open questions. Kruijver *et al*. (2001b) used the largest number, namely 37 behavioural outcome categories.

Regarding patient outcomes, patient satisfaction was used as an outcome measure in the seven included studies. Seven different patient satisfaction questionnaires were used, i.e. the Patient Satisfaction with the Interview Assessment Questionnaire (Delvaux et al. 2004), the Patients' Perception of the Interview Questionnaire (Razavi et al. 2003), the Patient Satisfaction with Communication Questionnaire (Jenkins & Fallowfield 2002; Shilling et al. 2003), the Patient Satisfaction Questionnaire (PSQ) (Kruijver et al. 2001b), the Patient and Relative Perception of the Interview Questionnaire (Delvaux et al. 2005; Lienard et al. 2008), the PSQ (Brown *et al*. 2007) and the Medical Interview Satisfaction Scale (Hulsman *et al*. 2002). The number of items on the satisfaction questionnaires ranged from seven in the study of (Kruijver *et al*. (2001b) to 29 in the study of Hulsman *et al*. (2002). In the studies of Shilling *et al*. (2003), Hulsman *et al*. (2002) and Brown *et al*. (2007), an overall satisfaction score was used as the patient satisfaction outcome measure.

Three studies (Razavi *et al*. 2003; Delvaux *et al*. 2005; Liénard *et al*. 2006; Brown *et al*. 2007; Lienard *et al*. 2008) also used patient distress as an outcome which was measured with the State Trait Anxiety Inventory – State version (STAI-S). Kruijver *et al*. (2001b) used quality of life (QLQ-C30) as a patient outcome measure.

Outcomes

HCP communicative behaviour

Training effects on the behavioural outcomes were found in six of the seven included studies (Table 4). The study of Kruijver *et al*. (2001b) showed no training effects on any of the measured behavioural categories. In the study of Hulsman *et al*. (2002), several statistically significant effects were found on the quantitative and qualitative judgement ratings, but not on the frequencies of the behavioural categories. Hulsman *et al*. did not report the required data to facilitate the calculation of RR or SMD. Brown *et al*. (2007) reported a statistically significant increase in the use of behaviours from one of four categories, i.e. the shared decision-making category. This finding was reported as an SMD with 95% CI (see Fig. 1), i.e. 0.48 (95% CI: 0.04 to 0.92). Razavi *et al*. (2003) reported statistically significant improvement for four of 22 behavioural categories. Delvaux *et al*. in the 2004 study (Delvaux *et al*. 2004) reported a statistically significant improvement of one of 15 behavioural categories at the post-

training assessment, which remained significant at the 6-month follow-up assessment. The 2005 study of Delvaux *et al*. (2005) showed statistically significant improvement for 11 of 16 patient-directed behaviours. Although the three studies (Razavi *et al*. 2003; Delvaux *et al*. 2004, 2005) used the same measurement instrument, i.e. the CRCIRM, studies were not sufficiently similar to synthesise the outcomes quantitatively. Delvaux *et al*. (2004) examined the effect of communication training, while Razavi *et al*. (2003) examined the effect of communication training followed by consolidation workshops and Delvaux *et al*. (2005) examined effects on HCP communicative behaviour in a three-person interview. Statistically significant results for the studies of Delvaux *et al*. (2004) and Razavi *et al*. (2003) were expressed as SMD, with 95% CI (see Fig. 1). The SMD ranged from 0.18 (95% CI: −0.34 to 0.69) for *acknowledgement* in the study of Razavi to 0.74 (95% CI: 0.35 to 1.14) for *educated guesses* in the study of Delvaux. It is noticed that calculation of the SMD altered the significance of three outcomes that were reported as statistically significant in the original study of Razavi *et al*. (2003). Statistically significant results of the 2005 study of (Delvaux *et al*. (2005) were reported as RRs, with 95% CI. RRs ranged from 1.21 (95% CI: 1.03 to 1.42) for *acknowledgement* to 4.96 (95% CI: 2.42 to 10.13) for *eliciting and clarifying psychological information* (see Fig. 2). It is noticed that these outcomes involve RR of a MANOVAgroup-by-time analysis. Delvaux *et al*. (2005) did not report the required data to facilitate the calculation of RR based on post-training comparison of HCP behaviour in the control versus training group.

[FIGURE 1] AND [FIGURE 2]

One study (Jenkins & Fallowfield 2002) apriori selected a limited number of four binary behavioural outcomes. These outcomes were expressed as RRs, with 95% CI (see Fig. 2). RRs ranged from 1.26 (95% CI: 1.09 to 1.46) for *use of open questions* to 1.74 (95% CI: 0.97 to 3.12) for *psychosocial probing*. Here it is observed that the significance of one outcome, i.e. *psychosocial probing*, was altered by the calculation of the RR.

Patient outcomes

Training effects on patient satisfaction outcomes were found in three of seven included studies (Table 4). Four studies (Kruijver *et al*. 2001b; Hulsman *et al*. 2002; Shilling *et al*. 2003; Brown *et al*. 2007) showed no training effects on patient satisfaction. Both (Razavi *et al*. (2003) and Delvaux *et al*. (2005) reported statistically significant improvements on one of nine patient satisfaction dimensions. Delvaux *et al*. (2004) reported statistically significant improvement on two of five patient satisfaction dimensions both after training and at 6-month follow-up. These results were expressed as SMD, with 95% CI (see Fig. 3) and ranged from 0.07 (95% CI: −0.30 to 0.44) for *satisfaction with information and support* to 0.70 (95% CI: 0.16 to 1.24) for *satisfaction with the assessment of concerns*. Note that calculation of the SMD altered the significance of four outcomes that were reported as statistically significant in the original studies. Delvaux *et al*. (2005) also reported a statistically significant training effect on the overall patient satisfaction with the interview (one item), but did not provide the required data to facilitate the calculation of an SMD.

[FIGURE 3]

None of the four included studies that had patient distress or quality of life as an outcome measure reported significant training effects on any of these measures (see Table 4).

Baseline analyses

There were no baseline differences between training and intervention groups in HCP communicative behaviour (*P*-values between 0.13 and 0.59). The only significant baseline differences were found among the patient satisfaction outcomes (Razavi *et al*. 2003; Delvaux *et al*. 2005). In the one study (Razavi *et al*. 2003), the *satisfaction of patients with the physicians' perception of the patients' understanding of the disease* at baseline was significantly higher in the control group than in the intervention group (d =–0.65, 95% CI –1.18 to –0.13). In the other study (Delvaux *et al*. 2005) *overall patient satisfaction with the interview* at baseline was significantly higher in the intervention group compared with the control group (d = 0.66, 95% CI 0.12 to 1.20). No other baseline differences in

patient satisfaction outcomes were found.

Clinical significance

The outcomes expressed as SMD with 95% CI were compared with the criterion that a difference of 0.5 represents a clinically relevant difference. The 95% CI corresponds with a pessimistic to optimistic scenario regarding effect of training, while the actual point estimate involves the intermediate scenario. Regarding effects on HCP behaviour (Fig. 1), outcomes indicate that in an optimistic scenario all seven outcomes represent a clinically relevant difference. In a pessimistic scenario, none of the seven outcomes represent a clinically relevant difference, while in the intermediate scenario three of seven outcomes appeared clinically relevant. When effects were expressed as RR the NNT with 95% CI was calculated to give an indication on the clinical relevance (see Table 5). In an optimistic scenario, NNT ranged from three to four, indicating that three to four HCP need to be trained for one HCP to attain the skills involved, while in a pessimistic scenario for one HCP to attain these skills, 13 to an infinitely large number of HCP need to be trained. In the intermediate scenario, the NNT ranged from five HCP for *appropriate responding cue responding* to nine HCP for *psychosocial probing*. Delvaux *et al*. (2005) did not provide the required data to calculate the NNT.

[TABLE 5]

Regarding patient satisfaction outcomes (see Fig. 3), which were expressed as SMD, four of seven outcomes were clinically relevant in an optimistic scenario, none in the pessimistic scenario, while in the intermediate scenario only the effect on *patient satisfaction with the assessment of concerns* was clinically relevant.

DISCUSSION

The aim of this review was to clarify the effectiveness of communication training for oncology HCP to improve patient outcomes. A striking finding of our review is that despite extensive literature searching, only seven studies met the review's inclusion criteria, all of which were published since 2001. It would appear that the effect of communication skills training for HCP on patient outcomes has only recently become of interest to researchers. When interpreting the findings of this review, it should be taken into consideration that inclusion of studies was limited to studies that had patient outcomes as an endpoint. This means that no definite conclusions can be drawn about the effect of communication training programmes on HCP communication skills in real patient encounters. Moreover, it has been shown elsewhere that communication training is effective in establishing improvement in HCP communicative behaviour (Fellowes *et al*. 2004; Gysels *et al*. 2004). The current review yielded several statistically significant improvements on both patient satisfaction and HCP communicative behaviour. Yet, the extent to which these benefits are clinically significant remain inconclusive. No evidence could be found for an effect (either positive or negative) as a result of communication skills training on patient distress.

Several reasons may account for the somewhat disappointing results of this review. It appeared that most studies (Kruijver *et al*. 2001b; Razavi *et al*. 2003; Delvaux *et al*. 2004, 2005) used multiple behavioural outcome categories. It can be suggested that one weakness of these studies is that by performing multiple comparisons they risked concluding that communication training had an effect when no true effect exists. Because of the use of multiple behavioural outcome categories, the connection with patient outcomes has been obscured. It appears that the combination of training goals with content of the programme and patient outcome variables is scarcely based on available theory and knowledge. It is recommended that future trials determine a primary outcome, preferably reported as a single measure and based on available theory and knowledge. Moreover, it might be fruitful to develop and subsequently evaluate a training programme within the context of a theoretical framework, such as that by Feldman-Stewart *et al.* (Carlson *et al*. 2005; Feldman-Stewart *et al*. 2005). This framework proposes four key components around which HCP communication in cancer care can be investigated. These are the focus of the interaction, the patients and HCP themselves with their needs, skills, values, beliefs and emotions, the communication process and finally, the environment in which the communication occurs.

There is ample evidence that patients value patient-centred communication, i.e. that their (emotional)

needs are recognised and responded to appropriately (Suchman *et al*. 1997; Levinson *et al*. 2000; Lewin *et al*. 2001; Bub 2004; Beach *et al*. 2005; Hack *et al*. 2005). Perhaps this signifies an important tenet to incorporate in future communication training programmes; namely, that it is pivotal for patient-centred communication to recognise that patients provide cues to their feelings, fears and expectations and subsequently to respond appropriately. This may lead to further disclosure and improvement of satisfaction with communication. This should be reflected in the choice of behavioural outcome categories.

Another reason why communication training failed to elicit consistently significant changes on HCP communication behaviours and patient outcomes, concerns the absence of adequate transfer strategies in the training design. Transfer strategies are strategies that support the transfer of acquired skills from training to the workplace environment. To be effective, these strategies should be directed towards factors that affect the transfer process. Since in most cases, there is a range of facilitating and hindering factors, a combination of approaches seems to be the most effective way to establish transfer (Grol & Grimshaw 2003; Wensing & Grol 2005). Moreover, it seems crucial to pay attention to the contextual and organisational characteristics of the environment where the learned skills need to be applied, especially the provision of supervisory support seems pivotal (Baldwin & Ford 1988; Booth *et al*. 1996; Kruijver *et al*. 2001b; van Weert *et al*. 2004). For instance, when nurses feel unsupported by management to use the newly acquired communication skills, it is highly unlikely that the new skills will be applied and probably the learned behaviours will be lost (McCabe 2004). Although three studies in the current review more or less targeted the transfer of acquired skills, none of the included studies incorporated strategies in the training design to enhance or strengthen the provision of supervisory support. To establish the transfer of acquired communicative skills, it is recommended that training programmes incorporate interventions to accomplish attitudinal change in ward culture and managerial emphasis, so that the contribution of patient-centred communication to quality care is better recognised. It is recommended that ward managers be given adequate training to provide supervisory support to their employees who attend a communication skills training programme. This may be a window towards improving the actual performance of acquired communicative skills and patient satisfaction with communication.

Yet, another reason for the lack of results in this review involves the measurement of the outcomes in the studies. In studies (Delvaux *et al*. 2004, 2005; Lienard *et al*. 2008; Razavi *et al*. 2003; Liénard *et al*. 2006) in which each HCP interviewed only one patient at each assessment point, patient factors have a greater influence on outcome categories than in studies in which each HCP interviewed several patients at each assessment point. In those studies, the variation in patient factors is better controlled for. In addition, concerning the measurement of patient satisfaction, different measurement instruments were used. Although these instruments were all directed towards satisfaction with communication, little was done in any of the included studies to prevent scoring at the ceiling of the patient satisfaction scales. This resulted in limited variation between the groups. This phenomenon is a well-known problem when measuring patient satisfaction. For further research, it is recommended to use patient satisfaction scales that can yield variation in item responses. For instance, by limiting the patients' frame of reference to satisfaction with HCP communicative behaviour at a specific point in time when responding to patient-questionnaire items (Hendriks *et al*. 2002, 2004). A fundamentally different and promising approach is proposed by Sixma *et al*. (1998), who developed a conceptual framework for measuring patient satisfaction. In this approach, patients attach importance and performance scores to different healthcare aspects. Performance relates to the actual patients' experience of the HCP behaviour or healthcare services. Importance refers to the fact that different patients value different aspects of HCP behaviour or health services. Instruments that are based on this framework, i.e. QUOTE-questionnaires, yield more variation in the patients' rating of the quality of care (Jacobi *et al*. 2004; Pieterse *et al*. 2005). Measuring cancer patients' satisfaction with the communication of HCP along the lines of this framework might therefore be more sensitive in measuring change.

A last consideration concerns the statistical analyses performed in this review. Our bivariate analyses of effect sizes reduced the number of statistically significant findings to four as compared with the 11 significant results of the multivariate analyses in the original studies of Delvaux *et al*. (2004) and Razavi *et al*. (2003). These multivariate analyses were conducted to correct for baseline differences. However, even though we found a trend towards baseline differences between training and control groups, these

differences were in fact not statistically significant. Therefore, it can be argued that our approach of calculating effects sizes with 95% CI reflects the more realistic chance of improving communicative behaviour and patient satisfaction.

In conclusion, there is little evidence that communication training programmes which aim at improving HCP communicative behaviour are uniformly effective in improving patient outcomes. There is a pressing need to ensure that communication training programmes are accompanied by good quality randomised evaluations in which:

- The goals and content of the training programme are conceptually linked to outcomes that are important to patients and HCP.
- A primary outcome is chosen, preferably operationalised as a single measure.
- The training programme incorporates activities to promote the transfer of acquired skills into daily practice, preferably activities to strengthen the provision of supervisory support to participants of the programme.

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TABLES AND FIGURES

Table 1. Search strategy

Medline	Cinahl	PsycInfo
[('Disclosure- '/all SUBHEADINGS in MIME,MJME) or ('Nonverbal-Communication- '/all SUBHEADINGS in MIME,MJME) or ('Negotiating-'/all SUBHEADINGS in MIME,MJME) or ('Communication-Barriers'/WITHOUT SUBHEADINGS in MIME,MJME) or ('Verbal-Behavior-'/all SUBHEADINGS in MIME,MJME) or (communication- in MIME, MJME) or (explode 'Professional-Patient-Relations'/all SUBHEADINGS in MIME,MJME) or (interacti* in ab) or (cue* in ab) or (respondi* in ab) or (communicat* in ab)] and [(explode 'Education-Continuing'/all SUBHEADINGS in MIME,MJME) or (explode 'program-evaluation'/all subheadings in MIME, MJME) or (explode 'Teaching-'/all SUBHEADINGS in MIME,MJME) or (train* in ab) or (program* in ab) or (teach* in ab) or (educat* in ab)] and [('Medical-Oncology'/all SUBHEADINGS in MIME,MJME) or ('Oncology-Service-Hospital'/all SUBHEADINGS in MIME,MJME) or ('Cancer-Care-Facilities'/all SUBHEADINGS in MIME,MJME) or (explode 'Oncologic-Nursing'/all SUBHEADINGS in MIME,MJME) or (explode 'Neoplasms-'/all SUBHEADINGS in MIME,MJME) or (cancer* in ab) or (tumor* in ab) or (tumour* in ab) or (malign* in ab) or (oncolog* in ab) or (palliati* in ab) or (hospice* in ab)] and [(Randomised controlled trial in pt) or (controlled clinical trial in pt) or (randomised controlled trials in MIME,MJME) or (random allocation in MIME,MJME) or (double-blind method in MIME,MJME) or (single-blind method in MIME,MJME) or (Clinical-Trial in pt) or (clinical trials in MIME,MJME) or ('clinical trial') or [(singl* or doubl* or trebl* or tripl*) and (mask* or blind*)] or ('latin square') or (placebos in MIME,MJME) or placebo* or random* or (research design in MIME,MJME) or (comparative study in MIME,MJME) or (evaluation studies in MIME,MJME) or (follow-up-studies in MIME,MJME) or (prospective studies in MIME,MJME) or (cross-over-studies in MIME,MJME) or control* or prospective* or volunteer* or before* or after or longitudinal or pretest* or post* or evaluat*) not [(animal in MIME,MJME) not (human in MIME,MJME)] not [(review in pt) or (meta-analysis in pt)]	[(explode 'Teaching-'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Program-Evaluation'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Education-'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (train* in ti, ab) or (program* in ti, ab) or (teach* in ti, ab) or (educat* in ti, ab)] and [((explode 'Communication-'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Communication-Skills-Training'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (interact* in ti, ab) or (communicat* in ti, ab) or (cue* in ti, ab) or (respond* in ti, ab)] or (explode 'Professional-Patient-Relations'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE)] and (explode 'Oncologic-Care'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Neoplasms-'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Cancer-Patients'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Oncologic-Nursing'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (cancer* in ti, ab) or (tumor* in ti, ab) or (tumour* in ti, ab) or (malign* in ti, ab) or (oncolog* in ti, ab) or (palliat* in ti, ab) or (hospice* in ti, ab) and (explode 'Experimental-Studies'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or [(single* or doubl* or treble* or tripl*) and (mask* or blind*)] or (explode 'Quasi-Experimental-Studies- '/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Prospective-Studies'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Crossover-Design'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or (explode 'Repeated-Measures'/all TOPICAL SUBHEADINGS/all AGE SUBHEADINGS in DE) or [(control* or prospective* or volunteer* or before* or longitudinal or pretest*) in ti, ab)	[(explode 'On-the-Job-Training' in MJ,MN) or (explode 'Social-Skills-Training' in MJ,MN) or (explode 'Teaching-' in MJ,MN) or (explode 'Communication-Skills-Training' in MJ,MN) or (explode 'Program-Evaluation' in MJ,MN) or (explode 'Educational-Programs' in MJ,MN) or (explode 'Educational-Program-Evaluation' in MJ,MN) or (train* in ab) or (program* in ab) or (teach* in ab) or (educat* in ab)] and [(explode 'Neoplasms-' in MJ,MN) or (cancer* in ab) or (tumor* in ab) or (tumour in ab) or (malign* in ab) or (oncolog* in ab) or palliat* or hospice* or (explode 'Palliative-Care' in MJ,MN)] and [(explode 'Verbal-Communication' in MJ,MN) or (explode 'Communication-Skills' in MJ,MN) or (explode 'Communication-' in MJ,MN) or (explode 'Interpersonal-Communication' in MJ,MN) or (communicat* in ab) or (interact* in ab) or (cue* in ab) or (respondi* in ab)] and (explode 'Experimental-Design' in MJ,MN) or (explode 'Treatment-Outcomes' in MJ,MN) or (explode 'Treatment-Effectiveness-Evaluation' in MJ,MN) or (explode 'Longitudinal-Studies' in MJ,MN) or (explode 'Placebo-' in MJ,MN) or (control in ab) or (prospect* in ab) or (volunteer* in ab) or (compar* in ab) or (random* in ab) or (latin square in ab) or (placebo in ab) or (longitud*) or (pretest*) or (clinical trial) or [(FC:PPSYI = CLINICAL-TRIAL) or (FC:PSYI = DOUBLE-BLIND-DESIGN) or (FC:PSYI = EMPIRICAL-STUDY) or (FC:PSYI = EXPERIMENTAL-REPLICATION) or (FC:PSYI = FOLLOWUP-STUDY) or (FC:PSYI = LITERATURE-REVIEW) or (FC:PSYI = LONGITUDINAL-STUDY) or (FC:PSYI = META-ANALYSIS) or (FC:PSYI = PROGRAM-EVALUATION) or (FC:PSYI = PROSPECTIVE-STUDY) or (FC:PSYI = SINGLE-BLIND-DESIGN) or (FC:PSYI = TREATMENT-OUTCOMES)]
Hits 2774	Hits 891	Hits 345

Table 2. Inclusion and exclusion criteria

Inclusion criteria
- Population of HCP receiving communication training should consist of either nurses or doctors in oncology care.
- Studies should evaluate a communication skills training programme.
- The design of the studies evaluating communication training effectiveness should either have a controlled or a single group pretest–posttest study design.
- Presented outcomes should concern both HCP' communicative behaviour in real patient encounters and patient outcomes.

Exclusion criteria
- Studies concerning training programmes not aiming at improving communicative behaviour of HCP, e.g. attitudes or knowledge.

HCP, healthcare professional.

Table 3. Excluded papers

Reasons for exclusion	Studies
No controlled or single group pretest–posttest study design	12 papers: Coffman & Coffman 1993; Cowan & Laidlaw 1993; Argent *et al.* 1994; Cowan *et al.* 1997; Delvaux & Razavi 1997; Heaven & Maguire 1997; Jarrett & Payne 2000; St Claire 2000; Brown *et al.* 2002; Butow *et al.* 2002a,b; Kerr *et al.* 2003
No HCP behaviours in real patient encounters	2 papers: Hietanen *et al.* 2007; Stewart *et al.* 2007
No patient outcomes reported	35 papers: Razavi *et al.* 1993, 2000, 2002; Faulkner *et al.* 1995; Booth *et al.* 1996; Heaven & Maguire 1996; Maguire *et al.* 1996a,b; Baile *et al.* 1997; Hulsman *et al.* 1997; Parle *et al.* 1997; Wilkinson *et al.* 1998, 1999, 2002, 2003; Baile *et al.* 1999; Fallowfield *et al.* 1998; White & Malik 1999; Klein *et al.* 2000; Abel *et al.* 2001; Fallowfield *et al.* 2001; Hellbom *et al.* 2001; Kruijver *et al.* 2001a; Fallowfield *et al.* 2002; Fallowfield *et al.* 2003; Finset *et al.* 2003; Fujimori *et al.* 2003; Kruse *et al.* 2003; Ladouceur *et al.* 2003; Alexander *et al.* 2006; Heaven *et al.* 2006; Timmermans *et al.* 2006; Back *et al.* 2007; Favre *et al.* 2007; Liu *et al.* 2007

HCP, healthcare professional.

Table 4. Included studies

Study feature	Brown *et al*, 2007	Delvaux *et al*. 2004	Delvaux *et al*. 2005 & Lienard *et al*. 2008	Hulsman *et al*. 2002	Kruijver *et al*. 2001b	Razavi *et al*. 2003 & Liénard *et al*. 2006	Jenkins & Fallowfield 2002 & Shilling *et al*. 2003
Design	SGPP	RCT	RCT	Repeated measurement design	RCT	RCT	RCT
n (patients)	90	335	56	385	265	118	372
Subject group	Adult cancer patients	Adult cancer patients	Adult cancer patients and relative	Adult cancer patients	Adult cancer patients.	Adult cancer patients	Adult cancer patients
Age of subjects (SD)	55 (–)	>18 years old	patients 61.1 (–); relatives 58.3 (–)	45.4 (7.7)	55.9 (–)	>18 years old	75% >44 years
n (HCP)	10 (oncologists)-voluntary	115 (nurses)-voluntary	62 (specialist physicians)-voluntary	21 (physicians)-voluntary	51 (nurses)-voluntary	59 (physicians)-voluntary	93 (oncologists)-voluntary
Setting	Outpatient – informed consent consultation	Inpatient	In/outpatient (breaking bad, neutral or good news)	Outpatient	Inpatient – admission interview	In/outpatient (breaking bad news).	Outpatient
Intervention							
TG, training group CG, control group	TG (n = 10): oncologists received a 1-day workshop, incorporating presentation of different specific doctor behaviours, a video model of ideal behaviour, feedback in role-playing exercises and provision of individualised feedback on two audiotaped real patient informed consent consultations. Group size: four to six participants.	TG (n = 57): nurses received 105 h (30 h theoretical information + 75 h of role-playing exercises) training to decrease professional stress levels, to improve attitudes and communication skills. Training was given during three consecutive months. Each month five consecutive days. Topics were approached according to increased complexity. Groups consisted of max. 10 participants.	TG (n = 29): basic training and consolidation workshop. The 19-h basic programme consisting of two 8-h sessions and one 3-h session. It included a 2-h plenary session focussing on theoretical information and 17 h of small-group session (max six participants) practising skills in role-play with immediate feedback. The consolidation programme consisted of six 3-h workshops during 3 months.	TG (n = 21): a computer-assisted instruction programme consisting of four modules: basic communication skills; breaking bad news; effectively providing information and how to deal with patient's emotions. Communication theory is also presented, as are multiple-choice practice questions about the video, with immediate feedback. Each module can be completed within an hour.	TG (n = 28): nurses received 18 h of training. Training focused on learning facilitating skills and consisted of theoretical education, discussion of homework assignment, instruction regarding skill, demonstration of the skills and feedback in role-playing sessions. Training was given for 6 days in periods of 3 h and a follow-up meeting after 2 months. Group size: 10–15 participants.	TG (n = 29): basic training and consolidation workshop. The 19 h basic programme consisting of two 8-h sessions and one 3-h session. It included a 2-h plenary session focussing on theoretical information and 17 h of small-group session practising skills in role-play with immediate feedback. The consolidation programme consisted of six 3-h workshops during 3 months.	TG (n = 48): oncologists received a 3-day course, which was learner centred, incorporating cognitive, experiential and behavioural components. Small groups (three to five). Role-playing with patient simulators, followed by video review and group discussion
	No CG.	CG (n = 58): no training.	CG (n = 33): basic training without consolidation workshop.	No CG.	CG (n = 23): no training.	CG (n = 30): basic training and no consolidation workshop.	CG (n = 45): no training
Measurement							
Observational instrument	Coding of audiotaped consultations based on a typology for ethical communication within four categories (57 items); three interviews at each assessment point, two assessment points in time.	Cancer Research Campaign Interview Rating Manual (CRCIRM) to rate audiotaped interviews; one interview at each assessment point, three assessment points in time.	Cancer Research Campaign Interview Rating Manual to rate audiotaped interviews; one interview at each assessment point, two assessment points in time.	Communication Rating System to rate videotaped interviews; 2–5 interviews at each assessment point, three assessment points in time.	Roter Interaction Analysis System (RIAS) to rate videotaped interviews; one to six interviews at each assessment point, two assessment points in time.	Cancer Research Campaign Interview Rating Manual to rate audiotaped interviews; one interview at each assessment point, two assessment points in time.	Medical Interaction Process System to rate videotaped interviews; two interviews at each assessment point, two assessment points in time.

Patient satisfaction	Satisfaction with Decision Scale (SDS) Patient Satisfaction Questionnaire (PSQ)	Patient Satisfaction with the Interview Assessment Questionnaire (PSIAQ); eight items, five dimensions	Patient and Relative Perception of the Interview Questionnaire (PIQ); 14 items, nine dimensions Overall patient satisfaction with interview (one item)	Medical Interview Satisfaction Scale (MISS); 29 items, three subscales and total satisfaction score	Adapted Patient Satisfaction Questionnaire (PSQC); seven items	Patients' Perception of the Interview Questionnaire (PPIQ); 14 items, nine dimensions Overall patient satisfaction with interview (one item)	Patient Satisfaction with Communication Questionnaire (PSCQ); 17 items and an overall satisfaction score
Quality of life/ patient distress	STAI-S Beck Depression Inventory (BDI)	–	STAI-S (difference score)	–	EORTC QLQ-C30	STAI-S (difference score)	–
Outcomes							
HCP communicative behaviour (ES)	1/4 categories significant, i.e. *shared decision-making category*.	1/15 measured behaviours significant, i.e. *educated guesses, alerting to reality and confronting.*	11/16 measured patient-directed behaviours significant, i.e. *statement and responses; open, open directive and screening questions; directive, leading and multiple questions; eliciting and clarifying psychological information; eliciting and clarifying general information; checking; acknowledging; appropriate information giving; feelings stated explicitly, hints at feelings, facts only.*	No training effects on the descriptive ratings. Training effects on judgements ratings, i.e. general rating, average quality rating and average quantity rating improved for the combined post-course ratings compared with the combined pre-course rating.	No training effects on any of the 37 behavioural categories of the RIAS. Also no changes in the ratio of instrumental to affective communication.	4/22 measured behaviour were significant, i.e. *acknowledgement; empathic statement; educated guesses; negotiation.*	Significant improvement for: *empathy; appropriate responses to patient cues; psychosocial probing; use of open questions*
Patient satisfaction	No training effects on PSQ and SDS	2/5 dimensions of the PSIAQ significant, i.e. *clarification of the preoccupations* and *information and support.*	1/9 dimensions on the PPIQ significant, i.e. *assessment of concerns.* No effects on the mean PIQ score for both patient and relative. Overall satisfaction with interview (one item) improved significantly.	No training effects on the MISS	No training effects on the adapted PSQC	1/9 dimensions on the PPIQ significant, i.e. *assessment of the patient's understanding of the disease.* No effect on the mean PPIQ score nor overall patient satisfaction with interview (one item).	Non-significant training effect on the PSCQ
Patient distress/ quality of life	No training effects on STAI-S and BDI	–	No training effects on STAI-S	–	No training effects on QLQ-C30	No training effects on the STAI-S	–
Statistical procedure	*T*-test	MANOVA	MANOVA	Multilevel analysis	ANOVA	MANOVA	ANCOVA

RCT, randomised controlled trial; SGPP, single group pretest–posttest; STAI-S, State Trait Anxiety Inventory – State version.

Figure 1. Forest plot of outcomes of training on HCP behaviour expressed as SMD. HCP, healthcare professional; SMD, standardisedmean differences.

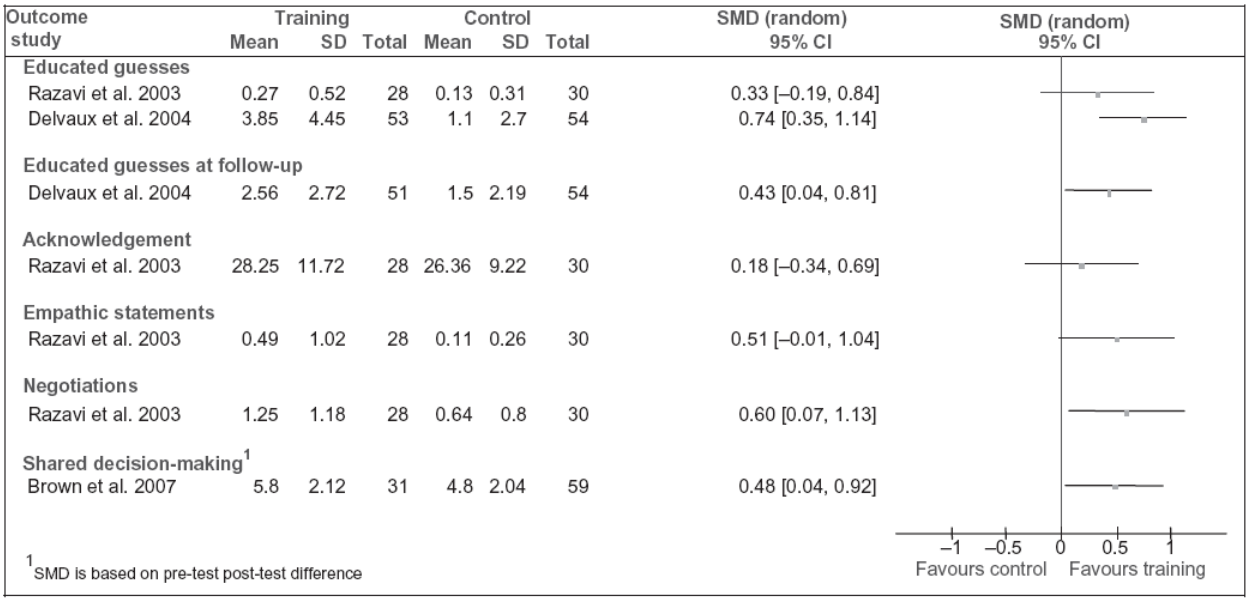

Figure 2. Forest plot of outcomes of training on HCP behaviour expressed as RR. HCP, healthcare professional; RR, relative risk.

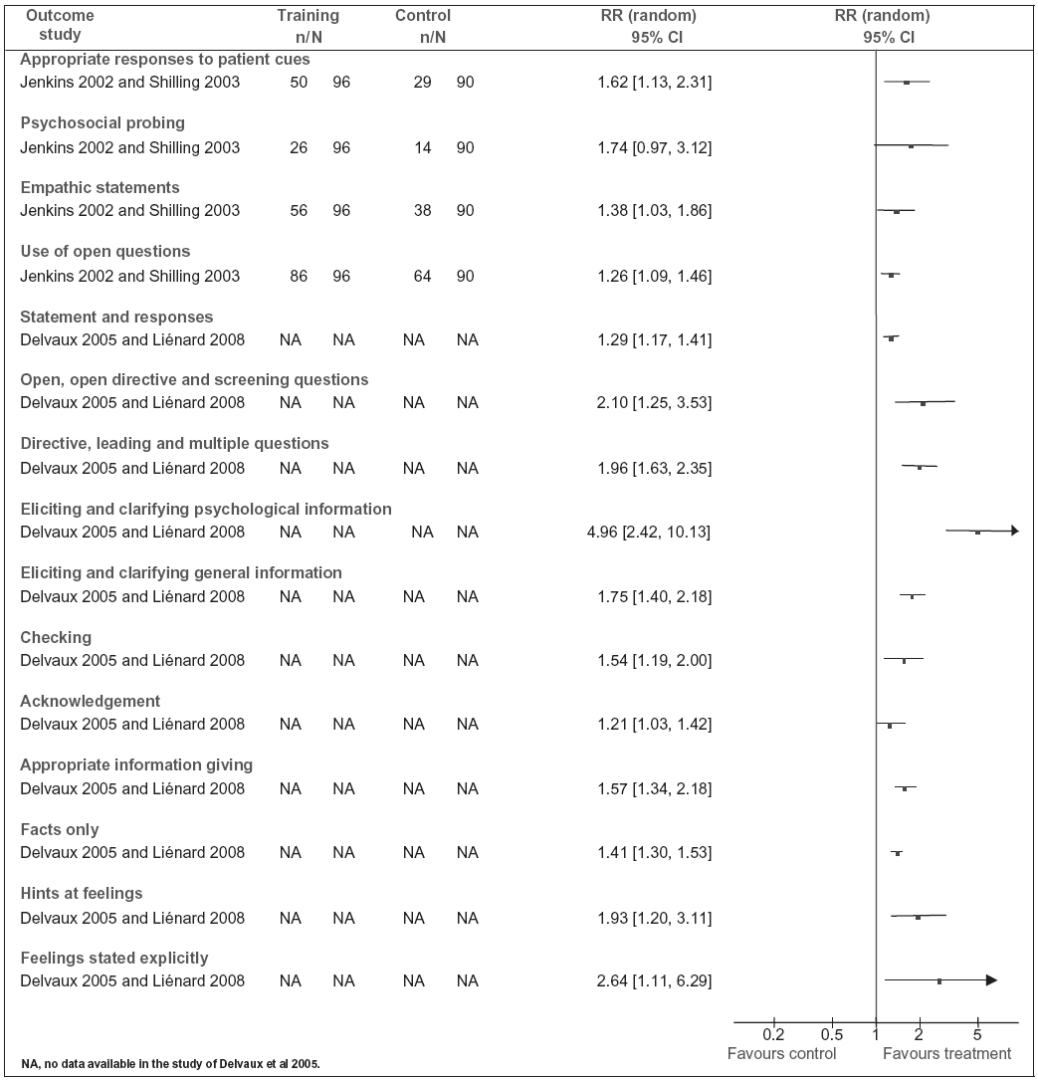

Figure 3. Forest plot of outcomes of training on patient satisfaction expressed as SMD. PPIQ, Patients' Perception of the Interview Questionnaire; SMD, standardised mean differences.

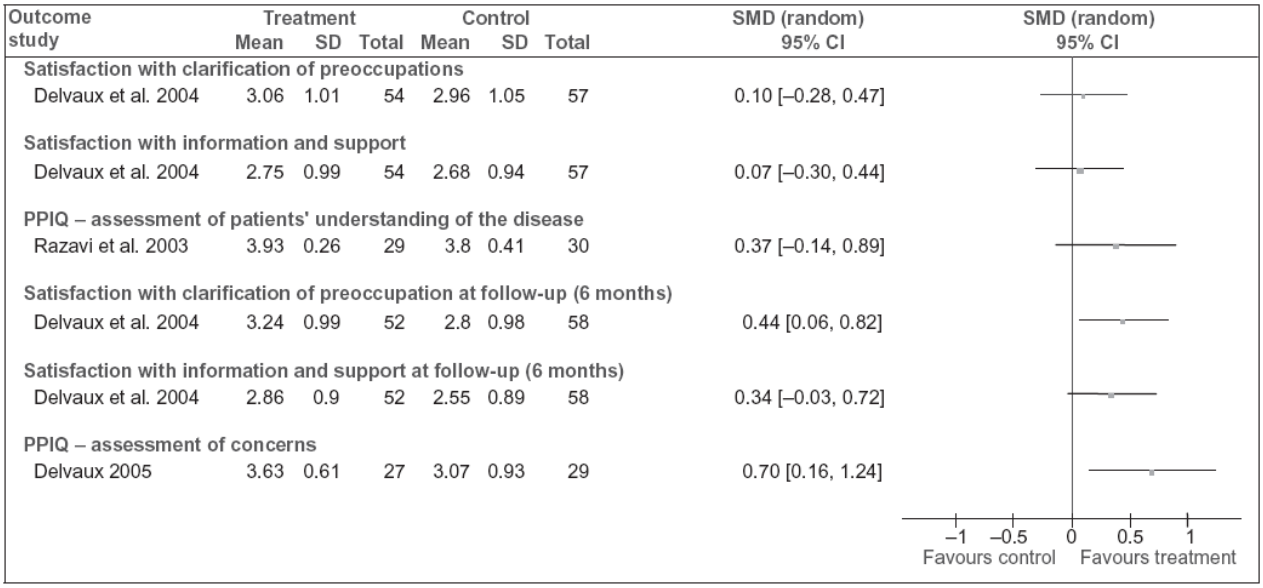

Table 5. Clinical significance of HCP communicative behaviour expressed as RR

HCP communicative behaviour	RR (95% CI)	NNT (95% CI)
Appropriate responses to patient cues (Jenkins & Fallowfield 2002; Shilling *et al.* 2003)	1.62 (1.13, 2.31)	5 (3, 16)
Psychosocial probing (Jenkins & Fallowfield 2002; Shilling *et al.* 2003)	1.74 (0.97, 3.12)	9 (4, ∞)
Empathic statements (Jenkins & Fallowfield 2002; Shilling *et al.* 2003)	1.38 (1.03, 1.86)	6 (3, 55)
Use of open questions (Jenkins & Fallowfield 2002; Shilling *et al.* 2003)	1.26 (1.09, 1.46)	5 (3, 13)

HCP, healthcare professional; NNT, number needed to treat; RR, relative risk.