

# BMJ Open Communication skills training for the radiotherapy team to manage cancer patients' emotional concerns: a systematic review

Mara Myrthe van Beusekom,<sup>1</sup> Josie Cameron,<sup>2</sup> Carolyn Bedi,<sup>2</sup> Elspeth Banks,<sup>3</sup> Gerald Humphris<sup>1</sup>

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<sup>1</sup>School of Medicine, University of St Andrews, St Andrews, UK

<sup>2</sup>Edinburgh Cancer Centre, Western General Hospital, Edinburgh, UK

<sup>3</sup>Patient Representative, National Cancer Research Institute, London, UK

## Correspondence to

Dr Mara Myrthe van Beusekom; [mvb4@st-andrews.ac.uk](mailto:mvb4@st-andrews.ac.uk)

## ABSTRACT

**Objectives** Many cancer patients experience high levels of anxiety and concern during radiotherapy, often with long-lasting effects on their well-being. This systematic review aims to describe and determine the effectiveness of communication skills training (CST) for the radiotherapy team (RT) to improve conversations in this setting and to support patients with emotional concerns.

**Design** Systematic review.

**Interventions** CST for RT members.

**Data sources** On 17 April 2018, databases Medline, Embase, Scopus and PsycNET were searched.

**Eligibility criteria, Population, Intervention, Comparison, Outcome(PICO)** Quantitative and/or qualitative articles were included that evaluate the effect of a CST for RT members (vs no CST) on communication behaviours and patients' emotional concerns.

**Data extraction and synthesis** Articles were appraised using the mixed-methods appraisal tool, and a narrative synthesis was performed.

**Results** Of the nine included articles, five were randomised controlled trials, three were mixed-methods and one used repeated measurements. Four of the five different CST programmes managed to increase emotional communicative behaviour from the RT, and all studies measuring patient communicative behaviour found an improvement in at least one of the hypothesised outcomes. Two studies examining patient anxiety and concerns found a positive effect of the CST, although one found a negative effect; two other studies without a positive effect on mood made use of both empathic CST and tools.

**Conclusions** There are promising indications that CST can be successfully introduced to improve emotional conversations between RT members and patients. With the right support, the RT can play an important role to help patients cope with their emotional concerns. Future work is necessary to confirm initial promising results and to ensure the learnt communication skills are sustained.

## INTRODUCTION

Many cancer patients who undergo radiotherapy treatment experience concerns about the quality of their daily life,<sup>1</sup> are anxious or worried, or feel uncertain about their future.<sup>2</sup>

## Strengths and limitations of this study

- A systematic search was carried out in four comprehensive databases (ie, Medline, Embase, Scopus and PsycNET) and reference lists were snowballed.
- Inclusion of both quantitative and qualitative findings benefits the review.
- A tool specifically developed for mixed-methods studies (ie, the mixed-methods appraisal tool) was used to evaluate included articles.
- Findings are limited by the small number of quantitative studies published in this area.
- Despite limited numbers (peer-reviewed, English-language only), good-quality studies allow for careful insights into the effectiveness of communication skills training in the radiotherapy setting and indicate future directions.

Patients' anxiety is particularly high just prior to treatment, during the radiotherapy simulation session.<sup>3</sup> At the start of their therapy, patients may fear 'the unknown' and can be afraid of side effects, such as severe skin reactions, damage to organs and being tired.<sup>4</sup> During and after radiotherapy treatment, the most common concern that cancer patients and survivors experience is that of cancer recurrence,<sup>5</sup> that is, 'the fear, worry, or concern relating to the possibility that cancer will come back or progress'.<sup>6</sup> Such concerns can have long-lasting effects on patients' quality of life and well-being.<sup>7</sup>

Communication during radiotherapy treatment could play an important role to address patients' concerns: a recent study from our group found that patients whose fear of cancer recurrence trajectories decrease during radiotherapy express more cues and concerns during appointments with their therapeutic radiographers and refer to cancer more directly.<sup>8</sup> In addition, the moments when patients' anxiety levels are highest at

the start of radiotherapy correspond to a peak in information needs.<sup>9</sup> During radiotherapy, patients have 'on treatment review' by therapeutic radiographers<sup>10</sup> in the UK, and these consultations might be an ideal opportunity to provide psychosocial support. Indeed, a recent review shows that increased communication and information sharing can benefit both patients and radiation therapists.<sup>11</sup>

However, not all forms of support are equally effective, and it has been suggested to develop communication skills training (CST) for the radiotherapy team (RT) to improve communication-related and patient outcomes.<sup>12 13</sup> Also radiation therapists themselves indicate that they would appreciate further education to help patients deal with emotional distress.<sup>14</sup> Various CST courses for oncology professionals in general have already shown improvements in clinicians' self-efficacy, communication skills and strategies, as well as transfer of these strategies into the clinical practice.<sup>15 16</sup> CST programmes seem particularly effective at encouraging healthcare professionals (HCPs) to increase their use of open questions and show empathy towards patients.<sup>17</sup>

Unfortunately, even though managing patients' emotions, triggered by their condition and treatment, is the role of all health service staff, including the RT team, little attention has been given to the effectiveness of CST to improve communication with patients in the setting of radiation therapy. Furthermore, a specific question remains as to whether patients' communication with the RT also leads to improvements for patients to manage their emotional concerns. The aim of this systematic review is therefore to provide an overview of the available evidence on whether CST can help RT members to support cancer patients in managing their distress during treatment. The review will describe and determine the effectiveness of CST to improve communication behaviours and support patients' emotional concerns.

## MATERIALS AND METHODS

### Search strategy

On 17 April 2018, databases Ovid MEDLINE, Scopus, PsycNET and Ovid Embase were searched for a combination of the keywords (radiation therapist\*, radiotherapist\*, radiographer\*, technologist\*, radiotherapy team or radiation oncologist\*) and (train\*, educat\*, workshop, module, teach, curricul\* or learn) and (cancer, carcinoma or neoplasm) and (distress, fear\*, worry, worries, concern\*, anxiety or emotion\*) and patient\*, without restriction on publication date. For a tailored search per database, see online supplementary material figure S1. Snowballing was used to search the reference lists of included articles.

### Selection criteria

Duplicates were removed. Titles and abstracts were screened for full-text evaluation (MMvB). When there was uncertainty about the suitability of an article for

inclusion in the analysis, authors MMvB and GH reached consensus on the inclusion through discussion. To be included, studies had to be published in a peer-reviewed journal, written in English, and describe and evaluate a CST programme for members of the RT to address patients' concerns, worries or anxiety during radiotherapy treatment. When various healthcare professions were involved in a training programme, at least 50% of the sample had to be specialised in radiotherapy for the article to be included.

### Data extraction and analysis

The following data were extracted from the included articles into a table: study type, number and characteristics of the patient sample, number of the radiotherapy staff sample, the CST intervention (duration, content, didactic and experiential methods), moment of delivery of new skills to the patient, moment of outcome measurement, methods to measure outcomes, RT and patient communicative behaviour (no limits; includes observed and self-reported) and all outcomes relating to patients' emotions, which included levels of concerns, worries or anxiety.

Articles were assessed for quality using the mixed-methods appraisal tool (MMAT),<sup>18</sup> which has promising reliability and was specifically designed to enable the appraisal of qualitative, quantitative and mixed-methods studies, making it ideally suited for mixed-studies reviews. The MMAT offers sets of questions relevant for different study types: that is, qualitative studies, quantitative randomised controlled trials (RCTs), quantitative non-randomised studies and quantitative descriptive studies. For mixed-methods papers, the qualitative section is combined with the relevant quantitative section, and three additional questions are answered to assess the mixed-methods aspect of the study.

Based on the limited number of studies that could be included, it was decided to conduct a narrative synthesis rather than a meta-analysis. This approach was considered more appropriate considering the limited number of studies that examined similar outcomes, and the variation in content between the different training programmes (ie, heterogeneity).

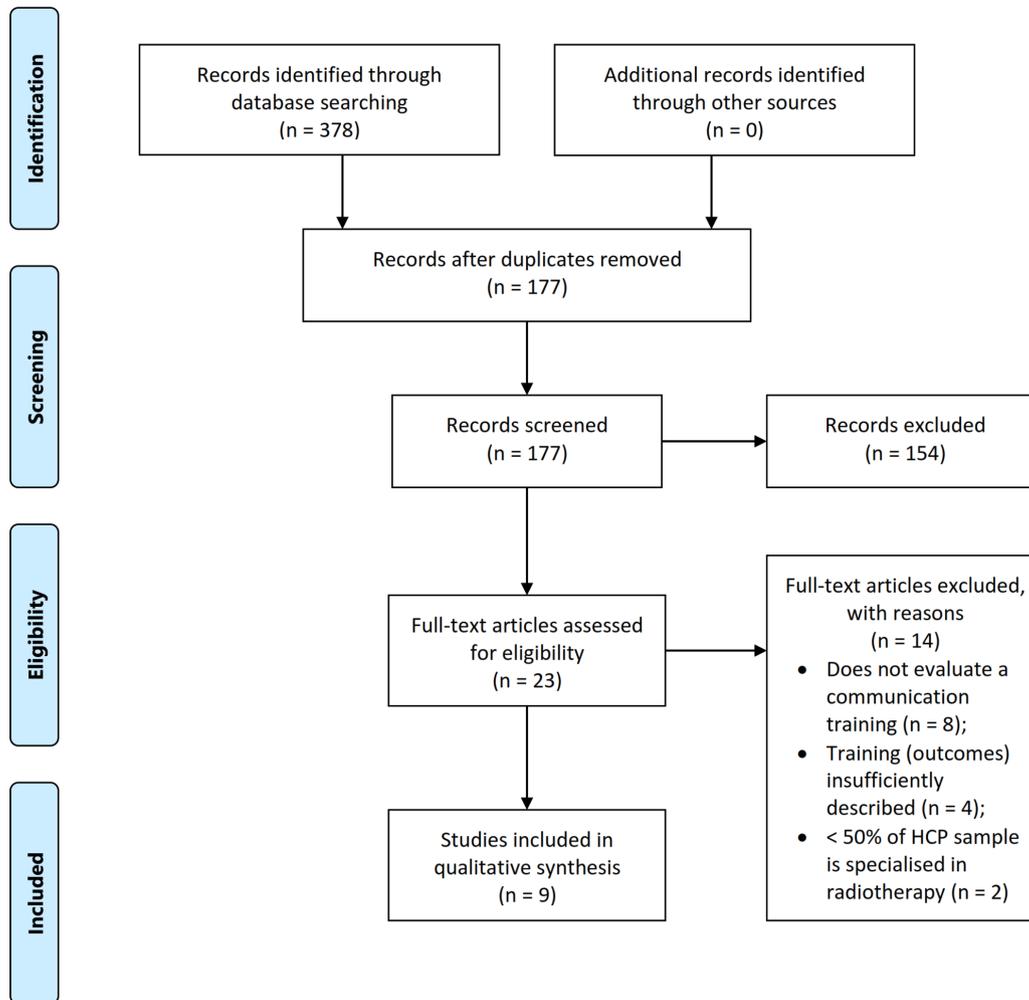
### Patient and public involvement

A patient representative/advocate was involved in the preparation of the systematic review and is included in the author byline.

## RESULTS

### Description of studies

The systematic search resulted in 378 articles (MEDLINE 95, Scopus 151, PsycNET 20, Embase 112), of which 177 were unique and screened for eligibility (figure 1, Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart<sup>19</sup>). Based on the titles and abstracts, 23 references were included for full-text evaluation. Nine articles from the search were included (table 1);



**Figure 1** Preferred Reporting Items for Systematic Reviews and Meta-Analyses flowchart for the systematic review. HCP, healthcare professional.

snowballing reference lists did not result in the inclusion of additional articles. Five articles described RCTs, three articles made use of mixed methods and another article used repeated measurements. All studies scored 50% or higher on quality using the MMAT (online supplementary table S1). However, some articles described pilot studies,<sup>20–22</sup> with relatively small numbers of participants. In addition, randomisation is not always described in detail<sup>23–25</sup> and inclusion of HCPs is usually on voluntary basis, with moderate inclusion rates, forming a risk for selection bias of more motivated members of the RT in the intervention groups. When qualitative/mixed-methods are used, little consideration is given to the influence on the setting and researcher on outcomes or to the limitations of the integration of the various methods.<sup>20 22 26</sup> In addition, limited descriptions of theoretical models behind the developed interventions are given, which makes it difficult to link the topics and learning strategies that are used in the training programmes to HCP and patient outcomes.

### Sample characteristics

Four articles included radiation therapists in the training programme,<sup>20–22 26</sup> three included various members of

the RT, including secretaries, nurses, physicians and physicists,<sup>23–25</sup> one article included nurses and radiographers<sup>27</sup> and another targeted radiation oncologists.<sup>28</sup> The number of staff included ranged between  $n=4$ <sup>20</sup> and  $n=465$ .<sup>25</sup> In most studies,<sup>20 21 23–26</sup> effects of the training intervention for staff were evaluated looking at communication with breast cancer patients. The number of patient participants included in the articles ranged between  $n=12$ <sup>20</sup> and  $n=313$ .<sup>25</sup> Two articles included patients with a variety of cancer types, including breast, urological, gynaecological, head and neck, brain and lung cancer.<sup>27 28</sup> Only one study made use of a simulated patient to evaluate communicative behaviour of HCPs.<sup>23</sup> Patients' mean age was consistently around 55–60 for the various studies.

### Training programme

The nine articles described five different training programmes, of which three focused only on (non)verbal communication skills, while the other two also introduced the RT to the use of tools (ie, mindfulness strategies<sup>22</sup> and the distress thermometer and problem list [DT&PL])<sup>27</sup> to support emotional conversations with patients. Training periods varied from a single training session,<sup>27 28</sup> to two

**Table 1** Study features of articles included in the analysis

Study (MMAT score)	Butlin et al <sup>22</sup> (50%)	Gibon et al <sup>23</sup> (50%)	Merckaert et al <sup>24</sup> (50%)	Liénard et al <sup>25</sup> (50%)	Haikett et al <sup>26</sup> (50%)	Haikett et al <sup>21</sup> (75%)	Haikett et al <sup>28</sup> (75%)	Hollingsworth et al <sup>27</sup> (100%)	Timmermans et al <sup>28</sup> (75%)
Design	Mixed methods: repeated measures (pre-post), questionnaires	RCT	RCT	RCT	Mixed methods: repeated measures (pre-post), interviews	RCT	RCT	RCT	Repeated measures (pre-post)
n (patients)	n/a	Simulated anxious breast cancer patient	237 adult breast cancer patients	313 adult breast cancer patients	12 adult breast cancer patients	122 adult breast cancer patients	unclear number of breast cancer patients	220 adult cancer patients	160 cancer patients
Age of patients (SD)	n/a	Not described	TG1 56.5 (10.7), TG2 55.0 (11.6), waiting list TG1 55.3 (11.2), waiting list TG2 57.2 (11.6)	TG1 55.7 (10.4), TG2 55.1 (11.3), waiting list TG1 55.4 (11.5), waiting list TG2 56.5 (10.8)	61.6 (8.8)	TG: 54.2 (12.22) CG: 55.1 (12.25)	Not described	TG: 61 (12.2), CG: 62 (11.5)	Pretraining group: 58.9 (13.9); posttraining: 58.4 (12.2)
n (HCPs)	12 radiation therapists	80 members of RT team	96 members of RT team	TG: 65 members of RT team, CG: 31 members of the RT team	4 radiation therapists	10 radiation therapists completed training	60 radiation therapists took part in training	13 nurses and radiographers took part in training	8 radiation oncologists
Age of HCPs (SD)	36.7 (11.2)	RG: 40 (10.5) CG: 41 (8.8)	TG: 39 (10.6); waiting list 41.3 (8.9)	TG: 39 (10.6) CG: 41 (8.9)	Not described	Not described	Not described	Not described	33 (range 26-58)
Intervention	TG: PracticeCALM: 6 weeks of 1.5-hour sessions; 2 weeks of learning integration. Training on 'being calm', (non)verbal and empathic communication skills, therapeutic presence and self-awareness, and panic attacks practice intervention. No CG.	TG: 16 hours patient-orientated communication skills and team resource-oriented training. 22 hours team resource-orientated training. Learner focused, skills oriented, cognitive, behavioural, modelling components. Over 4-month period. CG: usual care.	TG: patient-orientated communication skills and team resource-oriented training. Over 5-month period. CG: usual care.	TG: patient-orientated communication skills and team resource-oriented training. Over 4-month period. CG: usual care.	TG: Two 4-hour sessions: (1) 'RT prepare', on consultation skills in RT. (2) 'Eliciting and responding to emotional cues', including anxiety, distress, anger and depression. Skills training in role plays with simulated patient. No CG.	TG: Two 4-hour sessions: (1) 'RT prepare', on consultation skills in RT. (2) 'Eliciting and responding to emotional cues', including anxiety, distress, anger and depression. Skills training in role plays with simulated patient. No CG.	TG: Two 3-hour sessions: (1) 'RT prepare', (2) 'Eliciting and responding to emotional cues', No CG.	TG: training session including audio-visual example of DT&PL administration, role playing, advice on dealing with strong emotions. CG: usual care.	TG: (1) 3-hour plenary training in communicative behaviour, with special attention to consultation start; (2) three 1-hour feedback sessions; (3) brief guideline in patient file as reminder; (4) completed checklist of behaviours after each consultation. No CG.
Delivery to patients RS IV	RS: during RT treatment.	n/a	RS: RT planning session.	RS: first and last RT session.	IV, prior to planning session, IV <sub>2</sub> prior to start of treatment.	IV, prior to planning session, IV <sub>2</sub> prior to start of treatment.	IV, prior to planning session, IV <sub>2</sub> prior to start of treatment.	IV: DT&PL session during second week of RT or second cycle of chemotherapy. Some received a second session towards end of therapy.	RS: during initial radiation oncology consultation.
Measurement	Pretraining, directly after training and at 6-month follow-up.	At RT simulation session.	TG: pretraining and posttraining. CG: at baseline and at 4 months.	TG: pretraining and posttraining. CG: At baseline and at 4 months.	After initial consultation and after IV <sub>1</sub> and IV <sub>2</sub> .	After initial consultation and after IV <sub>1</sub> and IV <sub>2</sub> .	Following IV <sub>1</sub> and IV <sub>2</sub> , and 12 months after assignment.	At baseline, and 1, 6 and 12 months after assignment.	Analysis of utterances using the Roter interaction analysis system on videotaped sessions (OB).
Method OB SR	Pretraining and posttraining: radiation therapist-reported Perceived Stress Scale (PSS). Posttraining and at follow-up: questions on use of training components and perceived benefits.	Content analysis of audiotaped sessions (OB).	Content analysis of audiotaped sessions (OB).	Content analysis of audiotaped sessions (OB).	Hospital Anxiety and Depression scale (HADS) (SR) concerns about interviews on benefits and improvements (SR); Quality assurance (QA) protocol to check consultations (OB).	HADS (SR), concerns about RT scale (SR), RT scale (SR); patient interviews on benefits and improvements (SR); Quality assurance (QA) protocol to check consultations (OB).	QA protocol on 5-10 samples from three sites (OB).	Profile of mood states (SR), EQ-5D-3L (SR), Trent Patient Views of Cancer Services Questionnaire (SR).	Analysis of utterances using the Roter interaction analysis system on videotaped sessions (OB).
Outcomes HCPs									

Continued

**Table 1** Continued

Study (MMAT score)	Butlin et al <sup>22</sup> (50%)	Gibon et al <sup>23</sup> (50%)	Merckaert et al <sup>24</sup> (50%)	Liénard et al <sup>25</sup> (50%)	Halkett et al <sup>20</sup> (50%)	Halkett et al <sup>21</sup> (75%)	Halkett et al <sup>26</sup> (75%)	Hollingsworth et al <sup>27</sup> (100%)	Timmermans et al <sup>28</sup> (75%)
Communicative behaviour	TG: verbal and sustainable relational connection reported as component of training that was used in practice; but communication training not in list of perceived benefits.	TG: more empathy, negotiation, emotional words and checking questions; fewer directive questions. No differences for open questions, acknowledgement, reassurance and procedural information.	TG: more assessment skills, supportive setting information. No differences for empathy, reassurance or negotiation skills.	TG: more assessment skills, setting information, social words at first session. No differences for support words, negotiation or anxiety and sadness words. At second session, TG still used more assessment skills.	TG: good rapport, information provision, chance to ask questions, empathic replies, involved patients. Variations in active listening skills and eliciting and responding to emotional cues.	n/a	TG: good information provision. Difficulties: identifying and addressing emotional cues, consulting brevity, listening and addressing all concerns.	TG: using DT&PL corresponded with reassurance and information provision, discussion of medication and recommendations to discuss further with other HCP.	Posttraining: more early supportive remarks and psychosocial and diagnosis information. Overall, more supportive remarks, open-ended questions, psychosocial questions and diagnostic information. No difference for agenda setting or prognosis information.
Patients									
Communicative behaviour	n/a	n/a	TG: more open questions, more emotional words. No difference for open directive questions, or use of social, medical or radiotherapy words.	TG: more sadness words at last radiotherapy session. No difference for open questions, nor for use of medical, radiotherapy, anxiety or social words.	n/a	n/a	n/a	n/a	Posttraining: more patient participation in interactions re psychosocial issues, express more concerns. In overall consultation no difference in proportion of utterances.
Concerns, anxiety, etc	PSS: no difference pretraining and posttraining. 11/12 radiation therapists reported perceived patient benefits.	n/a	n/a	Anxiety, depression and concern scores decreased after first intervention.	Anxiety and concerns lower in TG than CG. No difference in depression.	n/a	Weak evidence for worse POMS scores in TG. Those with better mood at baseline improved more.		

IV, separate intervention; CG, control group; DT&PL, distress thermometer and problem list; HCPs, healthcare professionals; MMAT, mixed-methods appraisal tool; OB, observed; POMS, profile of mood states; RS, regular session; SR, self-reported; TG, training group.

3-hour or 4-hour sessions,<sup>20 21 26</sup> weekly sessions over a period of 8 weeks<sup>22</sup> and a 38-hour training programme over a period of 4–5 months.<sup>23–25</sup>

While all training programmes addressed emotional communication with cancer patients undergoing radiotherapy, specific objectives and topics covered varied between the programmes. The PracticeCALM project aimed to support the RT with strategies to reduce patient anxiety and covered a session on stress, communication and being calm, therapeutic presence and self-awareness, PracticeCALM interventions and management of panic attacks.<sup>22</sup> Another project wanted to improve RT members' assessment of patients' concerns and needs, information provision and communication about resources within the team and communication between colleagues.<sup>23–25</sup>

The studies by Halkett and colleagues aimed to train the RT in information provision about radiotherapy, based on Pendleton's model for consultations,<sup>29</sup> with a focus on support rapport-building, awareness of the patient's emotional status and additional needs, setting a mutually agreed agenda, building partnership and making appropriate use of time and resources. Furthermore, another objective was to help the RT recognise and respond to patients' emotions<sup>20 21 26</sup>. The objective of the project in the use of the DT&PL was to facilitate the discussion of patients' concerns. The training introduced the visual tool and supported RT members with how to deal with strong emotions.<sup>27</sup>

The final training package aimed to increase patient participation in the consultation. This programme covered agenda setting, investigating the patient's medical and psychosocial status, exploring the patient's ideas, reacting supportively, asking open questions, information provision about diagnosis, prognosis, treatment intent and emotional impact, and discussing the treatment decision and informed consent. In addition, the focus of the training was to discuss the first three topics at the very start of the consultation.<sup>28</sup>

All training programmes made use of role play in the training programme, of which four utilised simulated patients.<sup>20 21 26 28</sup> Other didactic methods included reflection,<sup>22</sup> individual feedback on consultations<sup>22 28</sup> and skill exercises.<sup>23–25</sup> Halkett and colleagues saw that some of the positive effects of their intervention were short lasting.<sup>21</sup> Strategies used to promote the transfer of communication skills into the clinical setting included holding a follow-up 'consolidation workshop'<sup>25</sup> or for members of the RT to regularly perform self-analysis of consultations.<sup>26</sup> Having trainers provide feedback on posttraining consultations<sup>20 28</sup> appeared to be particularly helpful.

Most studies described the facilitators of the workshops as 'experienced' or 'trained',<sup>20 21 23–26 28</sup> and two also gave the background of the facilitators. The first study included a communication skills facilitator with a medical background<sup>20</sup> and one with a background in clinical psychology and communication skills. The second programme benefited from a facilitator with a

background in radiation therapy.<sup>26</sup> Two studies did not describe the background or expertise of the workshop facilitators.<sup>22 27</sup>

### Delivery to patients

The majority of the newly acquired communication skills from the members of the RT were applied to standard care sessions with patients,<sup>22 24 25 28</sup> including the initial consultation with the radiation oncologist,<sup>28</sup> the radiotherapy planning session,<sup>24</sup> throughout radiotherapy treatment<sup>22</sup> or during the first and last radiotherapy session.<sup>25</sup> On the other hand, communication skills acquired in the 'RT prepare' and 'eliciting and responding to emotional cues' programmes<sup>20 21 26</sup> were delivered in a separate session with the patient, one prior to the radiotherapy planning session and a second session prior to the start of treatment. Also, the training from the DT&PL workshop<sup>27</sup> was applied in a separate intervention with patients during the second week of radiotherapy treatment, and if it was deemed necessary, in a second session towards the end of the patient's therapy.

### Outcome measures

This review focused on outcomes regarding communicative behaviour of members of the RT and patients, and measures of anxiety or concerns from patients. Three studies performed a content analysis on audiotaped sessions,<sup>23–25</sup> the Halkett articles made use of the widely used Hospital Anxiety and Depression scale (HADs),<sup>30</sup> and two measures developed by the authors: a concerns about radiotherapy scale, and a quality assurance protocol to analyse audiotaped consultations.<sup>20 21 26</sup> Timmermans and colleagues used the Roter interaction analysis system, a method to code medical dialogue,<sup>31</sup> on videotaped consultations.<sup>28</sup> The two studies that found no or possibly negative effects from the skills training in their quantitative data<sup>22 27</sup> used profile of mood states (POMS), which evaluates six mood states<sup>32</sup> and a radiation therapist-reported Perceived Stress Scale (PSS), which measures perception of stress<sup>33</sup>

### Effects on RT communicative behaviour

Studies that described communicative behaviour from RT members after training without comparing to a control group found good results for rapport,<sup>20</sup> information provision,<sup>20 26 27</sup> opportunity to ask questions,<sup>20</sup> empathic replies<sup>20</sup> and reassurance.<sup>27</sup> Two of these studies, of which one an RCT, indicated that variations were found in the extent to which RT members could identify and respond to emotional cues and concerns.<sup>20 26</sup> Also studies that compared communicative behaviour pretraining and post-training or between a training and control group found varying results. An overview of effects of CST for studies that conducted an RCT is given in [table 2](#). Most communication training packages were successful at increasing several aspects of RT's communicative behaviour, but at the same time there were several instances where hypothesised effects were not detected. Specifically, two studies

**Table 2** Effects of CST on communicative behaviours and patient concerns for studies that conducted an RCT

Effect of CST (RCTs)	Negative	None	Positive
<b>On RT communicative behaviour</b>			
Gibon <i>et al</i> <sup>23</sup>		Open Qs: RR 1.06; 95% CI 0.47 to 2.40; p=0.889 Acknowledgement: RR 0.87; 95% CI 0.68 to 1.11; p=0.252 Reassurance: RR 0.76; 95% CI 0.45 to 1.28; p=0.305 Procedural information: RR 1.01; 95% CI 0.84 to 1.22; p=0.879	Empathy: RR 4.05; 95% CI 1.09 to 15.11; p=0.037 Negotiation: RR 2.34; 95% CI 1.14 to 4.83; p=0.021 Emotional words: RR 1.32; 95% CI 1.03 to 1.69; p=0.030 Checking Qs: RR 2.00; 95% CI 1.16 to 3.45; p=0.013 Directive Qs: RR 1.55; 95% CI 1.09 to 2.20; p=0.014 Other Qs: RR 1.84; 95% CI 1.32 to 2.55; p<0.001
Merckaert <i>et al</i> <sup>24</sup>		Empathy: RR 1.98; 95% CI 0.10 to 39.25; p=0.654 Reassurance: RR 0.93; 95% CI 0.58 to 1.50; p=0.772 Negotiation: RR 1.00; 95% CI 0.25 to 4.06; p=0.999	Assessment: RR 1.99; 95% CI 1.27 to 3.12; p=0.003 Support: RR 1.13; 95% CI 1.00 to 1.28; p=0.050 Setting information: RR 1.34; 95% CI 1.07 to 1.68; p=0.10
Liénard <i>et al</i> <sup>25</sup>		Leading Qs (first): RR 0.23; 95% CI 0.01 to 8.02; p=0.415 Checking Qs (first): RR 0.79; 95% CI 0.54 to 1.14; p=0.203 Directive Qs (first): RR 0.96; 95% CI 0.64 to 1.44; p=0.472 Support (first): RR 0.88; 95% CI 0.73 to 1.06; p=0.191 Negotiation (first): RR 1.07; 95% CI 0.73 to 1.57; p=0.740 Medical words (first): RR 1.24; 95% CI 0.91 to 1.69; p=0.177 Radiotherapy words (first): RR 1.15; 95% CI 0.96 to 1.39; p=0.131 Anxiety words (first): RR 1.09; 95% CI 0.68 to 1.74; p=0.726 Sadness words (first): RR 1.67; 95% CI 0.67 to 4.13; p=0.269 Support (second): RR 1.04; 95% CI 0.81 to 1.33; p=0.761 Setting information (second): RR 1.25; 95% CI 0.95 to 1.63; p=0.109 Negotiation (second): RR 0.93; 95% CI 0.59 to 1.45; p=0.744 Medical words (second): RR 1.09; 95% CI 0.72 to 1.64; p=0.689 Radiotherapy words (second): RR 0.80; 95% CI 0.55 to 1.18; p=0.257 Anxiety words (second): RR 0.63; 95% CI 0.18 to 2.25; p=0.479 Sadness words (second): RR 3.60; 95% CI 0.91 to 14.27; p=0.068 Social words (second): RR 1.08; 95% CI 0.76 to 1.52; p=0.672	Open Qs (first): RR 8.71; 95% CI 1.02 to 74.76; p=0.048 Setting information (first): RR 1.44; 95% CI 1.18 to 1.75; p<0.001 Social words (first): RR 1.40; 95% CI 1.06 to 1.84; p=0.019 Assessment (second): RR 1.88; 95% CI 1.23 to 2.88; p=0.004
<b>On patient communicative behaviour</b>			
Merckaert <i>et al</i> <sup>24</sup>		Open directive questions: RR 1.01; 95% CI 0.50 to 4.03; p=0.519 Social words: RR 1.03; 95% CI 0.80 to 1.32; p=0.838 Medical words: RR 0.88; 95% CI 0.63 to 1.22; p=0.434 Radiotherapy words: RR 1.02; 95% CI 0.79 to 1.31; p=0.898	Open questions: RR 3.41; 95% CI 1.19 to 9.76; p=0.022 Emotional words: RR 1.67; 95% CI 1.07 to 2.60; p=0.025

Continued

Table 2 Continued

Effect of CST (RCTs)	Negative	None	Positive
Liénard <i>et al</i> <sup>25</sup>		Assessment (first): RR 0.86; 95% CI 0.57 to 1.30; p=0.478 Medical words (first): RR 1.41; 95% CI 0.92 to 2.16; p=0.119 Radiotherapy words (first): RR 1.29; 95% CI 0.90 to 1.85; p=0.171 Anxiety words (first): RR 1.68; 95% CI 0.77 to 3.68; p=0.196 Sadness words (first): RR 0.50; 95% CI 0.12 to 2.06; p=0.340 Social words (first): RR 1.16; 95% CI 0.80 to 1.68; p=0.429 Assessment (second): RR 1.53; 95% CI 0.92 to 2.56; p=0.102 Medical words (second): RR 1.18; 95% CI 0.76 to 1.84; p=0.456 Radiotherapy words (second): RR 0.66; 95% CI 0.41 to 1.08; p=0.101 Anxiety words (second): RR 0.66; 95% CI 0.19 to 2.23; p=0.501 Social words (second): RR 1.47; 95% CI 0.95 to 2.29; p=0.087	Sadness words (second): RR 5.86; 95% CI 1.28 to 26.81; p=0.023
On patient concerns, anxiety			
Halkett <i>et al</i> <sup>21</sup>		Depression (T2): b -0.068; SE 0.052; p=0.194 Anxiety (T3): b -0.033; SE 0.080; p=0.683 Depression (T3): b -0.085; SE 0.061; p=0.162 RT concerns (T3): b -0.048; SE 0.232; p=0.835	Anxiety (T2): b -0.145; SE 0.056; p=0.009 RT concerns (T2): b -0.918; SE 0.234; p<0.001
Hollingworth <i>et al</i> <sup>27</sup>	Total POMS: -5.16; 95% CI -10.36-0.04, p=0.52		

Effects on patient communicative behaviour.

CST, communication skills training; POMS, profile of mood states; Qs, questions; RCTs, randomised controlled trials; RR, Relative Rate.

(RCT and repeated measurement) found an increase in supportive skills of RT members in the intervention group<sup>24 28</sup>; another RCT did not detect an effect for this outcome.<sup>25</sup> A positive effect of CST was detected on RT members' use of emotional<sup>23</sup> and social words,<sup>25</sup> but not on anxiety and sadness words.<sup>25</sup> One high-quality repeated measurement study found an increase in the use of open-ended questions,<sup>28</sup> but an RCT project detected no difference for the number of open questions asked.<sup>23</sup> The latter study did, however, find an increase in empathic communication skills,<sup>23</sup> while another RCT did not detect the hypothesised effect on empathy.<sup>24</sup> No difference was detected for reassurance provision in two RCTs within the same project,<sup>23 24</sup> but a third RCT using another CST package did see that RT members provided more reassurance after training<sup>27</sup> and another study found that RT members responded more to questions about psychosocial aspects.<sup>28</sup> Increased assessment skills and use of social words were retained at a follow-up session 4 months after training.<sup>25</sup>

Most studies also evaluated the effect of the CST on patient outcomes.<sup>20-22 24 25 27 28</sup> With respect to communicative behaviour, it was seen that the newly acquired skills from the members of the RT lead to patients asking more open questions,<sup>24</sup> although the follow-up RCT of this project could not detect a difference for this outcome.<sup>25</sup> Varying results were seen for patients' use of emotional words: three (RCT and repeated measurement) studies found an increase in the use of emotional<sup>24</sup> and sadness

words,<sup>25</sup> and found that patients expressed their concerns more frequently.<sup>28</sup> However, in two RCTs, no difference could be detected for the number of social,<sup>24 25</sup> anxiety or sadness words<sup>25</sup> posttraining. Timmermans and colleagues saw that their CST led to patients participating more in conversations regarding psychosocial issues.<sup>28</sup>

### Effects on patient concerns

In addition, three papers examined effects of communication training on patients' levels of anxiety and other concerns. It was seen that levels of anxiety,<sup>20 21</sup> depression<sup>20</sup> (HADs) and concern scores decreased after the intervention,<sup>20 21</sup> although a pilot RCT that hypothesised to lower depression levels did not find an effect on this outcome.<sup>21</sup> Butlin and colleagues found no quantitative effect on patient stress levels as perceived by radiation therapists (PSS), but qualitatively, patient benefits were reported.<sup>22</sup> Hollingworth and colleagues on the other hand found weak evidence for worse mood states (POMS) for patients in the intervention group.<sup>27</sup>

### DISCUSSION

To our knowledge, this is the first review to have looked at the effectiveness of communication skills programmes for members of the RT to support cancer patients with their emotional concerns during treatment. Despite the available evidence on the importance of the relationship between patients and the RT<sup>34-36</sup> and recommendations

to target staff education to increase comfort levels with emotional conversations,<sup>14 37</sup> only nine articles met the review's inclusion criteria, of which seven focused specifically on communication skills. Surprisingly, even though fear of cancer recurrence is the most common concern for patients during and after radiotherapy treatment,<sup>5</sup> none of the included studies took this specific concern into consideration; instead, the current focus is on patient anxiety, (general) concerns and depression. While success was not always consistently obtained for the various training programmes, there was indeed evidence for the potential of CST to improve communicative behaviour of members of the RT and patients as well as patient outcomes. CST appeared to be particularly effective at increasing supportive skills of RT members<sup>24 28</sup> and the use of emotional words by both staff and patients.<sup>23 24</sup> These findings correspond with earlier evidence on effects of CST on HCPs who work with cancer patients.<sup>17</sup> Moreover, there was promising evidence<sup>38</sup> that training programmes for radiation therapists targeted at interactions prior to the radiotherapy planning session and start of treatment could successfully reduce patient levels of anxiety and concerns.<sup>21</sup>

A limitation of this review is that as a result of the restricted number of articles that describe CST in the setting of radiotherapy sessions and the heterogeneity of content and outcome measures of the different programmes, a quantitative meta-analysis was not considered appropriate. As a qualitative synthesis is more easily influenced by personal bias, results were discussed between the authors. In addition, it is possible that the systematic search has missed articles; however, snowballing the reference lists of articles that were found in the search did not result in the addition of new relevant articles. Other limitations of the review include that only English-language papers were included, one author screened for titles/abstracts, there was no prospective protocol registration, and that only peer-reviewed literature (ie, no grey literature) was included.

While the evidence suggests that CST for members of the RT is an area worth continued exploration, there are several barriers that need to be overcome in the implementation of such CST programmes. According to the 'Capability', 'Opportunity', 'Motivation' and 'Behaviour' (COM-B) system that describes factors that influence people's behaviour, in addition to RT members having the necessary capabilities, that is, knowledge and skills on how to manage emotional conversations with patients, their behaviour will be influenced by their motivation and the opportunities available to them to make these conversations possible or prompt them.<sup>39</sup>

The CST, therefore, needs to be adjusted to the time schedule of the RT and can only become a success with full support from the organisation and motivated participants.<sup>25 25</sup> In addition, in practice, it can be difficult to find the time and a quiet space to hold the sometimes slightly more elaborate conversations with patients.<sup>20 26 27</sup> These logistical considerations, such as asking the patient

to arrive a few minutes early or having a free space available, need to be addressed in the design of a CST package in order for it to be successfully implemented in the setting of radiotherapy treatment. This issue is particularly important since there is evidence that time is one of the main factors that influences skill levels of radiation therapists to manage emotional interactions with patients.<sup>40</sup>

With respect to RT members' knowledge and skills to facilitate emotional conversations and help patients manage their concerns, consolidation is another important area to address. Role play is commonly used and encouraged by workshop participants,<sup>26</sup> also in the context of CST for medical imaging students.<sup>41</sup> The finding that having trainers provide feedback on post-training consultations<sup>20 28</sup> is particularly helpful is strongly advocated by Heaven and colleagues' model for clinical supervision.<sup>42</sup> This supportive activity can be enhanced in combination with behaviour prompts in the form of reminders in patients' medical files. This joint strategy appears to trigger a wide range of positive communication behaviours.<sup>28</sup>

Longer workshops to consolidate skills are deemed unfeasible to implement on a national level<sup>26</sup> due to the previously addressed time constraints, but recent work has shown promising results with single-day training.<sup>43</sup> As recommended in several of the included studies,<sup>21 23</sup> it is advisable to perform a cost-benefit analysis for future interventions. The two studies included in this review that make use of communication skills workshops, but as part of an intervention that uses a tool of some sort both have less positive (or even negative) outcomes compared with the other interventions that focus on communication only.<sup>22 27</sup> This could suggest that when it comes to outcomes regarding emotional communication and patient concerns, it might be a better investment of resources to fully focus training for RT members on empathic communication skills.

## CONCLUSIONS

In conclusion, CST is a promising strategy to increase the opportunity for empathic communication between members of the RT and patients, although little is known about how to obtain these positive results consistently or how to retain skills over a longer period. There is limited but high level evidence that the RT members' communication skills can also successfully be transferred to the clinical practice to reduce patient levels of anxiety and concerns.

However, research in this context is still in its infancy and more work is needed to understand which components of CST programmes actually lead to positive outcomes for members of the RT and patients, so that these outcomes can be obtained consistently. In addition, with fear of cancer recurrence being the most common concern that patients who undergo radiotherapy experience, it would be worth investigating whether CST can help RT members to support patients with this particular

concern. More research is also needed to explore how to consolidate (better) the learnt communication skills and, if this leads to longer or multiple training sessions, weigh the cost and benefits of the implementation of such workshops at multiple sites. To encourage motivated participation by members of the RT, service design or codesign strategies can be explored to involve staff as partners in the design of CST, so that their needs and preferences are incorporated in the fundamentals of the training package.

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## REFERENCES

- Hollant L, Single MP, Gaines K, *et al*. Assessing distress in patients with gastrointestinal tumors during radiotherapy. *Journal of Clinical Oncology* 2016;34:e18087.
- Sundaresan P, Sullivan L, Pendlebury S, *et al*. Patients' perceptions of health-related quality of life during and after adjuvant radiotherapy for T1N0M0 breast cancer. *Clin Oncol* 2015;27:9–15.
- Lewis F, Merckaert I, Liénard A, *et al*. Anxiety and its time courses during radiotherapy for non-metastatic breast cancer: a longitudinal study. *Radiother Oncol* 2014;111:276–80.
- Halkett GK, Kristjanson LJ, Lobb EA. 'If we get too close to your bones they'll go brittle': women's initial fears about radiotherapy for early breast cancer. *Psychooncology* 2008;17:877–84.
- Simard S, Thewes B, Humphris G, *et al*. Fear of cancer recurrence in adult cancer survivors: a systematic review of quantitative studies. *J Cancer Surviv* 2013;7:300–22.
- Lebel S, Ozakinci G, Humphris G, *et al*. From normal response to clinical problem: definition and clinical features of fear of cancer recurrence. *Support Care Cancer* 2016;24:3265–8.
- Koch L, Bertram H, Eberle A, *et al*. Fear of recurrence in long-term breast cancer survivors—still an issue. results on prevalence, determinants, and the association with quality of life and depression from the cancer survivorship—a multi-regional population-based study. *Psychooncology* 2014;23:547–54.
- Barraclyffe L, Yang Y, Cameron J, *et al*. Does emotional talk vary with fears of cancer recurrence trajectory? A content analysis of interactions between women with breast cancer and their therapeutic radiographers. *J Psychosom Res* 2018;106:41–8.
- Halkett GK, Kristjanson LJ, Lobb E, *et al*. Meeting breast cancer patients' information needs during radiotherapy: what can we do to improve the information and support that is currently provided? *Eur J Cancer Care* 2010;19:538–47.
- Cameron JL, Blyth CM, Kirby AS. An audit of a radiotherapy review clinic for breast cancer patients: a multi-disciplinary approach. *J Radiother Pract* 2008;7:233–9.
- Elsner K, Naehrig D, Halkett GKB, *et al*. Reduced patient anxiety as a result of radiation therapist-led psychosocial support: a systematic review. *J Med Radiat Sci* 2017;64:220–31.
- Mitchell AJ, Lord K, Slattery J, *et al*. How feasible is implementation of distress screening by cancer clinicians in routine clinical care? *Cancer* 2012;118:6260–9.
- Braeken AP, Kempen GI, Eekers D, *et al*. The usefulness and feasibility of a screening instrument to identify psychosocial problems in patients receiving curative radiotherapy: a process evaluation. *BMC Cancer* 2011;11:479.
- Lavergne C, Taylor A, Gillies C, *et al*. Understanding and addressing the informational needs of radiation therapists concerning the management of anxiety and depression in patients receiving radiation therapy treatment. *J Med Imaging Radiat Sci* 2015;46:30–6.
- Kissane DW, Bylund CL, Banerjee SC, *et al*. Communication skills training for oncology professionals. *J Clin Oncol* 2012;30:1242–7.
- Uitterhoeve RJ, Bensing JM, Girol RP, *et al*. The effect of communication skills training on patient outcomes in cancer care: a systematic review of the literature. *Eur J Cancer Care* 2010;19:442–57.
- Moore PM, Rivera Mercado S, Grez Artigues M, *et al*. Communication skills training for healthcare professionals working with people who have cancer. *Cochrane Database Syst Rev* 2013;3:CD003751.
- Pace R, Pluye P, Bartlett G, *et al*. Testing the reliability and efficiency of the pilot Mixed Methods Appraisal Tool (MMAT) for systematic mixed studies review. *Int J Nurs Stud* 2012;49:47–53.
- Moher D, Liberati A, Tetzlaff J, *et al*. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009;6:e1000097.
- Halkett GK, Schofield P, O'Connor M, *et al*. Development and pilot testing of a radiation therapist-led educational intervention for breast cancer patients prior to commencing radiotherapy. *Asia Pac J Clin Oncol* 2012;8:e1–8.
- Halkett GK, O'Connor M, Aranda S, *et al*. Pilot randomised controlled trial of a radiation therapist-led educational intervention for breast cancer patients prior to commencing radiotherapy. *Support Care Cancer* 2013;21:1725–33.
- Butlin H, Salter KL, Williams A, *et al*. PracticeCALM: coaching anxiety lessening methods for radiation therapists: a pilot study of a skills-based training program in radiation oncology. *J Med Imaging Radiat Sci* 2016;47:147–54.
- Gibson AS, Merckaert I, Liénard A, *et al*. Is it possible to improve radiotherapy team members' communication skills? A randomized study assessing the efficacy of a 38-h communication skills training program. *Radiother Oncol* 2013;109:170–7.
- Merckaert I, Delevallez F, Gibson AS, *et al*. Transfer of communication skills to the workplace: impact of a 38-hour communication skills training program designed for radiotherapy teams. *J Clin Oncol* 2015;33:901–9.
- Liénard A, Delevallez F, Razavi D, *et al*. Is it possible to improve communication around radiotherapy delivery: a randomized study to assess the efficacy of team training? *Radiother Oncol* 2016;119:361–7.
- Halkett G, O'Connor M, Aranda S, *et al*. Communication skills training for radiation therapists: preparing patients for radiation therapy. *J Med Radiat Sci* 2016;63:232–41.
- Hollingworth W, Metcalfe C, Mancero S, *et al*. Are needs assessments cost effective in reducing distress among patients with cancer? A randomized controlled trial using the distress thermometer and problem list. *J Clin Oncol* 2013;31:3631–8.
- Timmermans LM, van der Maazen RW, van Spaendonck KP, *et al*. Enhancing patient participation by training radiation oncologists. *Patient Educ Couns* 2006;63:55–63.
- Pendleton D, Schofield T, Tate P, *et al*. The new consultation: developing doctor-patient communication. 2003.
- Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983;67:361–70.
- Roter D, Larson S. The Roter interaction analysis system (RIAS): utility and flexibility for analysis of medical interactions. *Patient Educ Couns* 2002;46:243–51.
- Baker F, Denniston M, Zabora J, *et al*. A POMS short form for cancer patients: psychometric and structural evaluation. *Psychooncology* 2002;11:273–81.
- Cohen S, Kamarck T, Mermelstein R. Perceived stress scale measuring stress: a guide for health and social scientists. 1994:235–83.
- Halkett GKB, Merchant S, Jiwa M, *et al*. Effective communication and information provision in radiotherapy—the role of radiation therapists. *J Radiother Pract* 2010;9:3–16.
- Martin K-L, Hodgson D. The role of counselling and communication skills: how can they enhance a patient's 'first day' experience? *J Radiother Pract* 2006;5:157–64.
- Dong S, Butow PN, Costa DS, *et al*. The influence of patient-centered communication during radiotherapy education sessions on post-consultation patient outcomes. *Patient Educ Couns* 2014;95:305–12.
- Maamoun J, Fitch M, Barker R, *et al*. Results of a radiation therapist opinion survey identifying, measuring and addressing radiation

- therapy patient supportive care needs. *J Med Imaging Radiat Sci* 2009;40:24–31.
38. Burns PB, Rohrich RJ, Chung KC. The levels of evidence and their role in evidence-based medicine. *Plast Reconstr Surg* 2011;128:305–10.
  39. Michie S, van Stralen MM, West R. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implement Sci* 2011;6:42.
  40. Hulley L, Cashell A, Feuz C, *et al.* Communicating with emotional patients: thoughts, skills, and influencing factors for ontario radiation therapists. *J Med Imaging Radiat Sci* 2016;47:315–22.
  41. Halkett GKB, McKay J, Shaw T. Improving students' confidence levels in communicating with patients and introducing students to the importance of history taking. *Radiography* 2011;17:55–60.
  42. Heaven C, Clegg J, Maguire P. Transfer of communication skills training from workshop to workplace: the impact of clinical supervision. *Patient Educ Couns* 2006;60:313–25.
  43. Halkett G, O'Connor M, Jefford M, *et al.* RT Prepare: a radiation therapist-delivered intervention reduces psychological distress in women with breast cancer referred for radiotherapy. *Br J Cancer* 2018;118:1549–58.