"Is it possible to improve the breaking bad news skills of residents when a relative is present? A randomised study"

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Abstract

Background:Although patients with cancer are often accompanied by a relative during breaking bad news (BBN) consultations, little is known regarding the efficacy of training programmes designed to teach residents the communication skills needed to break bad news in a triadic consultation.Methods: Residents were randomly assigned to a 40-h dyadic and triadic communication skills training programme (n=48) or a waiting list (n=47). A simulated BBN triadic consultation was audiotaped at baseline, and after training for the training group, and 8 months after baseline for the waiting list group. Transcripts were analysed using content analysis software (LaComm). A coder determined the moment of bad news delivery and the relative's first turn of speech regarding the bad news. A generalised estimating equation was used to evaluate residents' communication skills, BBN timing, and the relative's inclusion in the consultation.Results:Ninety-five residents were included. After training, the dura...

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Original article

Is it possible to improve radiotherapy team members' communication skills? A randomized study assessing the efficacy of a 38-h communication skills training program

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ABSTRACT

Background and purpose: Optimizing communication between radiotherapy team members and patients and between colleagues requires training. This study applies a randomized controlled design to assess the efficacy of a 38-h communication skills training program.

Material and methods: Four radiotherapy teams were randomly assigned either to a training program or to a waiting list. Team members' communication skills and their self-efficacy to communicate in the context of an encounter with a simulated patient were the primary endpoints. These encounters were scheduled at the baseline and after training for the training group, and at the baseline and four months later for the waiting list group. Encounters were audiotaped and transcribed. Transcripts were analyzed with content analysis software (LaComm) and by an independent rater.

Results: Eighty team members were included in the study. Compared to untrained team members, trained team members used more turns of speech with content oriented toward available resources in the team (relative rate [RR] = 1.38; $p = 0.023$), more assessment utterances (RR = 1.69; $p < 0.001$), more empathy (RR = 4.05; $p = 0.037$), more negotiation (RR = 2.34; $p = 0.021$) and more emotional words (RR = 1.32; $p = 0.030$), and their self-efficacy to communicate increased ($p = 0.024$ and $p = 0.008$, respectively).

Conclusions: The training program was effective in improving team members' communication skills and their self-efficacy to communicate in the context of an encounter with a simulated patient. Future study should assess the effect of this training program on communication with actual patients and their satisfaction. Moreover a cost-benefit analysis is needed, before implementing such an intensive training program on a broader scale.

Optimal patient care has always been a priority in radiotherapy through, improving services' quality, professionals' training and patients' involvement [1–5]. For all these purposes, a good communication with patients and with other team members is essential. It should be recalled at this level that, team members from different disciplines (secretaries, nurses, physicists and physicians) have short encounters with patients [6]. During these encounters, team members must communicate with patients to transmit useful information about radiotherapy [7–9] and assess and respond to patients' concerns and needs [10–12]. Moreover, it should be also recalled that team members have to communicate with each other to share patient information and to plan and coordinate caregiving, especially for patients with complex medical or psychosocial problems [13–15]. This communication may be difficult because it involves team members of different disciplines with specific roles and responsibilities [6,16–18].

Theoretically, optimal communication includes two aspects. Firstly, it includes encounters with patients to make a comprehensive assessment of their concerns and needs and to give them appropriate information and support. Secondly, it involves encounters with colleagues to share information about patients' concerns and needs and to organize the support needed by patients in addition to radiation treatment administration. Therefore, optimal communication requires that team members possess a repertoire of communication skills. Although two studies have previously assessed the impact of communication skills training programs for

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radiotherapists [19,20], to our knowledge, no study having a randomized controlled design has assessed the effects of a training program designed specifically to improve team members' communication skills in radiotherapy. It has to be recalled at this level that at least 20 h of training is needed to improve health care professionals basic communication skills and that more advanced communication skills require further training [21–23].

Therefore, a 38-h training program has been designed for radiotherapy teams and tested for its efficacy. This training program is learner-centered, skills-focused and practice-oriented. It includes two modules: a 16-h patient-oriented communication skills training module followed by a 22-h team-resource-oriented communication skills training module. The patient-oriented module was organized in small monodisciplinary groups including team members of the same discipline (secretaries, nurses, physicists, and physicians). This module was designed to improve team members' abilities to communicate with their patients. Its aims were to improve the assessment of patients' concerns and needs and to improve giving patients' information and support. The team-resource-oriented module was organized in small interdisciplinary groups including at least one team member from each discipline (at least one secretary, one nurse, one physicist and one physician). This module was designed to improve each team member's ability to communicate with both patients and colleagues. Its first aim was to improve each team member's communication with patients about available resources within the team. This aim involved team members better informing patients about their own roles in the team, each team member's role and the most appropriate team member to manage patients' concerns and needs, as well as assessing and supporting the patients' abilities to express their concerns and needs to team members. The second aim of the team-resource-oriented module was to improve each team member's communication with colleagues about patients. This aim involved better informing colleagues about patients concerns and needs, better informing colleagues about the support given to patients, and better organizing the support needed by patients with colleagues.

This study applied a randomized controlled design to assess the efficacy of the training program on radiotherapy team members' communication skills and their self-efficacy to communicate in the context of an encounter with a simulated anxious cancer patient. First, it was hypothesized that the training program would lead to an increase in team members' use of communication skills for assessment and for providing information and support. Second, it was hypothesized that the training program would lead to an increase in team members' use of turns of speech with a team-resource-oriented content. Third, it was hypothesized that the training program would lead to an improvement in team members' self-efficacy to communicate with a simulated patient about her concerns and distress and an improvement in team members' self-efficacy to communicate with a simulated patient and with colleagues about team resources.

Methods

Radiotherapy team members

To be included in this study, team members had to speak French and had to be willing to participate in the training program and its assessment procedures. Team members participating in other training programs with the same goals during the assessment and training periods were excluded from the study.

Study design and assessment procedures

The efficacy of the communication skills training program was assessed in a study allocating teams randomly before the first assessment time to either a 38-h training program (training group) or a waiting list (waiting list group) according to a computer generated randomization list. As displayed in the eAppendix (Supplement), assessments were scheduled after the randomization (T1) and after the training program (T2) for the training group, and at T1 and 4 months after T1 (T2) for the waiting list group. Each assessment was carried out in the workplace and included, among others, one encounter with a simulated anxious cancer patient as well as a set of questionnaires. Team members' communication skills and their self-efficacy to communicate in the context of an encounter with a simulated patient were the primary endpoints.

Communication skills training program

The 38-h communication skills training program included two modules, as shown in Fig. 1. This training included a 16-h patient-oriented communication skills training module followed by a 22-h team-resource-oriented communication skills training module. Sessions were spread over a 4-month period to allow team members to practice their newly learned skills. Sessions lasted at least 3 h and were organized at each team's convenience (e.g., during working hours or on the weekend, either at or outside the hospital). Sessions were organized in small groups (5–9 participants). Training was learner-centered, skills-focused and practice-oriented. It included cognitive, behavioral and modeling components [21,24]. The communication skills training program is described in a detailed manual (available by written request to the authors).

The patient-oriented communication skills training module included five sessions: the first 4-h session was organized for the whole radiotherapy team and the other four 3-h sessions (12 h) were organized in small monodisciplinary groups including team members of the same discipline (secretaries, nurses, physicists, and physicians). The first 4-h session focused on information about patients' distress in radiotherapy and practical exercises on communication in oncology. The other four 3-h sessions were designed to improve the team members' abilities to communicate with patients according to their own professional's role. The aims were to improve the assessment of patients' concerns and needs and to improve the information and support given to the patients. Team members were invited to practice their communication skills through role playing exercises based on patient communication problems arising in radiotherapy (e.g., setting up and ending an encounter with a patient, tailoring information about radiotherapy according to patients' needs, managing patients' emotions, and detecting patients' anxiety and depression). Team members were given immediate feedback on their communication skills during the role playing activities by experienced facilitators.

The team-resource-oriented communication skills training module included seven sessions: six 3-h sessions (18 h) were organized in small interdisciplinary groups including at least one team member from each discipline (at least one secretary, one nurse, one physicist and one physician), and the last 4-h session was organized for the whole radiotherapy team. The six 3-h sessions included 1 h of information about different forms of collaboration (i.e., multidisciplinary, interdisciplinary and transdisciplinary) and 17 h of role playing exercises. These sessions were designed to improve each team member's ability to communicate with both patients and colleagues. The first aim of these sessions was to improve, when necessary, each team member's communication with patients about available resources in the team: to better informing patients about their own roles in the team and about each team member's role, to better informing patients about the most appropriate team member to manage their concerns and needs and to better assessing and supporting patients' abilities to express their concerns and needs to this team member. The second aim of these sessions was to improve, when necessary, each team member's

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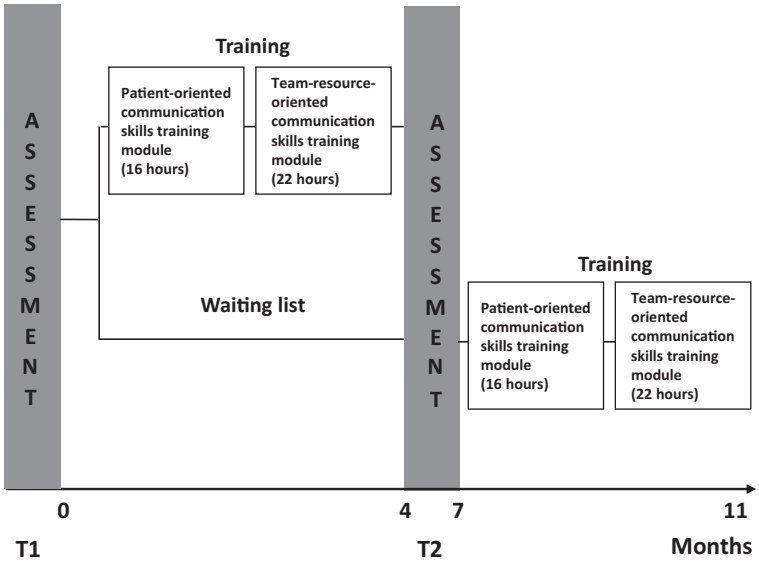

Fig. 1. Study design, training and assessment procedures.

communication with colleagues about patients: to better informing colleagues about patients concerns and needs, to better informing colleagues about the support given to patients and to better organizing the support needed by patients with colleagues. Role playing exercises were based on communication problems arising in radiotherapy (e.g., organizing patients' radiotherapy simulation, organizing patients' treatment, organizing team support for various types of patients, including anxious patients, depressed patients and patients with complex medical situations). Through these role playing exercises, team members became aware of each professional's roles and responsibilities and of different forms of collaborations. At the end of the training program, the whole radiotherapy team took part in the last 4-h session, which provided a summary of the previous sessions, assessed the participants' satisfaction and facilitated a discussion about the training program.

An encounter with a simulated anxious cancer patient

Team members' communication skills were assessed in the context of an encounter with a simulated anxious cancer patient, played by a trained actress. Encounters were organized at the workplace. Before the encounter, team members had enough time to read the case description carefully and review the aim of the encounter. The simulated patient was then introduced to the team member at the recording desk, and the encounter lasted a maximum of 30 min. Encounters with simulated patients have been described as a valid method to assess communication style [25]. Encounters were audiotaped and not video-recorded. The encounter scenario was a first contact between the radiotherapy team member and an anxious breast cancer patient on the day of the radiotherapy simulation. The actress was instructed to express a high level of anxiety about the efficacy of radiotherapy treatment and side effects. A scenario with a high level of anxiety content was chosen to test the efficacy of the training program on team members' patient-oriented and team-resource-oriented communication skills. These skills involved communicating with the simulated patient about her concerns and needs, providing her with information and support, and communicating with the simulated patient about team member resources that may be helpful. A scenario with a high level of anxiety content generates a communication challenge in terms of each team member's ability to communicate with the simulated patient both about her concerns and needs and about resources available in the team to manage her concerns and needs. One actress was trained to maintain the same behaviors and the same level of high anxiety during all the study. Before starting the study, the actress's training included discussing the standardized scenario with one of the study coordinators. The training included also, practicing the role with professionals acting the different disciplines working in radiotherapy department (secretaries, nurses, physicists, and physicians) and, being debriefed by the same coordinator. After starting the study, regular debriefing and feedback sessions were organized in order to maintain reproducibility.

Communication content analysis

The audiotapes of the encounters were transcribed. Transcripts were analyzed by the LaComm, a French communication content analysis software. This software uses a word count strategy based on categories of words like PROTocol ANalyzer (PROTAN) [26] or Linguistic Inquiry and Word Count (LIWC) [27] and a word combination strategy like the General Inquirer [28]. The software functions to analyze verbal communication utterance by utterance by identifying utterance types and contents. This software is used generally in medicine, and it is particularly used in oncology.

Regarding utterance types, the communication used during the encounters was analyzed with the dictionaries included in the LaComm. The dictionaries are composed of words, word stems or expressions, and the dictionaries' contents were built on the basis of empirical knowledge derived from actual and simulated patient consultations performed by physicians [29,30]. The organization of the dictionaries was adapted from the categories of the Cancer Research Campaign Workshop Evaluation Manual (CRCWEM) [29–32] and was redefined and categorized according to the three-function approach of the medical consultation [33] by a panel of experts (Table 1). Thus, the utterances were categorized in three main types: assessment, support and information, as shown in Table 1. Regarding utterance contents, three dictionaries were used: medical, emotional and social.

The content analysis software has been shown to be effective in measuring improved communication skills [34,35]. It is important to emphasize that this software is only useful for assessing training effects and is not designed for teaching.

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Table 1
Description of turns of speech contents analyzed by a rater[a] (independent rater blind to the study arm) and utterance types and contents analyzed by the LaComm[b] (communication content analysis software).

	Definitions	Examples
Turns of speech[a]		
Contents		
Patient-oriented	With a reference on the simulated patient	
Team-resource-oriented	With a reference on another radiotherapy team member or another healthcare professional in oncology and with reference to team working	Did you talk about side effects to the radiotherapist? Did you meet a psychologist for your anxiety problem? We discussed your case in multidisciplinary meeting
Utterances types[b]		
Assessment		
Open questions	Assessment of a wide range of issues, concerns, or feelings	How are you doing? Tell me
Open directive questions	More focused assessment of issues, concerns, or feelings	Tell me what occurred since the last treatment. What do you feel?
Directive questions	Precise assessment of a specific area	Did you begin the treatment? Are you feeling pain?
Leading questions	Assessment of a more precise dimension while suggesting an answer	You do not have pain, do you?
Checking questions	Checking of information given without seeking further elaboration	Really? Do you understand what I say?
Other types of questions	Assessments not classified by LaComm into one of the previous categories	
Support		
Acknowledgment	Support by listening to the patient	Mh, Mh. Right. That should not be easy
Empathy	Support by showing an understanding of the patient's emotional or physical state	I understand that you are distressed. I realize that you have pain
Reassurance	Support by reassuring the patient about a potential threat, discomfort or uncertainty	Don't worry. I will do everything that is possible to help you
Information		
Procedural information	Information about orientation and transition of talk in the encounter	I am Radiotherapist x. Please take a seat
Negotiation	Proposition to the patient taking his/her point of view into account	I suggest we talk about it with your radiotherapist
Other types of information	Affirmative utterrances not classified by LaComm into one of the previous categories	
Utterances contents[b]		
Medical words	Words related to oncology and other medical specialities	Cancer, radiotherapy, exams, breast, skin reaction, pain
Emotional words	Words related to negative and positive emotion	Fear, sad, anxious, happy, comfort, satisfaction
Social words	Words related to relation and daily life (hobbies, clothes, food,...)	Partner, work, hobby, driving, children, shopping

Turns of speech contents

The contents of the transcripts were analyzed. Turns of speech contents were categorized as turns of speech with a patient-oriented content and turns of speech with a team-resource-oriented content (Table 1). A turn of speech with a patient-oriented content refers explicitly to the simulated patient. A turn of speech with a team-resource-oriented content refers explicitly to another radiotherapy team member or another healthcare professional in oncology and refers explicitly to team working. One rater, blinded to the time assessment and group allocation, read all team members' turns of speech and assessed these contents.

Questionnaires

After the encounter with the simulated anxious cancer patient, team members filled in a questionnaire assessing their self-efficacy to communicate with the patient about her concerns and distress. They also filled in a questionnaire assessing their self-efficacy to communicate with the patient and with colleagues about team resources. Team members were asked also to report socioprofessional information and their current motivation to improve their communication skills.

Self-efficacy to communicate with the simulated patient about her concerns and distress. A 6-item scale adapted from Parle et al. [36] was used to assess team members' self-reported perception of their own performance in communicating with the simulated patient about her concerns and distress in an encounter programed next week. It is a 5-point Likert scale ranging from "not at all able" (1) to "extremely able" (5). The internal reliability of this scale is high (Cronbach's alpha score = 0.87).

Self-efficacy to communicate with the simulated patient and with colleagues about team resources (needed by/provided to/received by the simulated patient). This 10-item self-report scale assesses team members' perception of their own performance in communicating with the simulated patient and with their colleagues about team resources in an encounter programed next week. It is a 5-point Likert scale ranging from "not at all able" (1) to "extremely able" (5). The internal reliability of this scale is high (Cronbach's alpha score = 0.90).

Socioprofessional data. Data were collected about each team member's age, gender, marital status, occupational status, work experience in oncology, work experience in their team, previous patient-oriented training and team-oriented training.

Current motivation to improve communication skills. This 2-item self-report scale assessed team members' motivation to improve patient-oriented communication skills and to improve team-resource-oriented communication skills. It is an 11-point Likert scale ranging from "not motivated" (0) to "extremely motivated" (10).

Statistical analysis

To be considered for data analysis, team members had to attend at least 4 h of communication skills training. Statistical analysis of the socioprofessional data and current motivation to improve communication skills consisted of a comparative analysis of both

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groups of team members at baseline using parametric tests and nonparametric tests as appropriate (Student's *t*-test and χ^2).

Data generated by the LaComm are counts of utterance types and contents. The data generated from the independent rater are counts of turn of speech contents. The LaComm data and the turn of speech contents were considered as the dependent variables and group-by-time effects were assessed using generalized estimating Poisson regression models. The models tested time effects, group allocation effects and also group-by-time effects using the training group at the baseline and the waiting list group as the reference group. Results of group-by-time effects (training effects) were presented as relative rates (RR) with 95% confidence intervals (95% CI). Training effects were controlled for the duration of the encounters.

Data generated from the self-efficacy to communicate scales were assessed using the Mann–Whitney tests. Delta scores between T2 and T1 scores were calculated for the training group and the waiting list group and compared using nonparametric tests for independent groups. All tests were two-tailed, and the alpha was set at 0.05. Analyses were performed with SPSS software (version 18.0 for MAC OS X; SPSS Inc., Chicago, IL).

Results

Team members' recruitment, composition of teams and socioprofessional data

Of 217 recruited members, a total of 96 team members registered for the training program (eAppendix [Supplement]): 71% ($n = 65$) of these subjects were included in the training group and 25% ($n = 31$) were included in the waiting list group. Sixteen of the team members were excluded from the analysis for the following reasons: leaving the team between the assessment and training periods ($n = 1$), drop-out ($n = 3$), lack of patient contact ($n = 9$), recording problem ($n = 2$) and lack of training attendance ($n = 1$). Eighty team members completed the two encounters with a simulated anxious cancer patient. Of these team members, 51 were in the training group, and 29 were in the waiting list group. The composition of the four radiotherapy teams that participated in the randomized study between October 2006 and December 2008 including secretaries, nurses, physicists and physicians is summarized in the eAppendix (Supplement).

Comparison of included and excluded team members showed no statistically significant differences in age, gender, occupational status and number of years of practice (in oncology and in the teams). With regard to socioprofessional data and current motivation to improve skills, no statistically significant differences were found at the baseline between trained team members (training group) and untrained team members (waiting list group), except in their marital status; more of the untrained team members were single ($p = 0.002$).

The mean age of the trained team members was 40 years (standard deviation [SD] = 10.5 years), 77% were women and 96% lived with a partner or children. Sixty-five percent of the trained team members worked full time and had a mean of 13 years of experience in oncology (SD = 12.9 years) and 11 years of experience in the team (SD = 8.3 years). In the last year, seven team members had attended a patient-oriented training, and nine team members had attended a team-oriented training. The mean age of the untrained team members was 41 years (SD = 8.8 years), 69% were woman and 28% lived alone. Among the untrained team members, 83% worked full time and had a mean of 10 years of experience in oncology (SD = 9.1) and 9.5 years of experience in the team (SD = 8.8). Two team members had attended a patient-oriented training and five team members had attended team-oriented communication training in the past year (eAppendix [Supplement]).

Trained teams members participated in an average of 34 h of training (SD = 4.4, Min = 22, Max = 38). They participated in an average of 15 h of the 16-h patient-oriented communication skills training (SD = 1.6, Min = 10, Max = 16) and 19 h of the 22-h team-resource-oriented communication skills training (SD = 3.7, Min = 6, Max = 22).

Training effects on team members' utterances

Generalized estimating equation analysis (GEE) showed significant group-by-time effects of attendance of the training program on the number of turns of speech made by the team members (Table 2). Compared with the baseline, at the second assessment, GEE showed a significant increase in team-resource-oriented turns of speech for trained team members compared with untrained team members (RR = 1.38; $p = 0.023$).

GEE also showed significant group-by-time effects on the counts of the utterance types made by team members (Table 2). Analysis showed a significant increase in the rate of open directive questions (RR = 1.67; $p = 0.051$), directive questions (RR = 1.55; $p = 0.014$), leading questions (RR = 5.37; $p = 0.052$), checking questions (RR = 2.00; $p = 0.013$), other types of questions (RR = 1.84; $p < 0.001$) and total questions (RR = 1.69; $p < 0.001$) for trained team members compared to untrained team members. Analysis also showed a significant increase in the rate of empathy (RR = 4.05; $p = 0.037$) and negotiation (RR = 2.34; $p = 0.021$).

Moreover, GEE showed significant group-by-time effects on the content of utterances made by team members (Table 2). Compared with the baseline, at the second assessment time, the regression analysis showed a significant increase in the count of emotional words (RR = 1.32; $p = 0.030$) for trained team members compared to untrained team members.

A secondary analysis showed that group-by-time effects in the different professional groups (secretaries, nurses, physicists, and physicians) had about the same size, that means more turns of speech with a team-resource-oriented content, more assessment utterances, more empathy, more negotiation and more emotional words. The small number of subjects in each professional group did not allow to compare statistically these size effects.

Training effects on team members' self-efficacy to communicate

Mann–Whitney tests showed significant training effects (group effects evolution) on the self-efficacy to communicate scales (Table 3). Training effects were observed for the self-efficacy to communicate with a simulated patient about her concerns and distress ($z = -2.26$, $p = 0.024$) and for the self-efficacy to communicate with a simulated patient and with colleagues about team resources ($z = -2.65$, $p = 0.008$).

Discussion

This study is the first investigation with a randomized design to assess the impact of a 38-h training program on radiotherapy team members' communication skills and team members' self-efficacy to communicate in an encounter with a simulated anxious cancer patient. This study shows that the implementation of this intensive training program is feasible in radiotherapy departments when the heads of these departments support its organization and when team members are motivated to participate in it. This study also shows that this training program significantly improves both radiotherapy team members' communication skills and radiotherapy team members' self-efficacy to communicate in an encounter with a simulated anxious breast cancer patient.

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Table 2
Training effects (group-by-time) measured in the context of an encounter with a simulated patient: team members' turns of speech contents, and team members' utterances types and contents ($n = 80$)[a].

	Training group ($n = 51$)				Waiting-list group ($n = 29$)				Generalized estimating equation		
	Ti		T2		T1		T2		Training effects		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	RR	95% CI	*p*
Teams members' turns of speech											
Contents											
Patient-oriented	70	53	71	50	80	39	72	43	1.05	0.8 to 1.37	0.741
Team-resource-oriented	15	7	18	10	17	9	14	6	1.38	1.05 to 1.81	0.023
Total	85	55	89	57	97	46	86	46	1.1	0.86 to 1.41	0.449
Teams members' utterances											
Types											
Assessment											
Open questions[b]	0.3	0.6	0.3	0.6	0.4	0.8	0.4	0.7	1.06	0.47 to 2.40	0.889
Open directive questions	1.3	1.9	2.1	2.1	1.7	1.2	1.8	1.6	1.67	1.00 to 2.78	0.051
Directive questions	4.2	3.8	6.4	6.0	5.0	3.3	4.7	2.2	1.55	1.09 to 2.20	0.014
Leading questions[b]	0.1	0.3	0.1	0.4	0.3	0.6	0.1	0.3	5.37	0.99 to 29.22	0.052
Checking questions[b]	2.4	3.8	2.8	2.8	2.6	2.1	1.7	1.8	2.00	1.16 to 3.45	0.013
Other types of questions	10.4	10.1	14.9	11.2	13.8	10.7	9.9	8.3	1.84	1.32 to 2.55	<.001
Total	18.7	17.3	26.7	19.4	23.7	15.1	18.6	11.8	1.69	1.31 to 2.19	<.001
Support											
Acknowledgment	22.7	17.8	23.1	14.2	20.7	11.3	23.0	13.5	0.87	0.68 to 1.11	0.252
Empathy[b]	0.1	0.4	0.3	0.8	0.3	0.8	0.1	0.4	4.05	1.09 to 15.11	0.037
Reassurance[b]	1.4	1.3	1.0	1.1	2.0	2.3	1.7	1.7	0.76	0.45 to 1.28	0.305
Total	24.2	18.2	24.4	14.5	22.9	12.6	24.8	14.3	0.88	0.70 to 1.11	0.278
Information											
Procedural information	9.1	5.4	8.9	5.5	11.1	6.5	10.1	5.8	1.01	0.84 to 1.22	0.879
Negotiation[b]	1.5	2.5	2.1	2.8	2.1	4.4	1.4	1.7	2.34	1.14 to 4.83	0.021
Other types of information	40.9	40.4	38.9	34.1	49.3	36.3	43.7	37.4	0.98	0.67 to 1.43	0.910
Total	51.5	45.1	49.8	39.1	62.6	42.4	52.2	41.4	1.01	0.74 to 1.38	0.954
Contents											
Medical words	72.6	62.5	69.6	64.3	99.3	84.0	90.1	65.7	0.95	0.84 to 1.07	0.376
Emotional words	9.5	7.6	11.7	8.3	11.2	8.5	9.7	4.1	1.32	1.03 to 1.69	0.030
Social words	20.1	17.4	19.8	20.4	26.3	19.4	24.6	16.8	0.94	0.73 to 1.20	0.610

[a] Estimated relative rate based on a generalized linear Poisson regression models controlled for duration of the encounters.
[b] Negative binomial distribution; T1: at baseline; T2: after training for the training group and 4 months after baseline for the waiting list group; SD: standard deviation; RR: relative rate; CI: confidence interval.

Table 3
Effect of the training program on self-efficacy to communicate with the simulated patient about her concerns and distress and self-efficacy to communicate with the simulated patient and with colleagues about team resources ($n = 80$).

	Training group ($n = 51$)						Waiting-list group ($n = 29$)						Mann–Whitney	
	T1		T2		Evolution (T2–T1)		T1		T2		Evolution (T2–T1)		Group effects evolution	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	*z*	*p*
Self-efficacy to communicate														
With the simulated patient about her concerns and distress	3.3	0.8	3.9	0.5	0.5	0.9	3.5	0.7	3.7	0.7	0.1	0.7	−2.26	0.024
With the simulated patient and with colleagues about team resources (needed by/provided to/received by/the simulated patient)	3.3	0.7	4.0	0.5	0.6	0.7	3.5	0.6	3.7	0.7	0.2	0.7	−2.65	0.008

T1: at baseline; T2: after training for the training group and after 4 months for the waiting list group.

With regard to team members' communication skills, it was hypothesized that the training program would lead to an increase in radiotherapy team members' use of assessment, informative and supportive skills. The results of this study confirm this hypothesis. As expected, trained team members showed higher rates of using open directive questions, directive questions, leading questions, checking questions, other types of questions, total assessment, negotiation and empathy after training. Moreover, trained team members also used more emotional words than untrained team members. These improvements indicate that team members are more centered on the simulated patient after training.

With regard to the contents of the team members' turns of speech, it was hypothesized that the training program would lead to an increase in the team members' use of turns of speech with a team-resource-oriented content. The results of this study confirm this hypothesis. Trained team members, as expected, used more turns of speech with a team-resource-oriented content. This improvement demonstrates that the ability to communicate with

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a simulated patient about team resources may be introduced into the repertoire of radiotherapy team members' communication skills by appropriate training. It should be noted that 10 out of the 21 communication skills assessed in this study were improved by the training program.

Regarding the self-efficacy to communicate, it was hypothesized that the training program would improve the radiotherapy team members' self-efficacy to communicate with a simulated patient about her concerns and distress and improve their ability to communicate with a simulated patient and with colleagues about team resources. The results of this study confirm these hypotheses.

Experiential learning using role playing exercises in small groups with constructive feedback given by facilitators contributed to these improvements in team members' communication skills and their self-efficacy to communicate. These role playing exercises were based on communication problems brought up by each team member and allowed the newly learned communication skills to be tested. Moreover, the trainers' feedback was adjusted to each team member's communication skills level to increase the team member's self-efficacy to communicate. The high training attendance (on average 34 h of training of a total of 38 h) in this study may be explained by the team members' high motivation to participate in the training, and it may also be explained by the support of the heads of the radiotherapy departments.

There are numerous strengths of this study. The first strength is that the study applied a randomized controlled design to assess the efficacy of a communication skills training program designed specifically for all team members working in radiotherapy department (secretaries, nurses, physicists and physicians). The second strength is that the communication skills training program included 38-h of training aiming to improve team members' abilities to communicate both with their patients and with colleagues. The third strength is that experienced facilitators were trained together for each training module to ensure that the 4 radiotherapy teams received the same training program. The fourth strength is the use of a standardized encounter with a structured scenario, allowing for high test–retest validity in this study, which assessed team members' communication behaviors with repeated measures. The fifth strength is the use of content analysis software to assess communication skills to avoid interrater variability. The sixth strength is the use of a rater that was blinded to the group allocation and to the time assessment who tagged the turns of speech with team-resource-oriented content.

There are also several weaknesses of this study. First, this study included only four radiotherapy teams with different histories, leaderships and organizational and institutional backgrounds. It should be noted that the team members' participation rate was different between groups and was higher for teams allocated to the training arm of this study. Future studies should include a larger number of teams. Second, this study did not include behavioral measures of the communication between colleagues about the simulated patient. Futures studies should include such measures. Third, this study did not assess the transfer of learned skills to clinical practice. Future study should assess the effect of this training program on communication with actual patients and their satisfaction.

To conclude, the results of this study show the efficacy of a communication skills training program specifically designed for radiotherapy departments. Moreover a cost-benefit analysis is needed, before implementing such an intensive training program on a broader scale.

Conflict of interest

The authors have no financial or personal relationships with other people or organizations that could inappropriately influence their work. The principal investigator had full access to all study data in the study and takes responsibility for the integrity of the data and the accuracy of the analysis.

Role of the funding source

The study sponsors had no role in study design, data collection, data analysis, or data interpretation, or in the preparation, review, or approval of the report.

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Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.radonc.2013.08.019.

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