



## Intervention

## Improving physician–patient communication about cancer pain with a tailored education-coaching intervention

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## ARTICLE INFO

## Article history:

Received 9 July 2009

Received in revised form 16 October 2009

Accepted 26 October 2009

## Keywords:

Physician–patient communication

Cancer

Pain

Patient participation

## ABSTRACT

**Objective:** This study examined the effect of a theoretically grounded, tailored education-coaching intervention to help patients more effectively discuss their pain-related questions, concerns, and preferences with physicians.

**Methods:** Grounded in social-cognitive and communication theory, a tailored education-coaching (TEC) intervention was developed to help patients learn pain management and communication skills. In a RCT, 148 cancer patients agreed to have their consultations audio-recorded and were assigned to the intervention or a control group. The recordings were used to code for patients' questions, acts of assertiveness, and expressed concerns and to rate the quality of physicians' communication.

**Results:** Patients in the TEC group discussed their pain concerns more than did patients in the control group. More active patients also had more baseline pain and interacted with physicians using participatory decision-making. Ratings of physicians' information about pain were higher when patients talked more about their pain concerns.

**Conclusions:** The study demonstrates the efficacy of a theoretically grounded, coaching intervention to help cancer patients talk about pain control.

**Practice implications:** Coaching interventions can be effective resources for helping cancer patients communicate about their pain concerns if they are theoretically grounded, can be integrated within clinical routines, and lead to improve health outcomes.

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## 1. Introduction

An estimated 90% of patients with cancer experience at least moderate pain at some point in their illness, and almost half do not achieve adequate pain control [1]. Uncontrolled pain not only lowers quality of life, but it also can contribute to depression, patient refusal to undertake potentially beneficial therapy, and emotional burden on caregivers [1–4]. Effective pain medications are available, yet they are often underutilized because patients are worried about dependency and side effects [5,6] and because physicians do not understand the extent of the patient's pain [7].

While efforts to address system and provider-level barriers to effective pain control continue, patients and their families represent an opportunity for interventions because they stand to gain the most from effective pain management.

Pain management in cancer care could be improved through better physician–patient communication, particularly with respect to encouraging and facilitating patient involvement in discussing their pain experiences, options for pain relief, and concerns about medication. If patients talk more openly about these issues, physicians might gain a better understanding of how to provide more personalized care focused on the patient's unique pain control needs. Research across other clinical contexts has shown that clinicians give more information, achieve a better understanding of the patient's perspective, are more supportive, and are more accommodating when patients ask questions, express concerns, state their preferences, and make requests [8–15].

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This paper reports the results of an RCT testing the effectiveness of a theoretically grounded, tailored education and coaching intervention designed to help cancer patients communicate more effectively about pain and become more involved in deciding pain management treatment. While previous studies have tested coaching interventions to improve cancer pain self-management [15–19], none have examined whether these programs improved patients' ability to communicate with doctors about pain control.

In other clinical contexts, 'patient activation' interventions have produced mixed results in part because few have been designed to explicitly target processes underlying communication skill development and performance [20]. The intervention reported in this study was grounded in key tenets of social-cognitive theory [21] and models of communication competence [22,23]. Social-cognitive theory posits that behavioral performance is largely a function of an individual's confidence (self-efficacy) to perform a specific behavior and expectations that the behavior will produce desired results [24]. In the context of making decisions about pain control, two aspects of self-efficacy are important, confidence in effectively talking to clinicians about pain and confidence in one's ability to achieve control over pain. While one takes place within the consultation and the other in everyday living, the two are connected in that effective communication about pain management can be a pathway for better decisions about pain control and greater confidence in self-managing pain [25].

From a communication competence perspective, one's success as a communicator requires both capacity (repertoire of communication-related knowledge and skills) and adaptability (ability to coordinate one's turn-taking and topic development with that of the other interactant) [26]. In particular, interventions should address three requirements for effective 'performance' as a communicator—motivation, knowledge, and action [22,23]. While patients in pain presumably want effective pain control, they may need additional encouragement to be more proactive (and less reluctant) to talk to doctors about their needs [19]. With respect to knowledge, patients need some understanding of pain management options as well as techniques for how to talk to doctors about pain. In other words, it is difficult to actively communicate on a topic if one lacks pertinent content knowledge or communication skills. With respect to action, the link between cognition (knowing what to do) and behavior (doing) is facilitated primarily through practice and vicarious learning. Not surprisingly, patient activation interventions that employ modeling and rehearsal as pedagogical strategies also tend to be the most effective [27].

While a variety of formats have been used to deliver patient activation interventions (e.g., workbooks and printed material [28–30], interactive computer programs [31,32], video [33,34], and face-to-face or telephone coaching [35,36]), we selected a coaching intervention using lay health educators for two reasons. First, to provide patients an opportunity to practice specific communication skills in a 'live' interaction, the use of a coach seemed most appropriate, especially if this was someone who could also provide encouragement and immediate feedback. Second, some research indicates that coaching interventions are more effective with older patients [37–39], a demographic group that makes up a sizeable proportion of patients with advanced cancer.

Finally, we examined whether the intervention was effective taking into account other factors that influence how patients communicate with physicians. In several studies, patients who were older, less educated, sicker, and minority status asked fewer questions, were more passive, and were less involved in decision-making than were younger, more educated, healthier, and Caucasian patients [13,32,40–42]. Patient participation is also affected by the clinician's communication style. Patients generally become more involved in the consultation, including decision-making, when physicians use more facilitative, supportive, and

partnering communication [32,41,43–45]. Thus, for a patient communication intervention to have value, it must achieve the desired effect over and above other factors that influence patient participation in consultations.

## 2. Methods

The study reported here is part of a larger study that examined the relationship between tailored education and coaching for managing cancer pain and subsequent pain control as mediated by pain management and communication self-efficacy. Complete details of the conceptual model, study design, and research measures are presented elsewhere [46]. The present study examined the effect of the intervention on a subset of the research participants who allowed their consultations to be audio-recorded for further analysis.

### 2.1. Study design

The study was a randomized controlled trial comparing a tailored education and coaching intervention (TEC) to educationally enhanced usual care (EUC). We used EUC rather than usual care as the comparison group in order to control for the potential effects of education about managing pain on patient participation in the encounter. In other words, both TEC and EUC received education on pain management, but the TEC group additionally received communication skills coaching.

### 2.2. Research participants

Cancer care physicians were recruited from three health systems (UC Davis Cancer Center, Kaiser-Permanente Sacramento, the VA Northern California Health System) and one private practice. Medical, radiation, and gynecological oncologists (including both staff physicians and clinical fellows) were eligible if they saw patients at one of the participating sites and were in clinical practice at least 20% time. Participation was without compensation, but physicians were promised early access to the data, a breakdown comparing results of their own care to the aggregate results, and Continuing Medical Education credit in pain management.

Patients were recruited if they were (a) scheduled to see a participating physician, (b) were English-speaking and between the age of 18 and 80, (c) had a diagnosis of locally advanced or disseminated lung, breast, prostate, head and neck, esophageal, colorectal, kidney, bladder cancer or melanoma skin cancer, and (d) had a recent worst pain (past two weeks) score of 4 or higher (on a scale of 0–10) or pain in past two weeks that interfered with normal daily activities at least moderately. Patients were excluded if they (a) had a major surgical procedure scheduled within six weeks, (b) were enrolled in hospice, (c) followed by a pain management service, (d) had difficulty communicating with the research assistant, and (e) were unable to receive and/or complete mailed enrollment materials.

### 2.3. Procedure

Personalized letters were prepared notifying patients of the aims of the study and requesting assent to contact them by phone. Patients agreeing to be contacted were first interviewed by phone to collect baseline information on pain, other cancer symptoms, psychological distress, health related quality of life, adherence, and self-efficacy. By collecting the majority of baseline data by telephone prior to the index visit, we limited respondent burden at the time of the visit itself. Patient participants were promised a total of \$80 compensation: \$50 for completing the intervention and \$30 after completing follow-up telephone surveys.

Patients were asked to arrive 1 h prior to their scheduled appointment time. Upon arrival to the clinic waiting area, participants were greeted by a trained Health Educator and completed informed consent forms. Patients were then randomly assigned to either tailored education-coaching or educationally enhanced usual care (defined below) using a blocked-randomization scheme to assure balanced assignment within physicians. For quality control and training purposes, all interventions were audio-recorded. Following the intervention (which lasted 20–40 min), patients attended their scheduled oncology visit which also was audio-recorded for the patients and physicians who consented to be recorded.

## 2.4. The Intervention

### 2.4.1. The tailored education-coaching (TEC)

The TEC intervention assessed each patient's learning needs, goals, and values to develop a set of individualized messages and skill-building exercises designed to increase self-efficacy, enhance patient–physician communication, and improve care of cancer-related pain [46]. Paid Health Educators in this project were intensively trained over approximately 80 h to elicit patients' values, deliver plain-spoken messages, and to be sensitive to cultural differences that may influence how different patients respond to their illness and to the intervention.

Components of the TEC intervention included (a) providing patients with a copy of NCI's booklet, *Pain Control: A Guide for Patients with Cancer and Their Families*; (b) assessing current knowledge, attitudes, and preferences regarding pain management; (c) correcting misconceptions about cancer pain control; (d) teaching relevant concepts related to pain control (e.g., pain can be harmful to health, pain is easier to prevent than to treat, combinations of medicines and non-pharmacologic approaches are often required for optimal relief) and active communication (e.g., importance of asking questions, expressing concerns, stating opinions and preferences); (e) planning (identifying goals, matching strategies to goals); and (f) having the patients formulate a list of questions and concerns about pain. The Health Educator engaged the patient in role-playing exercises where the patient rehearsed question-asking, negotiation behaviors, and stating needs and preferences. The Health Educator also provided encouragement and feedback on the patient's communication.

### 2.4.2. Educationally enhanced usual care (EUC)

Patients randomly assigned to the EUC control group were greeted in the same manner as patients assigned to the TEC intervention. The Health Educator also provided these patients with a copy of *Pain Control: A Guide for Patients with Cancer and Their Families*. With EUC patients, the Health Educator verbally reviewed selected points in the booklet, emphasizing common misconceptions and key aspects of pain-related knowledge. The main difference between TEC and the EUC interventions is that, although both groups addressed misconceptions and facilitated learning in the pain management domain, the EUC did not teach in the communication domain or rehearse the patient's communication skills.

## 2.5. Baseline measures

Baseline measures were assessed at the baseline interview and included an assessment of average pain during the previous two weeks as well as the patient's self-reported age, education, gender, and ethnicity. Patients reported their average pain over the past two weeks with a single numerical analog scale, with 0 representing no pain and 10 representing the worst pain imaginable.

## 2.6. Communication measures

Two sets of communication measures were used, coding of active patient participation behaviors and observer ratings of physician's participatory decision-making and informativeness.

Patients' *active participation* was coded using a previously validated coding system [10,13,47,48] that has been used in other cancer settings to identify variability in patient participation [13,32]. The system assesses three types of verbal communication—asking questions, being assertive (offering opinions, stating preferences, making a request), and expressing concerns (worries, fears, negative feelings). These behaviors are considered 'active' because they can influence a clinician's behavior, perceptions of the patient, and treatment decisions [47,49]. Coders created two sets of active participation scores. *Total active participation* consisted of the frequency of questions, acts of assertiveness, and concerns regardless of topic. *Pain-specific active participation* consisted of a subset of the total participation that focused on pain-related issues. These included specific references to the experience of pain (e.g., 'pain,' 'hurting,' 'burning') or to pain therapy (e.g., pain medications, managing side effects of medications, relaxation to relieve pain, etc.).

Two trained coders, undergraduate majors in communication who were blinded to patients' assignments to groups, listened to the recordings and, when a speech act of interest occurred (e.g., patient asked a question, expressed a concern, offered an opinion), transcribed the conversational turns before, including, and after the speech act of interest. Using the utterance as the unit of analysis (i.e., the oral analogue of a simple sentence which may be in the form of a complete sentence, independent clause, or multiple predicate), coders followed the partial transcript while listening to that portion of the recording again and then placed targeted behavior(s) into appropriate verbal categories. Reliability was established by having both coders code a subset of 15 consultations independently of one another. Intraclass correlations (ICC) were sufficient for the total active participation measure (ICC = .74) as well as the pain-specific measure of active participation (ICC = .71). The remaining consultations were divided between the two coders who coded them independently.

The two coders also rated the physician's communication with the patient. The physician's *participatory decision-making* (a measure of physician effort to involve patient's in the consultation and in decision-making) was assessed using an adaptation of Kaplan's [50] 3 items participatory decision-making scale: to what extent did the doctor involve the patient in the consultation, to what extent did the doctor give the patient a sense of control over medical care, and to what extent did the doctor ask the patient to take some responsibility for medical care. Coders scored the items on a 10 point scale (1 = not at all, 10 = a great deal). In previous studies, this scale has predicted patient involvement in decision-making, disparities in health care, patient satisfaction, and adherence to treatment [51–53].

Coders assessed the physicians' *overall informativeness* on 5 point Likert scales using 4 items from a previously validated measure [47,54,55]: the doctor did not fully discuss with the patient what was causing the patient's problem (R), the doctor explained everything to the patient, the doctor was very informative about the patient health, the doctor's explanations and recommendations were clear and easy to understand. Coders also rated physicians' *pain-specific informativeness* with 3 items: the doctor thoroughly explained everything about pain to the patient, the doctor was very informative about the patient's pain and ways to control pain, the doctor's explanations about pain and ways to manage pain were clear and easy to understand. Each coder independently listened to each interaction and then rated the physician's communication on the three scales. Reliability (ICC)

between the coders' ratings was .80, .84, and .77, respectively, for the physician's participatory decision-making, overall informativeness, and pain-specific informativeness. Their scores on each measure were averaged to create one score per measure per interaction.

### 2.7. Data analysis

Our analysis included several steps. First, bivariate analyses were used to determine whether the patients' total active patient participation and pain-specific active participation differed between the TEC and the EUC groups. Second, multilevel multivariate regression models were used to identify predictors of the two active patient participation measures and the quality of the physicians' information-giving. Predictors of active patient participation included the experimental group (TEC vs. control) as well as the patient's baseline pain, age, education, gender, ethnicity, whether a companion accompanied the patient, and ratings of the physician's use of participatory decision-making. Finally, to examine whether patient participation was related to the quality of physicians' information-giving, the same predictors of patient participation were used in addition to the patient's total active participation (for the overall informativeness measure) and pain-specific active communication (for the pain-specific informativeness measure). All regression analyses used a varying intercepts model specification to account for the nesting of patients within physicians.

## 3. Results

A total of 265 patients received either the TEC or EUC, which represented 86% of the patients randomized in the study (see Kravitz et al. [46] for detailed information on patient recruitment). Of these, 148 (56%) additionally consented to have their consultations audio-recorded. Baseline and demographic measures did not differ between patients allowing audio-recording compared to those who declined. Table 1 shows baseline characteristics of patients assigned to the intervention and control groups. The only significant difference was that patients assigned to the TEC group tended to be older. Twenty-four physicians agreed to participate across the three sites (16 at UC Davis, 2 at the VA, and 6 at Kaiser Permanente). They were mostly male (71%) and ethnically diverse (50% non-white).

### 3.1. Bivariate analyses

Patients in the two experimental groups did not differ in their total active participation (means = 14.77 and 14.75 utterances for the TEC and control groups, respectively). However, patients in the TEC intervention did display more pain-specific active participation (mean = 6.21 utterances) than did the control group (mean = 4.63) ( $p = .008$ ). Observer ratings of physicians' overall informativeness were higher when patients were more active participants overall ( $r = .16$ ,  $p = .05$ ) but not when talking more

**Table 1**  
Characteristics of patients.

	TEC (n = 77)	Control (n = 71)	P-value
Mean age	59.8	56.6	.03
Female (%)	78%	84%	ns
Ethnicity			ns
African American (%)	8%	6%	
Caucasian (%)	67%	75%	
Hispanic (%)	20%	10%	
Asian (%)	5%	9%	
Education			ns
High school or less (%)	35%	26%	
Some college/tech school (%)	28%	28%	
College degree (%)	27%	32%	
Postgraduate (%)	10%	14%	
Baseline Pain (range 1–10)	5.82	5.59	ns

about pain ( $r = .09$ , ns). However, physicians were rated more informative about pain the more patients actively participated overall and about pain in particular ( $r = .33$ ,  $p < .001$  and  $r = .52$ ,  $p < .001$ , respectively). Ratings of physicians' information about pain did not differ between the TEC and the control group (means = 10.81 and 9.85,  $p = .12$ ).

### 3.2. Multivariate analyses

In the multivariate analysis, patients in the TEC and EUC control groups did not differ in their total active participation (see Table 2). Rather, more active patients were younger, reported more pain at baseline, and interacted with doctors who encouraged participatory decision-making. However, patients in the TEC group did communicate more about pain-related issues compared to those in the control group, even when taking account other factors that influenced patient participation. The adjusted mean difference between the two groups was 1.51 utterances indicating that the TEC group had 31% more questions, acts of assertiveness, and expressed concerns about pain than did the control group. In addition, patients who more actively discussed pain concerns had higher baseline pain and interacted with physicians using more participatory decision-making (Table 2).

The only significant predictor of the physicians' overall informativeness was whether the patient was accompanied by a companion, although there was a trend ( $p = .08$ ) for physicians to be rated more informative with patients in the TEC group (Table 3). However, physicians were rated more informative about pain when patients more actively communicated about pain ( $p < .001$ ) and were younger ( $p < .02$ ).

## 4. Discussion and conclusion

This study examined the effectiveness of a theoretically grounded, tailored education and coaching intervention (TEC) designed not only to provide pain management education, but also

**Table 2**  
Predictors of active patient participation.

Predictor	Total patient participation (n = 148)		Pain-specific participation (n = 148)	
	Estimate (SE)	p	Estimate (SE)	p
Patient race = Caucasian (ref = non-Caucasian)	0.88 (1.43)	.54	-0.27 (0.61)	.65
Patient's age	-0.20 (0.08)	.01	-0.03 (0.03)	.29
Patient's education = HS or less (ref = some college plus)	-1.59 (1.48)	.29	0.38 (0.64)	.56
Patient gender = female (ref = male)	0.71 (1.75)	.69	0.66 (0.76)	.39
Patient baseline pain	1.01 (0.36)	.005	0.48 (0.15)	.002
Physician participatory decision-making	0.26 (0.09)	.006	0.13 (0.040)	.001
Accompanied = yes (ref = no)	0.15 (1.60)	.93	0.36 (0.69)	.60
Education session = TEC (ref = control)	0.54 (1.32)	.68	1.51 (0.57)	0.009

**Table 3**  
Predictors of observer ratings of physicians' informativeness.

Predictor	Overall informativeness (n = 148)		Pain-specific informativeness (n = 148)	
	Estimate (SE)	p	Estimate (SE)	p
Patient race = Caucasian (ref = non-Caucasian)	−0.62 (0.67)	.36	−0.39 (0.58)	.50
Patient's age	−0.06 (0.04)	.13	−0.08 (0.03)	.015
Patient's education = HS or less (ref = some college plus)	0.22 (0.69)	.75	−0.48 (0.61)	.42
Patient gender = female (ref = male)	0.98 (0.81)	.23	−0.39 (0.72)	.59
Patient baseline pain	−0.07 (0.17)	.70	0.24 (0.15)	.11
Active patient participation (overall)	0.06 (0.04)	.13	–	–
Active patient participation (pain-specific)	–	–	0.49 (0.08)	.000
Accompanied = yes (ref = no)	1.48 (0.74)	.049	0.63 (0.65)	.34
Education session = TEC (ref = control)	1.08 (0.62)	.081	0.46 (0.56)	.41

to help patients more effectively talk to their doctors about pain control. In a RCT, we evaluated the intervention taking into account other factors known to influence patient participation (patient characteristics, physicians' communication style). Several findings were noteworthy and have important implications for improving the quality of physician–patient communication about cancer pain management.

First, our results demonstrated that social cognitive and communication competence theories provide a strong conceptual foundation for creating effective patient communication interventions. While patients' overall participation did not differ between the two groups, the TEC intervention did induce patients to ask more questions, be more assertive, and express more pain-related concerns than did EUC ( $p = .009$ ). Although health information (which both groups received regarding pain control) can facilitate patient involvement in cancer care [32,56], this study demonstrates the efficacy of further enhancing patient participation by implementing theoretically grounded interventions to help patients communicate effectively and be more involved in treatment decision-making. While the intervention had a stronger effect on patient communication about pain than on their overall participation, this is likely due to its exclusive focus on pain control. The intervention also indirectly contributed to better communication from physicians given that observer ratings of the doctors' information about pain were higher the more patients discussed their pain-related concerns.

While the efficacy of the TEC intervention was supported, there remains the question of whether these types of interventions are feasible and can be translated into everyday clinical practice. While some argue that coaching interventions are more costly, both in time and money [57–59], a number of studies show that the use of clinical staff or volunteers can be cost effective, especially if the educational sessions fit within the clinic work flow [57,60,61], help clarify patients' values and preferences [62], and if the result is more patient-centered communication, which has been linked to a reduction in unnecessary procedures [63,64]. More research is needed to identify the costs effectiveness of different methods for increasing patient participation in medical encounters [38].

Second, the results of the study also highlight the fact that communication in medical encounters is influenced by a host of factors that operate independently of patient activation and education interventions. Although we observed no differences in patient participation as a function of patient race and education, younger patients were more active communicators overall than were their older counterparts. Because there were no age effects related to communication about pain, even though patients in the TEC group were generally older than patients in the control group (see Table 1), the intervention may have attenuated the disparity by helping older patients more actively discuss their pain concerns with physicians. Also, patients reporting more pain at baseline were more active communicators overall and with respect to pain. Baseline pain likely is a motivating factor increasing patient

participation, yet patients' communication on pain-related issues was further enhanced by the intervention. Lastly, consistent with other studies [32,41,43–45], patients were more active participants, both overall and in discussing pain concerns, when their physicians facilitated patient participation in the consultation. This is an important reminder that the clinician's behavior will have a strong effect on patient involvement in ways that can support or interfere with the goals of patient communication interventions.

The study had several limitations. First, we analyzed the effect of the intervention on patient communication and not on whether the communication predicted better pain control and other health outcomes. We are currently collecting these data which will be reported separately after long term follow-up data collection is complete. Second, generalizability may be limited given that patients were selected from doctors who volunteered for the study and not all doctors and patients agreed to have their consultations audio-recorded. Third, the patient sample size was modest ( $n = 148$ ), which may have limited the power of our analysis. Finally, although we controlled for effects associated with individual physicians, our sample of physicians was too small ( $n = 24$ ) to explore the influence of physician gender or ethnicity.

Limitations notwithstanding, this study was a randomized controlled trial of the effectiveness of a communication skills intervention that was strongly grounded in theoretical process affecting communication performance. Using validated measures and taking into account multiple factors that influence patient participation in consultations, the intervention helped patients to more actively communicate about their pain-related concerns and preferences, behaviors which in turn were associated with higher ratings of the physicians' informativeness about pain management.

### Acknowledgements

This study was funded by a Research Scholars Grant in Cancer Control from the American Cancer Society (Dr. Kravitz). Dr. Kravitz was also supported during the project period by a Mid-Career Research and Mentoring Award (MH72756) from the National Institute of Mental Health. Dr. Street was also supported by the Houston Health Services Research and Development Center of Excellence (HFP90-020) at the Michael E. DeBakey VA Medical Center.

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