A pathway linking patient participation in cancer consultations to pain control

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Abstract

Objective: To test a pathway through which a tailored, pain management education–coaching intervention could contribute to better cancer pain control through the effects of patients' communication about pain on physician prescribing of pain medication.

Methods: Secondary analysis of data from a randomized controlled trial that tested the effects of a tailored education–coaching intervention on pain control for patients with advanced cancer. The current analysis focused on a subset of the patients ($n = 135$) who agreed to have their consultations audio-recorded. Patients' active communication about pain (e.g., expressing questions, concerns, and preferences about pain-related issues) was coded from audio-recordings. Change in pain medication was measured by patient self-report. Improvement in pain control was scored as the difference between baseline pain score and pain reported at 6 weeks.

Results: Patients' pain-related communication was a significant predictor of patient-reported changes in physician prescribing of pain medication ($p < .0001$) and mediated the effect of baseline pain on medication change. Other predictors of change in pain medication were age (younger) and having participated in the intervention (as opposed to usual care). Of the patients reporting adjustment in pain medications, 49% experienced better pain control compared with only 27% of patients reporting no change in pain management ($p < .02$).

Conclusions: Cancer patients who ask questions, express concerns, and state preferences about pain-related matters can prompt physicians to change their pain management regimen, which in turn may lead to better pain control. Future research should model pathways through which clinician–patient communication can lead to better cancer outcomes. Copyright © 2014 John Wiley & Sons, Ltd.

Introduction

An important principle of the 2001 Institute of Medicine report on *Crossing the Quality Chasm* [1] is that medical care should be 'patient-centered'. In cancer care, effective communication among clinicians, patients, and their families is the key to achieving the goals of patient-centered care such as understanding the psychosocial context of the patient's health concerns and needs, achieving a shared understanding of the problem, reaching agreement on the best course of action, and making decisions based on the clinical evidence and consistent with patients' values [2–4]. Although patient-centered communication should be considered as an indicator of quality care in and of itself [5], more research is needed to identify ways in which good communicative practices also contribute to better health outcomes in cancer care.

The purpose of this investigation is to explore a pathway whereby an intervention helps cancer patients suffering from poorly controlled pain achieve better pain control by activating them to communicate more about their pain-related concerns. This is an important endeavor in several respects. First, effective pain management is difficult in cancer care. Although pain can be effectively managed through medications, many patients are reluctant to use them because of concerns about dependency and side effects or because of beliefs that pain is a natural consequence of having cancer and cancer treatment [6,7]. Such reluctance can be self-defeating, as poorly controlled pain contributes to depression, lower quality of life, underutilization of appropriate medical services, and caregiver burden [8–11].

Second, much research on patient-centered communication in cancer care has focused on clinicians and paid

much less attention to the patient's role in the encounter. For example, numerous studies have focused on clinicians' challenges and strategies when breaking bad news [12–15], delivering diagnostic and prognostic information [16,17], recognizing and responding to patient's emotions [18,19], discussing risks and benefits associated with screening and treatment decisions [20,21], and facilitating shared decision-making [22,23]. However, to achieve patient-centered care, patients also have responsibilities to be actively engaged [4]. Because physicians are often not aware of the extent of the patient's pain [24], patients need to openly talk about pain-related complaints and complications by asking questions, expressing concerns, stating preferences, and sharing their opinions about treatment options. Yet, many patients are reluctant to report pain [6], and the failure to do so may inadvertently contribute to lower quality of care [25,26].

Third, although patient-centered communication may contribute to improved health outcomes, the evidence is mixed. Systematic reviews of research on physician–patient communication and health outcomes have yet to adequately explain how communication matters and under what circumstances [27–30], in large part because most investigations report correlational evidence only, yield inconsistent findings, or fail to model pathways through which communication in clinical encounters could contribute to better health outcomes [31]. In addition, studies that have tested interventions designed to improve clinician and/or patient communication generally report positive effects of the intervention on targeted communication behaviors [32], but mixed and null results on whether the communicative skills acquired actually led to better health outcomes [29].

In this paper, we present results of an investigation that complements earlier work and fills in the gaps of a pathway through which an intervention designed to improve cancer patients' understanding and communication about pain could lead to better pain control (Figure 1). In a previous study, cancer patients randomly assigned to a pre-consultation tailored education–communication skill

Figure 1. Pathway from patient coaching intervention and baseline pain to improved pain control

coaching intervention (TEC) experienced greater temporary (but not sustained) improvement in pain-related impairment but not severity compared with patients in an enhanced usual care (EUC) group that received pain management educational materials only [33]. However, secondary analysis [34] of that data revealed that a patient self-report measure of change in pain medication was a better predictor of sustained pain improvement (path C in Figure 1) [34]. In that study, patients more likely to report a change in pain medication participated in the TEC intervention and reported higher baseline pain. What was not examined in those studies was whether the patients' communication with the doctor played a role in linking the tailored education–coaching intervention to changes in pain management.

Fortunately, a majority of patients (56%) in the randomized controlled trial (RCT) agreed to have their consultations audio-recorded, thus providing the opportunity to explore the role of communication linking intervention to outcome. In an earlier analysis of this subsample, patients who more actively communicated about pain-related issues (i.e., asking questions, expressing concerns, and making requests) had either participated in the TEC intervention (path A_1 in Figure 1) or were experiencing more baseline pain (path A_2) [35]. In the current study, we tested two hypotheses: (a) patients who more actively talk about pain-related issues will more likely prompt physicians to adjust pain management regimens (path B in Figure 1) and (b) patients' communication about pain would mediate the relationship that connects changes in pain medication to both the tailored education–coaching intervention and baseline pain.

Methods

Overview

Although complete methodological details are published elsewhere [36], we summarize the key elements of the original RCT that are pertinent to this analysis.

Research participants

Medical, radiation, and gynecological oncologists (including staff physicians and clinical fellows) were recruited from three health systems in California (UC Davis Cancer Center, Kaiser-Permanente Sacramento, and the VA Northern California Health System) and one private practice. In the present analysis, a total of 24 physicians (16 male, 8 female) agreed to participate across the four sites. Inclusion criteria for patients included (a) English-speaking and between the age of 18–80 years, (b) have a diagnosis of advanced or disseminated cancer, and (c) report a worst pain (the past 2 weeks) score of 4 or higher (on a scale of 0 to 10) or pain in the past 2 weeks that interfered with normal daily activities. Exclusion criteria
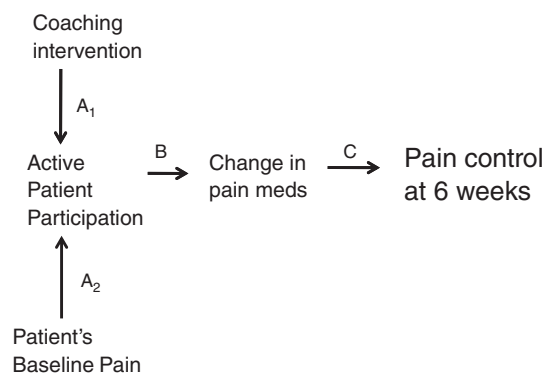
included (a) having a major surgical procedure scheduled within 6 weeks, (b) enrolled in hospice, or (c) followed by a pain management service. The study was approved by the UC Davis IRB.

Procedure

Patients were notified by mail about the aims of the study. Patients willing to participate were interviewed by phone to collect baseline information on pain, demographics, and other measures pertinent to the primary investigation. Participants were offered $80 in compensation: $50 for completing the intervention and $30 after completing follow-up telephone surveys. After arriving to the waiting area of the clinic, participants completed informed consent forms.

Patients were then randomly assigned to either the TEC or the educationally EUC condition (for complete details on each condition, see Kravitz et al.[36]). Patients in the TEC group received educational materials on pain management, and tailored education and communication skills coaching from a trained health educator. The tailored education included an assessment of knowledge and preferences for pain management, instruction on relevant concepts for pain control, and correcting any pain-related misconceptions. The communication skills coaching included advice on how to prepare for the visit, suggestions for writing down questions and concerns to bring up during the consultation, and role-play exercises on talking to their doctor about these issues.

Patients randomly assigned to the EUC control group received the same educational materials given to those in the TEC group, and the health educator also reviewed important pain management issues presented in those materials. The EUC condition did not have a communication skills component. The pre-consultation intervention lasted 20–40 min, following which patients attended their oncology visit that was audio-recorded for the patients who consented to be recorded. At 6 weeks following the visit, patients were contacted by phone to complete post-visit measures.

Baseline and outcome pain measures

To improve measurement reliability, pain severity was assessed as the mean of average and worst pain, with 0 on each of the two component scales representing no pain and 10 representing the average/worst pain imaginable. Cronbach's alpha values for the pain severity scale ranged from .81 to .93. Baseline pain severity was assessed at the initial interview. Patients completed the same measure 6 weeks following the visit. The outcome measure in this study was a pain improvement score that was created by subtracting the 6 weeks post-visit pain severity score from the previsit pain score. Differences equal to or greater than 1 were categorized as improved pain

outcome, and differences <1 were categorized as no improvement in pain severity.

Change in pain medication

Change in pain medication was measured post-visit with a single item. 'During the visit you just completed, did the physician recommend any change in your pain medicines?' ('Yes, new medicine'; 'Yes, change in dose or amount of a medicine I was already taking'; 'No'). Either 'yes' response was scored as a change in pain medication, and the 'no' was scored as no change.

Patients' active communication about pain

Patients' active communication was coded using the previously validated Active Patient Participation Coding System [37–40], a content analytic framework that has been used to identify variability in patient participation in a variety of clinical contexts, including cancer settings [23,37,41–43]. The measure focuses on three types of patients' verbal communication—asking questions, being assertive (stating preferences, making a request, offering opinions, and introducing new topic to discuss), and expressing concerns (worries, concerns, fears, and negative feelings). These forms of communication are considered 'active' because they can influence the physician's behavior, perceptions of the patient, treatment decisions, and what topics are discussed during the consultation [38,39,44–46].

When using this coding system, a coder will listen to an audio recording of the consultation to identify specific acts of active patient communication. When identified, the coder will pause the recording and transcribe that portion of the conversation in which the speech act(s) of interest occurred and then divide that segment of the conversation into utterances, the oral analogue of a sentence [44]. For example, if a patient says, 'Is there anything you can do for my pain? It's really bothering me a lot', then that would be coded as two utterances, one a question and the other an expression of concern. After coding the entire interaction, the coder computes the frequency of active patient communication utterances for that consultation. Although all active participation utterances were coded, for the analyses of interest in this study, we created an index of *pain-specific active communication* because we expected changes in pain medication to be more closely linked to patients' communication about pain management issues. The pain-specific communication measure included references to the experience of pain (e.g., 'pain,' 'hurting', and 'burning') or to pain therapy (e.g., pain medications, options for pain control, and side effects of pain medications).

Two undergraduate communication majors, who have participated in 12 h of training on the coding method, listened to the audio recordings. In addition to the training,

reliability was established by having both coders code a subset of 15 consultations independently of one another. Intraclass correlations (ICCs) were acceptable for both the overall active participation measures and pain-specific measure (ICCs = .74 and .71, respectively). The remaining consultations were divided between the two coders who coded them independently. Pain-specific communication comprised 36% of the overall active communication behaviors.

Data analysis

Two multilevel multivariate logit regression analyses were conducted to test the hypotheses that active patient communication about pain would more likely lead to pain medication change and that this effect would mediate relationships between the tailored education–coaching intervention and baseline pain on change in pain medication. The first model included the coaching–education intervention (vs. usual care) and baseline pain controlling for other covariates including patient age, sex, and race (White vs. non-White), education, clinical facility, whether a companion accompanied the patient, type of cancer, and disease stage. A second model added the pain communication variable into the list of predictors included in the first model. To assess the mediation hypothesis, we estimated and tested for statistical significance the difference in logistic regression coefficients for each predictor in the models with and without adjustment for patient's active communication about pain [47]. All analyses controlled for the nesting of patients within physicians.

Results

Of 265 patients who initially enrolled in the study, 148 (56%) consented to have their consultations audio-recorded. Of the 148, 13 did not complete the 6-week follow-up pain assessment, leaving a final sample of 135 patients for analysis. Table 1 provides baseline and demographic information about the participants. The sample was mostly White and female, diverse with respect to educational attainment, and ranged in age from 32 to

Table 1. Characteristics of patients (*N* = 135)

Mean age in years (range)	58.5 (32–80)
Female (%)	82
Ethnicity	
Hispanic (%)	7
Caucasian (%)	70
African-American (%)	16
Asian/Other (%)	7
Education	
High school or less (%)	32
Some college/tech school (%)	27
College degree plus (%)	41
Accompanied to visit (%)	22
Baseline pain (range 1–10)	6.60

80 years. Patients' pain levels ranged from moderate to severe. The sample that allowed for audio-recording did not differ from the larger sample in terms of their demographic and baseline characteristics.

Just over half of the sample in this study (54%) reported a change in pain medication, and 38% had better pain control 6 weeks following the consultation. With one exception, pain improvement and change in pain medication were not related to patients' demographics characteristics. Older patients were less likely to report a change in pain medication ($r = -.17$, $p < .05$).

Bivariate analyses

The patient's pain-specific active communication was significantly correlated with change in pain medication ($r = .49$, $p < .0001$) but only marginally with improvement in pain at 6 weeks ($r = .15$, $p = .08$). However, change in pain medication was moderately associated with pain control ($r = .22$, $p < .02$), as almost half (49%) of those who reported a change in pain medication also had better pain control at 6 weeks compared with only 27% in the group that reported no change in medication.

Multivariate analysis

Table 2 presents the results of the multivariate analyses. As shown in model 1, change in pain medication was significantly predicted by having participated in the coaching–education intervention, higher baseline pain, and younger age. In model 2, which additionally included the communication variable, patients were more likely to get a change in pain management if they communicated more actively about pain-related issues (Table 2). Change in pain medication remained associated with having participated in the tailored education and coaching intervention as did younger age. In the adjusted model, baseline pain was no longer a significant predictor of pain improvement. Thus, patient communication about pain was a statistically significant mediator of the effect of baseline pain on change in pain regiment but was not a statistically significant mediator of the coaching–education intervention.

Discussion

The investigation tested a pathway through which improved cancer pain outcomes could be linked to a patient activation–educational intervention designed to help patients more effectively talk to their physicians about their pain-related concerns. We supported the hypothesis that cancer patients with poorly controlled pain could prompt changes in their pain medication by more actively communicating their questions, concerns, needs, and preferences. Moreover, proportionally more of the patients who reported a change in pain medication achieved better pain control (49%) compared with patients who reported

Table 2. Predictors of change in pain medication

| | Predictors of pain medication adjustment | | | | | |
| | Model 1 (N = 135) | | Model 2 (N = 135) | | Mediated effect | |
Predictor	Estimate (SE)	p	Estimate (SE)	p	Estimate (SE)	p
TEC coaching intervention (ref = control)	1.57 (0.44)	.00005	1.40 (0.48)	.004	0.17 (0.19)	ns
Patient's age	−0.07 (0.02)	.007	−0.07 (0.03)	.009	0.01 (0.01)	ns
Baseline pain	0.24 (1.02)	.02	0.07 (0.11)	ns	0.17 (0.06)	.001
Patient's pain-specific active communication	–	–	0.34 (0.08)	<.0001	–	–

Estimates are logistic regression coefficients fit using generalized estimating equations to control for clustering effects of 135 patients nested within 24 physician providers. Other variables that were included in the models but were not statistically significant included patient's education, ethnicity, gender, marital status, type of cancer, cancer stage, and the study site. Mediated effects describe the change in logistic regression coefficients resulting from adding pain-specific active communication to the model, an estimate of the indirect effect of the covariate on the outcome that operates through pain-specific active communication. Mediated effects were estimated and tested using methods for generalized linear models.

no change in pain medication (27%). However, our findings did not support the proposition that the patient's active communication about pain would mediate the relationship between a tailored education–coaching intervention and pain medication adjustment, but it did mediate the relationship between the patient's baseline pain and change in pain medication. The study has important implications for future research and clinical practice.

Our findings indicate that patients can prompt physicians to make adjustments in treatment regimens by more actively communicating their concerns, questions, and preferences. Although some have questioned the desirability of physicians accommodating patient requests under some circumstances (e.g., name brand drugs and antibiotics[48]), we contend that cancer patients who actively participate in their consultations are more likely to have their concerns addressed and to receive appropriate cancer care. Physicians cannot read patients' minds and often have poor understanding of the patient's fears, concerns, and beliefs about their conditions and treatment options [49,50]. When patients are more explicit with their questions, what they are worried about, what their preferences are, and what their thoughts are on the risks and benefits of treatment options, physicians gain a better understanding of the patient's needs and views[49,50] that in turn helps them provide more informative, supportive, and patient-centered care [51–53]. This is particularly true in the management of cancer pain where many patients are reluctant to talk about pain [6,7], even though there are effective analgesic regimens.

Cancer pain is complex and influenced by a number of physiological and psychological factors and may be treated through a variety of pharmacological and behavioral means. Simply changing medication does not guarantee pain control because the medications themselves are not always effective and patients may not take them appropriately. However, because patients who reported pain medication changes were more likely to experience pain improvement compared with those reporting no medication change, cancer patients with poorly controlled pain could benefit from openly discussing their pain concerns and possible remedies.

Third, our study can serve as a model for how future research might examine relationships between physician–patient communication (and interventions designed to improve the communication process) and cancer care outcomes. Investigations studying relationships between communication and health outcomes often report inconsistent or null findings. This is because much of the research assumes a direct effect of communication on outcomes when in fact communication may act *indirectly* through pathways involving proximal (e.g., patient understanding and decision satisfaction) or intermediate (e.g., adherence and self-care skills) outcomes directly linked to the consultation itself [31]. Researchers and practitioners may benefit from first identifying the mechanism leading to a desired outcome, such as pain medication adjustment for better pain control, and then work backwards to what needs to happen in the consultation to achieve this, such as eliciting patients' questions and concerns about pain.

This study had several limitations. First, the patient's communication did not mediate the effect of the intervention on change in pain medication. This may be because our communication variable focused on the *quantity* of patients' active communication (i.e., how often they produce pain-related questions, concerns, and beliefs) rather than on the *quality* of this communication (e.g., its clarity or urgency), the latter of which also may have been enhanced by the intervention. Although a number of studies have shown that the patient's communication behavior can influence the physician's behavior in the consultation (e.g., provide more information and accommodate treatment preferences[38,45,53,54]), future research might use perceptual measures of patient communication in addition to behavioral coding (e.g., the Perceived Involvement in Care Scale[39,55]). Second, our sample was mostly women and White, thereby limiting generalizability of our findings. Third, we used self-reports of medication change as opposed to information on medical charts.

However, in the absence of pharmacy records, patient self-reports may be more accurate than physician notes in the record.

Limitations notwithstanding, this study presents an approach for better understanding how communication training can contribute to better health outcomes by affecting how the participants in cancer consultations communicate with one another and make decisions. Moreover, this study attempts to 'open the lid of the black box' such that investigators should not just be satisfied with examining outcomes alone but rather the means by which outcomes are achieved. In this case, one might posit (although would have to be tested) that pain communication interventions that do *not* affect physician prescribing (e.g., analgesic change) are unlikely to be very effective.

Acknowledgements

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