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Effects of Coaching Patients with Lung Cancer to Report Cancer Pain

Diana J. Wilkie, PhD, RN, FAAN [Professor], Harriet H. Werley¹ [Endowed Chair for Nursing Research, and Director, Center for End-of-Life Transition Research], Donna L. Berry, PhD, RN, AOCN, FAAN² [Director], Kevin C. Cain, PhD³ [Research Scientist], Hsiu-Ying Huang, PhD, RN, AOCN⁴ [Research Manager], Julia Mekwa, PhD, RN⁵ [Professor], Frances Marcus Lewis, PhD, RN, FAAN³ [Professor], Betty Gallucci, PhD, RN³ [Professor], Yu-Chuan Lin, PhD, RN⁶ [Assistant Professor], Angela Chia-Chen Chen, PhD, RN, PMHNP-BC⁷ [Assistant Professor], and Nai-Ying Ko, PhD, RN⁸ [Associate Professor]

¹Department of Biobehavioral Health Science, University of Illinois at Chicago, Chicago, IL, USA

²The Phyllis F. Cantor Center for Research in Nursing & Patient Care Services, Dana Farber Cancer Institute, Boston, MA, USA

³School of Nursing, University of Washington, Seattle, WA, USA

⁴Fred Hutchinson Cancer Research Center, Seattle, WA, USA

⁵University of Zululand, South Africa

⁶Tzu Chi University, Hualien, 97004 Taiwan

⁷Arizona State University, Phoenix, AZ, USA

⁸Department of Nursing, College of Medicine, National Cheng Kung University, Tainan City 701, Taiwan

Abstract

We examined effects of sensory self-monitoring and reporting Coaching on pain-related variables in patients with lung cancer. Randomly assigned to Coached or Not-Coached groups, 215 patients had their interactions with their providers audiotaped and completed study measures pre and post intervention. Of the 151 patients who completed the 4-week study, those Coached were more likely than those Not-Coached to give their providers unsolicited sensory pain information and to mention it before their providers asked for it. The mean number of pain parameters discussed during the audiotaped clinic visit was statistically larger at study-end for the Coached group. Scores for analgesic adequacy, all pain indices except one, anxiety, depression, and catastrophizing coping were not significantly different. Although Coaching increased the amount of pain data communicated to providers by patients with lung cancer, the magnitude was small and did not lead to improved adequacy of analgesics prescribed for each patient's pain level.

Keywords

lung cancer; pain; coaching; self-monitoring; self-reporting; patient-centered communications

One important barrier to adequate cancer pain relief is patients' actions during the pain assessment process. The typical actions of many patients with cancer pain can mislead their

providers, especially when patients appear stoic (Cleeland, Cleeland, Dar, & Rinehardt, 1986), show few facial (Wilkie, 1995) or behavioral (Wilkie, Keefe, Dodd, & Copp, 1992) expressions of pain, and report that they prefer not to tell other people about their pain (Coward & Wilkie, 2000; Wilkie & Keefe, 1991). Compounding the problem, providers often underestimate the severity of patients' pain (Anderson et al., 2004) and rarely use standardized pain assessment tools in clinical practice (Dalton et al., 1996), both of which may account for their propensity to underutilize analgesics (Anderson et al., 2004; Cleeland et al., 1994). One method of improving providers' pain assessments is to coach patients to communicate their pain in ways that providers recognize (Miaskowski et al., 2004; Oliver, Kravitz, Kaplan, & Meyers, 2001; Wilkie, Williams, Grevstad, & Mekwa, 1995). We report efficacy results of a sensory pain self-monitoring and reporting Coaching protocol on pain-related outcomes in outpatients with lung cancer.

Literature Review

Lung Cancer and Pain

Epidemiologists estimated that 215,020 Americans would be diagnosed with lung cancer during 2008 and 181,840 would die (Jemal et al., 2008). Lung cancer death rates exceed any other type of cancer for both men and women, and the vast majority of those with lung cancer will experience moderate to severe pain (Curtis, Krech, & Walsh, 1991; Greenwald, Bonica, & Bergner, 1987) and emotional distress (Sarna et al., 2005) during the course of the disease. Adequate pain control is critical to improve quality of life.

Pain Assessments

Some providers have made inaccurate pain assessments for nearly 40 years (Baer, Davitz, & Leib, 1970) and continue to do so (Anderson et al., 2004). Roughly one-half of patients with cancer may be at risk for inadequate pain assessment simply because they do not spontaneously talk about their pain (Wilkie & Keefe, 1991). Physicians typically undermedicate for pain (Ward et al., 2008), are less likely to want to spend time with patients with unresolved pain (Harris, Rich, & Crowson, 1985), attribute ongoing pain complaints to psychological complaints rather than inadequacy of the analgesic regimen (Cleeland, 1991), and interrupt or abruptly change the subject when pain is the conversation context (Berry, Wilkie, Thomas, & Fortner, 2003).

Coaching: Theoretical Framework

Providers' inaccurate pain assessments and the subjective, complex nature of pain perception suggest that a plausible method of improving cancer pain management would be to coach patients to communicate their pain in ways that providers recognize. Providers need to know where the patient has pain and its intensity, quality and temporal pattern in order to diagnose and treat its etiology and to prescribe adequate analgesics for pain relief. Pilot study findings suggest that coaching patients to systematically monitor and verbally communicate these sensory characteristics of their perceived pain to their providers is likely to help patients communicate their pain more directly, efficiently and in language known to their providers (Wilkie et al., 1995). Further rationale for developing a coaching intervention was provided by the Johnson Behavioral System Model for nursing practice (JBSM) (Johnson, 1980), which assumes that nurses serve partly as external sources to teach, model and facilitate practice of new behaviors when patients' behavioral choices are limited. Coaching was theorized as a method of teaching how to self-monitor and report sensory pain (a new behavior to many patients). Based upon assumptions of the JBSM, self-monitoring and reporting are behaviors consistent with the self-protection subsystem. Individuals develop self-protective behaviors and modify them over time to protect themselves from pain, which have been called pain control behaviors (Wilkie, Lovejoy, Dodd, & Tesler,

1988; Wilkie et al., 1992). Some pain control behaviors may be used habitually (set), whereas others may be used less regularly (choices), depending upon the effectiveness of the pain control. People who effectively control their pain may have an efficient pain control set or a large number of pain control choices that stimulate both ascending and descending pain control mechanisms or help from people in the environment. Thus, Coaching offered patients an additional choice.

Despite differences in conceptual frameworks, patient populations, and specific coaching methods, the concept of assisting patients to interact with providers was a common thread amongst previous studies. Findings suggest that simple coaching interventions directed toward patients can reduce pain, improve functional status, promote medication compliance, enhance recovery improve psychological status and reduce catastrophizing coping strategies (Gortner et al., 1990; Keefe et al., 1991; Lewis, Casey, Brandt, Shands, & Zahlis, 2006; Lewis et al., 2008; Miaskowski et al., 2004; Oliver et al., 2001; Rimer, Levy, Keintz, MacElwee, & Engstrom, 1987; Weinberger, Tierney, Booher, & Katz, 1989). Coaching patients was a robust method of assisting them to communicate with their providers (Gortner & Jenkins, 1990) and improved providers' inferences of lung cancer pain in a pilot study (Wilkie et al., 1995).

Purpose

The specific aim of our study was to examine effects of sensory self-monitoring and reporting Coaching on: (a) the amount and accuracy of communicated sensory pain data (location, intensity, quality, temporal pattern); (b) pain prescriptions; (c) pain relief; (d) anxiety; (e) depression; and (f) catastrophizing pain coping.

Methods

Design

We conducted a 4-week, randomized, controlled clinical trial with pre and post test measurements to test the effects of a Coaching intervention. The study was approved by the institutional review boards at the University of Washington, all referral centers, and at the University of Illinois at Chicago for ongoing data analysis. Using a two-tailed *t* test with alpha set at .05, prospective power analysis indicated we needed 100 patients per group for .80 power to detect a moderate intervention effect (.40).

Sample

Subjects were eligible to participate in this study if they: (a) had a diagnosis of small cell or non-small cell lung cancer; (b) spoke and read English; and (c) had pain related to the lung cancer or to anticancer therapies during the week prior to enrolling. Patients were excluded if they: (a) had pain for less than two months after thoracotomy; or (b) were mentally or physically unable to participate. A score of 20 or less on the Mini-Mental State (MMSE) (Folstein, Folstein, & McHugh, 1975) determined mental competence (1 patient excluded).

Procedures

At 11 clinical sites in the Puget Sound area, providers introduced patients to the investigators in person or via letters. A research assistant (RA) contacted patients, informed them about the study, and scheduled data collection to coincide with a scheduled clinic appointment. The RA administered the MMSE to determine eligibility, obtained an informed signed consent, interviewed the patient to complete a Demographic Data Form and pretest (baseline) measures of coping and emotional status. Patients then were seen by their oncology providers (usually physician, nurse practitioner) for usual care; routine clinic

follow-up visits. We audiotaped the interactions between patients and their providers at three visits: baseline and 2 weeks and 4 weeks after baseline. After the clinic visit, patients completed the pre-test measures of pain relief. The researcher, typically a RA (who had at least a high school diploma (n=1), baccalaureate (n=3) or master's (n=1) degrees or was one of the authors) and was well trained in all study procedures, opened a sealed opaque envelope with random assignment to groups (prepared in advance by the biostatistician from a computer-generated list of random numbers) and implemented the Coaching intervention with the Coached group or spent an equivalent amount of time discussing the Not-Coached group's cancer experience. We asked patients to complete post-test measures of pain relief, coping, and emotional status about 4 weeks after the baseline measures. A RA blind to group assignment abstracted all analgesics documented in the medical record during the 4-week study.

Coaching Intervention

Trained RAs delivered the initial sensory self-monitoring and reporting Coaching intervention (Wilkie et al., 1995) via videotape format. Its content was guided by the multidimensional conceptualization of pain (Ahles, Blanchard, & Ruckdeschel, 1983; Melzack & Wall, 1965) and the JBSM (Johnson, 1980). The 12-minute videotape of a trained actress who was wearing a white lab coat and had memorized the Coaching script: (1) was designed to help patients recognize the subjective nature of pain perception and to self-monitor and report changes in pain perception to providers; (2) instructed patients to use a Coaching Tool at home to self-monitor their pain; (3) showed the blank Coaching Tool (Figure 1), which included laminated, back-to-back pages with the body outline, word list, and pattern sections of the McGill-Pain Questionnaire (MPQ, 1970 version) (Melzack, 1975) and a 0-10 Pain Intensity Number Scale (Wilkie, Lovejoy, Dodd, & Tesler, 1990); (4) Coached patients that if pain changed from day to day they were to mark the tool with a grease pencil, thereby recording their PAIN (pattern, area, intensity, and nature); (5) encouraged them to summarize the information in note-form in order to help them verbally report PAIN--pattern, area, intensity, nature-- to their providers at their next appointment; (6) gave emphasis to the importance of this information in helping providers to make pain therapy decisions; and (7) included examples of Coaching Tools marked by other patients. To minimize the possibility that providers would detect group assignment, we instructed patients *not* to show the Coaching Tools to their providers, and all adhered to this instruction.

In person or by telephone, we tailored *reinforcement Coaching* to patient PAIN communication behavior at sessions 1 (via phone and mail), 2 (in person), and 3 (via phone and mail) weeks post-intervention; each reinforcement Coaching session duration was 5 to 10 minutes. Verbal and written (The PAIN Report, delivered in person or via mail) (Figure 2) reinforcement Coaching included 3 components: (a) recognition-reinforcement (praise) of data spontaneously communicated by the patient to the provider at the previous audiotaped clinic visit; (b) reiteration and clarification of incorrectly recalled Coaching content (pattern, area, intensity, nature); and (c) modeling and practice of strategies for the patient to communicate PAIN data not reported to the provider during the prior clinic visit. We tailored the content for reinforcement Coaching based on patient-communicated PAIN data from the audiotapes of the baseline (at the 1 week phone session) and 2-week (at the 3 week phone session) clinic visits and patient recollection of the videotaped Coaching content as recorded on a Recall Tool (at the 2 week in-person session, at both phone sessions). The Recall Tool was a process tool, not an outcome instrument and two research consultants with expertise in oncology nursing assessed its content validity. To complete the Recall Tool, the RA interviewed the patients prior to each reinforcement Coaching session and after the study-end outcome visit. The Recall Tool had 3 questions that assessed the

patient's: (a) retained knowledge of Coaching videotape content (For your doctor or nurse to understand the pain you feel, you should tell them four special things about your pain. Please list the four special things you need to report each time you see your doctor or nurse. Four blank lines were available to record the patient's response to this question. Correct responses were pattern, area, intensity, and nature or some facsimile of these concepts); (b) frequency of self-monitoring attempts (How often did you mark the tools we gave you to monitor your pain? Response options were: daily, every few days, weekly, several times since received them, once, didn't mark them. Did you use the notecards during your doctor visit this week? Response options were yes or no.); and (c) perceived barriers in communicating information to the provider (List any concerns or difficulties you have describing your pain to your doctor or nurse?). Recall Tool data and The PAIN Report, which was a summary of the pain information that the patient shared with the doctor or nurse during the last clinic visit, allowed the Coaching reinforcement to be tailored to the patient's specific communication needs. Table 1 presents an example of the reinforcement Coaching based on Recall Tool and The Pain Report data.

Instruments

Most study outcomes were measured with instruments with ample validity and reliability. We developed one tool to abstract data from the audiotape recordings.

Communicated Pain Data

We documented pain data communicated during the routine follow-up visits using the Audiotape Scoring Tool, an observation tool developed for this study. Two research consultants with expertise in oncology nursing assessed its content validity. Trained raters, blind to group assignment, recorded their observations of the audiotaped interactions regarding: (1) the presence or absence of communicated pain data (location, intensity, quality, and pattern); (2) who first mentioned the data; and (3) general impressions about the facilitating or hindering aspects of the pain-specific interactions. Two raters evaluated reliability of abstraction from 20 randomly selected audiotapes; accuracy agreement was 95%.

Pain Prescriptions

Because medical record data for analgesic prescriptions were often missing, we found that self-reported analgesics taken during the previous 24 hours (recorded at baseline, 2 weeks, and 4 weeks) was the best indicator of analgesics. We used the self-reported analgesics to obtain Pain Management Index (PMI) scores (Cleeland & Ryan, 1994), as an indicator of adequacy of analgesic drugs. We subtracted the worst pain category value (0-3) from the pain medication value (0-3). Negative PMI scores indicate inadequate analgesic drugs; 0 or positive scores indicate adequate analgesic drugs.

Pain Relief

We used the MPQ to measure pain location with a body outline, worst pain intensity with 6 verbal descriptors, pain quality with 78 descriptors, and pain pattern with 9 descriptors. The validity, reliability, and sensitivity of the MPQ is well documented (Wilkie, Savedra, Holzemer, Tesler, & Paul, 1990). We also used the MPQ to document analgesic consumption via patient interview. MPQ-derived outcome variables included: worst pain intensity (scaled 0 to 5) and pain rating index scores for pain quality (Melzack, 1975).

Two Visual Analogue Scales (VASs) provided ratio level measures of present pain intensity (I) and pain relief (R). The VAS-I was a horizontal, 10-cm line anchored on the left with "no pain" and on the right with "pain as bad as it could be" (Wilkie et al., 1990). The VAS-R

was a horizontal, 10-cm line anchored on the left with “no pain relief” and on the right with “complete pain relief.” The subject placed a red pen mark to show the intensity of present pain or amount of pain relief from all pain therapies. We used a computerized digitizer tablet to measure from the left side of the line to the place marked by the subject (Huang, Wilkie, & Berry, 1996) and the Dig2 software (Steineki, 1989) to automatically enter the score into a computer database. Validity ($r = .64$ to $.81$) (Wilkie et al., 1990; Zimmerman, Duncan, Pozehl, & Schmitz, 1987), reliability ($r = .99$) (Kremer, Atkinson, & Ignelzi, 1981) and sensitivity (Huskisson, 1983) of the VAS as a measure of pain intensity and pain relief have been estimated previously.

Anxiety

We measured anxiety with the State-Trait Anxiety Inventory (STAI), a self-administered tool with a 20-item scale measuring present (state) anxiety (Spielberger, 1983). Items were measured on a 4-point Likert scale that ranged from 1 (not at all) to 4 (very much so). Possible scores range 20 to 80. Concurrent validity has been demonstrated with the Taylor Manifest Anxiety Scale ($r = .83$) as well as construct validity, test-retest reliability ($r = .76$ to $.86$ at 20 days) (Spielberger, 1983) and internal consistency (Wilkie & Keefe, 1991).

Depression

The Center for Epidemiological Studies Depression Scale (CES-D) (Radloff, 1977), a 20-item, self-report questionnaire, measured depressive symptoms. Content, construct, and discriminant validity and internal consistency and test-retest reliability have been estimated for the CES-D (Blalock, DeVellis, Brown, & Wallston, 1989; Radloff, 1977).

Pain Coping

Pain catastrophizing coping was measured with the Pain Coping Strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983). The CSQ, a self-administered tool with 50 items, included 6 catastrophizing self-coping statements with possible scores that ranged 0-6, indicating “never do that” to “always do that.” Construct validity (Rosenstiel & Keefe, 1983; Turner & Clancy, 1986), test-retest reliability (Wilkie & Keefe, 1991), and internal consistency (Rosenstiel & Keefe, 1983; Wilkie & Keefe, 1991) have been documented.

Demographic Data

We used the Demographic Data Form (DDF) (Wilkie et al., 1992) to document personal characteristics obtained via interview. We collected cancer-related data from medical record review.

Analyses

We defined the *amount* of communicated sensory pain data as the count for the number of communicated pain components (location, quality, pattern, and intensity) on the audiotape. We determined *accuracy* of communicated pain information by comparing the audiotape data and MPQ data (considered the accurate master), and we defined *accuracy* as: (a) the percent of pain sites mentioned in both data sets; (b) the exact pain intensity value in both data sets; (c) at least one descriptor in both data sets for pain quality descriptors; and (d) at least one descriptor in both data sets for pain pattern descriptors. As the measure of *adequate analgesic drugs*, we calculated PMI scores per instructions (Cleeland & Ryan, 1994). To assess group effects controlling for baseline status, we used ANCOVA for continuous variables and logistic regression for dichotomous variables. We used chi square or independent *t* tests to assess post-test group effects. Statistical significance was set at $p < .05$.

Results

Sample Characteristics

Of the 296 patients eligible for the study, 81 (27%) refused and 215 (74% male, 26% female) enrolled (73% of those eligible). Regarding the enrolled sample: (a) their mean age was 62 ± 10 years; (b) all subjects had pain associated with primary lung cancer (83% non-small cell, 7% small cell, 10% missing histology data); (c) they had pain for 7 ± 14 months; (d) were diagnosed with lung cancer for an average of 6 ± 19 months (mode = 1 month, median = 2 months); and (e) 25% had been treated with radiation therapy and the others had combinations of surgery, radiation, or chemotherapy. A total of 151 patients provided study outcome data (completers; 70%). The main reasons subjects did not complete the study were: (a) 10% died within the 4-week study period; (b) 4% became too ill to finish study procedures; (c) 13% withdrew; and (d) 3% moved or were lost to follow-up. One patient, who was a physician and reported pain, withdrew from the study when the provider, upon seeing the audiotape recorder, said, "Why are you in the pain study, you don't have any pain?" Attrition rates and reasons for not completing were similar for both groups. Completers had a statistically higher average MMSE score (28.9 ± 1.8) than the noncompleters (28.2 ± 2.2) ($t = 2.14, p < .04$), but these differences are not clinically meaningful. Completers were not statistically different than the noncompleters on any demographic or baseline variables (communication, pain, emotion, coping). The completers included 108 men and 43 women. Table 2 presents other demographic characteristics.

Only one provider refused audiotaping, and one audiotape was inaudible (both Coached subjects). As measured by the length of the audiotapes, the median length of the clinic visit was 4.6 ± 3.8 min at baseline and 5.7 ± 5.7 min at study-end and not statistically different for either group.

Intervention Delivery and Uptake

All 5 elements (video, Tool, 3 reinforcement sessions with PAIN Report Card) of the Coaching intervention were delivered to 65% of the Coached group. Seven patients (9%) missed 2 to 3 intervention elements, and 19 patients (25%) missed 1 element. Therefore, 91% of the patients received four or five of the five intervention components. As delivered, the Coaching enabled 22% of the patients to recall all 4 sensory pain parameters 1 week after they viewed the videotape; a week later, it increased to 33%, where it remained at study-end. Patients with partial recall most frequently named pain location and intensity.

Communicated Pain Data - Amount

Table 2 shows results on provider behavior eliciting pain information and on patient communicating pain information. None of the variables in Table 2 showed group differences at baseline, except provider interference with the patients' pain reports, which was lower in the Coached group (5%) than Not-Coached (17%). At study-end, there was no statistical difference between Coached and Not-Coached groups for the frequency that providers asked about either general status or pain specifically. In the Coached group, however, providers interfered significantly more often with patients' pain report. This interference is consistent with the higher rate (not statistically significant) of Coached patients insisting on being allowed to talk about their pain. One patient said he had to grab the provider's arm and say, "Doctor, let me tell you about my pain" as the provider was leaving the room.

At study-end, substantially more Coached than Not-Coached patients communicated to the provider each of the 4 pain parameters, with 3 of these parameters showing a statistically significant effect (Table 2). Similarly, the percentage of patients giving their providers unsolicited information specific to sensory pain was larger for the Coached group at study-

end for all 4 of the sensory pain parameters, with the difference being statistically significant for reporting something about pain intensity and quality. Twice as many Coached patients as Not-Coached patients reported specific information about pain intensity using a 0-10 scale, though this difference was not quite significant. Overall, the mean number of pain parameters discussed during the audiotaped clinic visit was similar at baseline and was statistically larger at study-end for the Coached (mean = 3.3 ± 1.1) than Not-Coached (mean = 2.8 ± 1.5) ($F(2,148) = 6.9, p = .01$) groups. Coached patients slightly increased the number of parameters reported from baseline to study-end, but the Not-Coached patients reported fewer parameters.

Communicated Pain Data - Accuracy

There was some evidence that the intervention improved the accuracy of pain information reported by patients to providers. Accuracy of reported pain intensity was poor in both groups. At study-end, present pain intensity was reported accurately by 51% of the Coached group and 41% of the Not-Coached group, not a statistical difference. Accuracy of the worst pain intensity was reported by 38% of the Coached group and by 29% of the Not-Coached group, also not significant. For the 125 patients whose worst pain was moderate to severe at study-end, 81% in the Coached group and 65% in the Not-Coached group accurately reported the worst pain intensity to their providers, a significant difference ($\chi^2 = 4.3, p = .05$). Accuracy of reported pain sites was 77.9% for the Not-Coached group and 82% for the Coached group study-end (Odds Ratio (OR) = .8, $p = .38$). Pain quality accuracy was somewhat higher in the Coached group (72%) than the Not-Coached group (62.7%) at study end, but not statistically significant (OR = 1.7, $p = .13$). Pain pattern accuracy was somewhat higher in the Not-Coached group (94.7%) than the Coached group (92.1%) at study end, but again not statistically significant (OR = .7, $p = .53$).

Adequacy of Analgesic Drugs: PMI

At baseline, 81% of the Not-Coached group had adequate analgesics for their present pain intensity but only 76% did so at study-end (Table 3). Similarly, 86% of the Coached group had adequate analgesics for their present pain intensity but 84% did so at study-end (Table 3). In contrast, only about 50% of Coached and Not-Coached groups had adequate analgesics for their worst pain at baseline and study-end (Adjusted for baseline value OR = 1.38, $p = .36$).

Pain Relief

Table 3 shows measures of pain intensity and pain relief at baseline and study-end. There was no evidence that the coaching intervention benefited patients in terms of lowering their VAS present pain intensity or increasing their VAS pain relief scores. The Coached group did have slightly better reduction in the MPQ pain quality scores and number of words chosen than did the Not-Coached group, but these differences were not significant except for the PRI-Miscellaneous subscale.

Emotional Status and Coping

Internal consistency was adequate in this sample: catastrophizing coping ($\alpha = .87$); anxiety (Trait $\alpha = .92$; State $\alpha = .92$); and depression ($\alpha = .87$). Catastrophizing coping, anxiety and depression scores were similar in the two study groups, both at baseline and study-end. Catastrophizing coping scores decreased slightly more in the Coached group than the Not-Coached group, but not significantly so.

Discussion

Findings supported our hypothesis that providing Coaching would help lung cancer patients to increase the amount of pain data communicated to their providers during routine cancer care follow-up visits. The increase was statistically significant but small. The combined efforts of the patients and providers indicate that pain location was discussed during nearly all of the clinic visits, but that pain intensity, pain quality, and pain pattern data were not discussed during many of the visits. These findings are concerning since the main purpose of most provider visits was to determine patients' responses to cancer therapies and to manage symptoms that could interfere with patients continuing lung cancer treatments.

The communicated pain information was not as accurate as hypothesized and did not lead to improved adequacy of analgesics for each patient's level of pain, but 24-hour recall and self-report of analgesic use may have influenced our findings. We do not think there was much effect because the PMI scores indicated a high proportion of the patients (nearly 80% to 90%) had analgesic drugs adequate for the patient's present pain intensity. Improvements in pain relief were modest and did not lead to decreased anxiety, depression or catastrophizing coping as hypothesized. Coaching was directed at the patient, assuming that a patient's set of pain reporting behaviors would increase to include information vital to providers' decisions about prescribing analgesic therapies. Another assumption was that providers would have the resources to act upon the communicated data by prescribing analgesics appropriate for the location, intensity, quality and pattern of the patients' pain. Yet another assumption was that patients would take the prescribed analgesics, leading to increased pain relief and decreased anxiety, depression and catastrophizing coping. These clinical process steps reflect the complex, multifactorial nature of cancer pain management. Coaching was effective in the first process step, changing the patients' pain reporting set, as predicted by the JBSM. But Coaching was not robust enough to change provider prescribing behavior, and it is unknown if Coaching had any effect on patients' daily analgesic consumption behavior because we did not measure this variable. Improving the reporting of pain is insufficient to reduce pain suggesting that interventions focused on more than one factor related to effective pain management may be necessary to substantially improve lung cancer pain management.

Several other investigators have used coaching elements in interventions for people with cancer or other chronic illnesses with inconsistent effects. In one study (Rimer et al., 1987), printed materials and a counseling session with an oncology nurse resulted in improved patient pain-related outcomes. In three other studies (Miaskowski et al., 2004; Oliver et al., 2001; Syrjala et al., 2008), investigators found an effect of interventions with coaching components on reducing pain intensity, but the effect was not sustained. An individualized educational intervention focused on barriers to cancer pain management did not effectively improve pain outcomes in 43 women with gynecologic cancers (Ward, Donovan, Owen, Grosen, & Serlin, 2000), but when expanded to 176 cancer patients it was effective in reducing pain barriers but not PMI or pain severity and was inconsistent in effects on usual pain severity (Ward, Hughes, Donovan, & Serlin, 2001). Similarly, no effect was noted on emotional distress after coaching (focused on adaptation) in 181 newly diagnosed breast cancer patients (Samarel, Fawcett, & Tulman, 1997). Other investigators did not observe an effect on anxiety after patients were coached to ask questions during a consultation visit with medical oncologists (Brown, Butow, Boyer, & Tattersall, 1999). Generally, few studies with coaching-like interventions had significant effects on pain, and most had no significant effects on emotional and coping outcomes.

In contrast, Lewis showed consistent, significant improvements in both behavioral and emotional outcomes in two studies (Lewis et al., 2006; Lewis et al., 2008). The intervention

in both studies was fully scripted and emphasized the acquisition of specific, behavioral strategies that the patient or spouse could use with skill attainment through practice as the goal. Future research on coaching may benefit by more formally structuring coaching so that it emphasizes the many specific skills required to manage pain.

In these various studies with coaching-like interventions, the many design, sample and methodological differences prohibit firm conclusions about the effects of coaching. Contrary to our study, attrition differences in some studies may have contributed to false positive effects. As was true in our study, in the studies with multimodality components to the coaching intervention (Miaskowski et al., 2004; Oliver et al., 2001; Rimer et al., 1987; Ward et al., 2008), investigators found significant effects on outcomes directly related to the coaching content. We used a standardized videotape, self-monitoring tools and tailored coaching on pain reporting based on actual patient-reporting behavior and noted a statistical increase in the number of pain parameters reported but not on pain relief, which required additional skills. Implications of these findings suggest that future research on coaching interventions should include more than one communication technique and should tailor the coaching to all aspects of patient behavior that are directly related to the desired outcomes. Future studies also should include sufficiently large samples to detect small effects, especially for multifactorial phenomena.

Other investigators have focused on patient-provider communications about cancer pain. Although 93% of 239 cancer patients reported talking to their providers about their pain (Thomason et al., 1998) and providers gave pain intensity scores that were more consistent with patient reports (Syrjala et al., 2008), investigators did not report the specific pain information communicated nor did they provide a direct measure of what was actually communicated to the provider. Other investigators intervened with patients to facilitate communication between the patient and provider (Roter, Stewart, Putnam, Lipkin, & et al., 1997), and significantly increased the number of direct questions asked by predominantly elderly black women of their health care providers, but the intervention group's interactions with providers were characterized by greater anger and anxiety, and the patients were significantly less satisfied with their care. These findings are somewhat consistent with our observation that providers interfered statistically more often with the Coaching group's reports of pain and the Coaching group tendency to insist on reporting their pain to their providers. Perhaps providers gave patients cues that active patient participation is an unwelcome behavior during the treatment follow-up visit. Another possibility is that patients waited until the end of visit to attempt to communicate about the pain. Given the associated barriers to reporting information about pain and the barriers inherent in the communication between patient and providers (Berry et al., 2003), it is essential to pursue alternative methods to generate pain information for the provider and help the provider be receptive when patients want to share pain information. Computerized pain assessments hold promise as one such alternative method (Huang et al., 2003; Wilkie et al., 2003) and would overcome the communication difficulty exposed by the patient withdrawing because the provider did not think the patient (who also was a physician) had pain. The fact that the patient withdrew from the study rather than confronting the provider with the reality of the pain experience reflects the complexity of the communication process and provides an argument for making the sensory pain visible via a computer report.

Overall, study findings show some encouraging results for patients with lung cancer, their family members and providers. Baseline average pain intensity in this group of 151 people living with lung cancer was mild, which is much lower than the moderate to severe pain reported two decades ago in a study of lung cancer also from the Pacific Northwest (Greenwald et al., 1987) or in North Carolina (Thomason et al., 1998). Our finding that the average intensity of current lung cancer pain was low, independent of the Coaching

intervention, calls for celebration of this clinical outcome, and the need to avoid floor effects in future studies with criteria requiring moderate to severe pain for study inclusion (Miaskowski et al., 2004; Oliver et al., 2001; Syrjala et al., 2008).

Generalization of study findings is limited by the convenience sample with insufficient representation of people of color, study attrition, low baseline pain intensity, and complete intervention fidelity to only 65% of the experimental group. Although subjects were recruited from 11 clinical sites, analysis was conducted at the patient-provider level. Future research should examine effects of provider type and institutional affiliation.

In summary, our Coaching intervention helped patients communicate their sensory pain. The intervention was labor-intensive and effects were not robust, which indicates the need for more time-efficient interventions. Future research needs to build on our tailored approach to coaching but better integrate a focus on skills. Computerized pain assessment with multimedia coaching (Huang et al., 2003; Judge, Wilkie et al., 2001; Wilkie et al., 2003) are potential ways to increase the intervention effect, be more efficient, and deliver computer-generated reports to providers (Huang et al., 2003; Judge, Luedke, Ngamkham, & Wilkie, In review; Wilkie et al., In review).

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Figure 1.
Initial Coaching Intervention Components: Coaching Video and Coaching Tool.

Figure 2. The Pain Report and Color-Coded Note Cards. The Pain Report was a four-page carbonless packet. The white page was mailed to the patient one week after the initial Coaching Intervention to reinforce the phone call. The light yellow page was delivered at the in-person session (week 2). The pink page was delivered by mail (week 3) to reinforce the phone call. The yellow page was retained in the research records and contained all the information delivered to the patient during reinforcement Coaching. Note cards were color-coded to The Pain Report to allow the patient to take notes to the next clinic visit.

Table 1

Coaching Intervention: Dose, Components, Delivery Mode, Content Outline, and Message Examples.

Dose Number	Coaching Dose Components	Delivery Mode	Content Outline	Tailored Coaching Message Examples
1	Initial Coaching	12-minute Videotape	<ul style="list-style-type: none"> • Providers-experts about treating pain • Patients-experts about how pain feels • Providers know how pain feels only when patients tell them • Moaning, groaning, grimacing not effective to tell how pain feels • How to use tools to monitor four things about pain that providers need to know to give appropriate pain treatments <ul style="list-style-type: none"> • <u>P</u>atten tool (9 words) • <u>A</u>rea tool (body outline) • <u>I</u>ntensity (0-10 scale) • <u>N</u>ature (78 quality words) • Examples of tools marked by other patients • Making notes & sharing info at next clinic visit • Opportunity for questions 	
2	Coaching Tool		Laminated pages connected by ring clasp <ul style="list-style-type: none"> • Page 1 Front: Pattern • Page 2 Back: Body outline • Page 2 Front: 0-10 intensity scale with lines for two weeks of daily monitoring at rest and with activity • Page 2 Back: 78 quality descriptors Red grease pencil Note Card to record data and take to clinic visit	
3	Week 1 Reinforcement Coaching	Phone session	Recall Tool <ul style="list-style-type: none"> • Recall of 4 PAIN parameters, frequency of making Coaching tools, use of note card, concerns or difficulties in describing pain to providers visit (tailored praise for effective recall, reiteration and clarification of information not remembered) The Pain Report (mailed) <ul style="list-style-type: none"> • PAIN parameters disclosed at previous clinic visit (tailored praise effective communication behavior, reiteration and clarification of missing communication behavior) Model communication behavior <ul style="list-style-type: none"> • Reporting PAIN info marked on MPQ Help patient practice communication behavior: how to say PAIN data not reported during prior clinic visit 	<p>Yes, it's great you remembered that the area where you have pain and its intensity are important special information to tell Dr._. He also needs to know the nature and pattern of your pain so he can give you the medicines most effective for your type of pain.</p> <p>At your last clinic visit, you did a great job of telling Dr._ about your pain shoulder pain. Also telling him the number between 0 and 10 that it is at rest and with activity, how it changes with time (pattern) and the words that describe its nature would help Dr._ prescribe medicine specific for your type of pain. For example you can tell him, Dr._, my shoulder pain is 10 when I am walking around and 4 when I rest. It is burning, aching, and radiates down my arm. It's there constantly. Now, I will pretend to be Dr._. Let's pretend it is</p>

Dose Number	Coaching Dose Components	Delivery Mode	Content Outline	Tailored Coaching Message Examples
				next week when you see him. Tell me what you will say when he says, "How are you doing?" Allow patient to practice and share tips to overcome communication issues or concerns.
4	Week 2 Reinforcement Coaching	In-person session	Recall Tool The Pain Report Model communication behavior Help patient practice communication behavior	After clinic visit and week 2 MPQ was completed, reinforcement Coaching tailored to new Recall Tool information and MPQ data
5	Week 3 Reinforcement Coaching	Phone session	Recall Tool The Pain Report (mailed) Model communication behavior Help patient practice communication behavior	Tailored to new Recall Tool information and The Pain Report based on week 2 audiotaped clinic visit communication behavior and focused on reporting at week 4 visit

Table 2

Demographic Characteristics of Not-Coached (n = 75) and Coached (n = 76) Lung Patients Completing Baseline and Posttest Measures

Variable	Not-Coached		Coached		X ²	t	P
	f (%)	M (SD)	f (%)	M (SD)			
Age		63.2 (11.0)		60.1 (10.6)		1.8	.08
Gender					.7		.40
	Male 56 (74.7)		52 (68.4)				
	Female 19 (25.3)		24 (31.6)				
Ethnicity					2.4		.12
	Caucasian 70 (93.3)		65 (85.5)				
	Not Caucasian 5 (6.7)		11 (14.5)				
Education					3.0		.22
	8 th grade 6 (8.0)		9 (11.8)				
	12 th grade 40 (53.3)		30 (39.5)				
	College or Above 29 (38.7)		37 (48.7)				
Cancer Stage					.4		.94
	Stage I 8 (11.9)		9 (12.3)				
	Stage II 3 (4.5)		2 (2.7)				
	Stage III 32 (47.8)		37 (50.7)				
	Stage IV 24 (35.8)		25 (34.2)				
Months Since							
	Cancer Diagnosis	7.1 (18.4)		5.3 (19.5)		.6	.56
	Noticed Pain	8.0 (17.5)		6.2 (10.8)		.7	.46

Table 3

Audiotaped Patient and Provider Communication Behavior and Adequate Analgesia by Not-Coached (n = 75) and Coached (n = 76): Percentage at Study-End and Logistic Regression Controlling for Baseline Values

Variable	% at Study-End		Adjusted * Odds Ratio	Adjusted * <i>p</i> value
	Not-Coached	Coached		
Patient Stated or Confirmed Pain				
Location	81	92	2.8	.05
Intensity	63	82	2.5	.02
Quality	69	83	2.2	.05
Pattern	61	72	1.7	.12
Patient Mentioned Pain First				
Location	53	66	1.9	.07
Intensity	53	72	2.3	.02
Quality	53	70	2.0	.04
Pattern	61	72	1.6	.14
Patient Reported Intensity as 0-10	12	24	2.3	.06
Patient Insisted on Reporting Pain Clinician	8	18	2.7	.06
Asked about Pain	46	54	1.4	.31
Interfered with Pain Report	8	18	2.9	.04
Adequate Analgesia ⁺	76	84	1.5	.32

* Adjusted for Baseline

⁺ Pain Management Index Score indicated adequate analgesia

Table 4
Differences in Relief Indicators at Study-End by Not-Coached (N = 75) and Coached (N = 76) Groups Controlling for Baseline Values

Variables	Baseline		Study-End		ANCOVA	
	Not-Coached	Coached	Not-Coached	Coached	F	P for Group Effect
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)		
<i>Intensity</i>						
VAS Pain Relief	66.8 (34)	66.5 (31)	75.8 (24)	72.4 (28)	83.7	.37
VAS Present Pain Intensity	17.4 (19)	22.3 (22)	19.4 (23)	24.3 (25)	31.5	.46
<i>Quality</i>						
PRI-Sensory	9.7 (8.3)	11.5 (7.8)	8.0 (8.9)	8.0 (7.4)	29.5	.48
PRI-Affective	1.1 (1.8)	1.6 (2.0)	1.0 (2.1)	.8 (1.4)	41.8	.08
PRI-Evaluative	1.4 (1.5)	1.8 (1.7)	1.1 (1.4)	1.2 (1.4)	65.5	.79
PRI-Miscellaneous	2.39 (2.79)	3.04 (3.14)	2.41 (3.67)	1.47 (2.27)	36.8	.01*
PRI-Total	14.6 (12.6)	17.8 (12.5)	12.5 (14.7)	11.4 (10.7)	36.5	.13
NWC	6.3 (4.6)	7.5 (4.5)	6.3 (5.6)	5.0 (4.1)	21.8	.15

PRI = MPQ Pain Rating Index; NWC = Number of Words Chosen

* < .05