

Original Article

Differences in the Use of Pain Coping Strategies Between Oncology Inpatients with Mild vs. Moderate to Severe Pain

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Abstract

The purposes of this study were to determine a clinically significant cutpoint for worst pain and to evaluate for differences in the use of pain coping strategies between oncology inpatients with mild (i.e., worst pain intensity scores of ≤ 4) compared with moderate to severe (i.e., worst pain intensity scores of > 4) pain based on results of the cutpoint analysis. Oncology inpatients in pain ($n = 224$) completed the Coping Strategies Questionnaire (CSQ), the Brief Pain Inventory, and the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). Fifty-six percent had moderate to severe pain. Patients in the moderate to severe pain group had significantly poorer Karnofsky Performance Status scores ($P = 0.04$) and significantly lower ratings of overall health ($P < 0.0001$). No differences were found between the two pain groups on any of the subscales of the CSQ, except catastrophizing ($P < 0.0001$). Compared with the mild pain group, patients in the moderate to severe group scored significantly higher on this subscale. In addition, patients in the moderate to severe group used more passive coping strategies ($P = 0.02$). Except for catastrophizing, the number and types of pain coping strategies used by this sample of hospitalized patients do not appear to be influenced by their pain intensity scores. Finally, when the CSQ scores of these hospitalized oncology patients were compared with those found in previous studies of oncology outpatients and patients with chronic noncancer pain, the scores were similar. J Pain Symptom Manage 2009;38:717–726. © 2009 U.S. Cancer Pain Relief Committee. Published by Elsevier Inc. All rights reserved.

Key Words

Coping strategies, cancer pain, oncology inpatients, catastrophizing, quality of life, cutpoints

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Introduction

Both Ahles et al.¹ and McGuire² described cancer pain as a multidimensional experience that includes physiologic, sensory, affective, cognitive, behavioral, and sociocultural dimensions. However, much of the research in cancer pain has focused on an evaluation of the sensory and affective dimensions of the experience.^{3,4} In terms of the sensory dimension, worst pain intensity scores of >4 on an 11-point numeric rating scale (NRS) are consistently associated with clinically meaningful decreases in oncology patients' ability to engage in routine activities and have a negative impact on patients' mood and interpersonal relationships.^{5,6} Both Paul et al.⁵ and Serlin et al.⁶ found the same cutpoint between mild and moderate to severe pain in cancer patients using the same statistical approach. However, this type of cutpoint analysis has not been done in hospitalized patients in the palliative phase of their illness.

Although cancer pain is acknowledged to affect the whole person, little is known about the specific coping strategies that oncology patients use to manage their pain. In contrast, a number of studies have evaluated the use of coping strategies in patients with chronic non-cancer pain,^{7,8} arthritis pain,⁹⁻¹¹ low back and neck pain,¹²⁻¹⁴ and whiplash.^{15,16} The Coping Strategies Questionnaire (CSQ)¹² was used in most of these studies.

In an extensive review of studies that examined the relationships between pain intensity and the use of pain coping strategies, Jensen et al.⁷ noted that 10 of 12 studies failed to find significant correlations between pain severity and the CSQ subscales of "ignoring pain" and "coping self-statements." However, significant inverse relationships were found between pain severity and "ability to control and decrease pain" in six of nine studies.⁷

Only six studies were identified that evaluated the use of pain coping strategies in oncology patients, using the CSQ. Three of these studies¹⁷⁻¹⁹ had patients complete the entire CSQ, although three studies²⁰⁻²² used only parts of the CSQ. In the three studies that evaluated the relationships between cancer pain and the use of all the pain coping strategies in the CSQ,^{17,19,21} higher CSQ scores were associated with lower pain intensity scores.

Two additional studies with oncology patients^{23,24} used the Pain Catastrophizing Scale²⁵ to evaluate the relationships between catastrophizing and various characteristics of cancer pain. Catastrophizing refers to an individual's tendency to focus on and exaggerate the threat value of painful stimuli and to negatively evaluate one's own ability to deal with pain.^{9,12,25,26} Catastrophizing was found to be one of the most important factors that influence chronic noncancer pain patients' adjustment to pain^{9,27,28} and is consistently associated with higher pain intensity scores.²⁷ In patients with cancer pain, higher levels of catastrophizing were associated with greater emotional distress²⁴ and overprediction of pain.²³ In addition, two studies that used the CSQ^{19,21} found significant relationships between a variety of pain characteristics and catastrophizing. However, one study¹⁸ failed to confirm these findings.

These studies provide preliminary evidence that oncology patients' use of pain coping strategies needs to be considered as part of the multidimensional experience of cancer pain. However, the sample sizes in these studies were relatively small and focused primarily on outpatients.^{17-19,21} In addition, none of the studies done to date have compared the use of pain coping strategies in cancer patients who report mild vs. moderate to severe pain. Finally, several authors have concluded that more studies are needed that examine the relationships between various dimensions of the cancer pain experience and pain coping strategies.^{3,4} Therefore, the purposes of this study were to determine a clinically significant cutpoint and to evaluate for differences in the use of pain coping strategies between oncology inpatients with mild (i.e., worst pain intensity scores of ≤ 4) compared with moderate to severe (i.e., worst pain intensity scores of >4) pain based on the results of the cutpoint analysis.

Methods

Sample and Methods of Data Collection

This study is part of a larger multicenter study, the European Pharmacogenetic Opioid Study (EPOS). From a convenience sample of 1571 cancer patients hospitalized at the

Norwegian Radium Hospital, 342 met the initial screening criterion for the EPOS, namely, that they would be on a regularly scheduled opioid treatment for their cancer pain for at least three days. In addition, patients were included if they were adults >18 years of age, had a verified cancer diagnosis, were able to provide a blood sample, and were able to sign the informed consent. A total of 225 patients were enrolled in this study. The remaining 117 did not meet the inclusion criteria ($n=34$), were too ill ($n=33$), refused to participate ($n=48$), or withdrew participation after enrollment ($n=2$). This study was approved by the Regional Committee for Medical Research Ethics, Central Norway, and the Norwegian Radium Hospital.

After enrollment, patients were asked to complete the study questionnaires. If the patient was not able to complete the questionnaires independently, a research nurse read the items to these patients ($n=173$) and recorded their answers.

Instruments

Patients completed several self-report questionnaires, and their medical records were reviewed for disease and treatment information (i.e., cancer diagnosis, presence of metastasis, length of time since cancer diagnosis, and number of comorbidities).

Demographic Characteristics. This questionnaire obtained information on age, gender, educational level, marital status, and employment status.

Clinical Characteristics. The patients' performance status was assessed using the Karnofsky Performance Status (KPS) scale,²⁹ which was rated by the research nurse using a 0 (i.e., dead) to 100 (i.e., normal activity) scale. The KPS has satisfactory predictive and construct validity³⁰ and interrater reliability.^{31,32}

Self-assessed health was measured using one item from the 30-item European Organization for Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30). This single item asked the patient to respond to the following question: "How would you rate your overall health during the past week?" using a 1 (very poor) to 7 (excellent) scale.³³

Pain Characteristics. Pain was assessed using the Norwegian version of the Brief Pain Inventory (BPI-N).³⁴ The first part of the BPI-N consists of four single-item measures of pain severity (i.e., pain now, as well as least, average, and worst pain). Each item is rated on a 0 (no pain) to 10 (pain as bad as you can imagine) NRS. The second part of the BPI-N assesses the extent to which pain interferes with seven aspects of function using a 0 to 10 NRS. The Brief Pain Inventory (BPI) has been validated across cultures and languages,^{34,35} is sensitive to changes in pain intensity,³⁶ and is simple to use. Patients were asked to rate all the pain intensity and pain interference items using the time frame of the past 24 hours.

Information on breakthrough pain (BTP) was obtained by asking patients to indicate whether they had BTP elicited by movement, swallowing, defecation, or urination.

Coping Strategies Questionnaire. The CSQ consists of 50 questions that evaluate six cognitive strategies (i.e., diverting attention, reinterpreting pain sensations, ignoring pain sensations, coping self-statements, catastrophizing, and praying/hoping) and one behavioral strategy (increasing behavioral activities) for coping with pain. In addition, two items are used to rate the overall effectiveness of the coping strategies.¹² Each subscale has six items, and each item is rated on a 0 (never do that) to 6 (always do that) NRS that indicates how frequently the strategy is used to cope with pain. Each subscale score can range from 0 to 36. The internal consistency coefficients in a sample of patients with noncancer pain ranged from 0.71 to 0.85.¹² The reliabilities of the subscales in lung cancer patients ranged from 0.60 to 0.90.¹⁹ The CSQ was translated from English to Norwegian following a recommended back-forward procedure.³⁷ In this study, the Cronbach's alphas for the CSQ subscales ranged from 0.67 to 0.80.

The two effectiveness items on the CSQ are ability to control pain and ability to decrease pain. These items are rated on seven-point scales that range from 0 (no control/not able to decrease pain at all) to 6 (complete control/able to decrease pain completely).

In addition, in this study, CSQ active and passive coping scores were calculated using the system developed by Nicholas et al.³⁸

Five of the subscales (i.e., diverting attention, reinterpreting pain sensations, coping self-statements, ignoring sensations, and increasing behavioral activities) met Brown and Nicassio's³⁹ definition of active coping, whereas two subscales (i.e., catastrophizing and praying/hoping) met their definition of passive coping.

Statistical Analysis

Data were analyzed using SPSS Version 15.0 for Windows software (SPSS, Inc., Chicago, IL). Descriptive statistics were used to summarize the demographic and clinical characteristics of the patients. A cutpoint that divided the sample of patients into mild vs. moderate to severe pain was created from the worst pain intensity scores using the analytic strategy described by Serlin et al.⁶ and Paul et al.⁵ Four different categorical variables, which represented the four possible combinations for the cutpoints, between ratings 3 and 7, were created and related to the set of seven interference items from the BPI using multivariate analysis of variance (MANOVA). For example, cutpoint (CP) 3 was coded so that a pain severity rating of 1–3 would correspond to “mild” and >3–10 to “moderate to severe” pain. The criterion used to determine the optimal cutpoint for mild vs. moderate to severe pain was that a MANOVA among pain severity categories yielded the largest *F* ratio for the between-category effect on the seven interference items as indicated by Pillai's trace, Wilk's lambda, and Hotelling's trace *F* statistics.

To make comparisons about the use of various pain coping strategies, the sample was dichotomized into those who reported mild pain (i.e., worst pain score ≤ 4) compared with those who reported moderate to severe pain (i.e., worst pain scores > 4) based on the results of the cutpoint analysis. Chi-squared analyses and independent sample *t* tests, as well as Mann-Whitney tests, were used to evaluate for differences in demographic, clinical, and pain characteristics as well as pain coping strategies between the two pain groups. All calculations used actual values. Adjustments were not used for missing data. Therefore, the cohort for each analysis was dependent on the largest set of data available. A *P*-value of <0.05 was considered statistically significant.

Results

Cutpoint Calculations

As shown in Table 1, for worst pain, CP 4 (i.e., 1–4 is mild pain, >4–10 is moderate to severe pain) were the optimal cutpoints, in that they had the largest between-category *F*-ratios, using Pillai's trace, Wilk's lambda, and Hotelling's trace. When there are only two groups to distinguish between, Pillai's trace, Wilk's lambda, and Hotelling's statistics are all the same number. Using worst pain intensity scores, 56% of the sample was classified as having moderate to severe pain.

Differences in Demographic and Clinical Characteristics Between the Pain Groups

Demographic and clinical characteristics of the total sample and the two pain control groups are summarized in Table 2. Of the 224 patients, 52.2% were women, with a mean age of 60.7 years (standard deviation [SD] = 12.3 years). Almost two-thirds of the sample (65.0%) were married and 96.8% were not working. Only 22.8% had a college or university education. The mean length of time since the cancer diagnosis was 2.1 years (SD = 3.5 years), and the mean number of comorbidities was 1.1 (SD = 1.1). The most prevalent cancer diagnoses were gastrointestinal (14.7%), gynecologic (13.8%), and lung (12.1%). Two-thirds of the patients had metastatic disease. The patients reported their own mean health status as 38.3 (SD = 25.3), and their mean KPS score was 64.9 (SD = 15.6).

No differences were found between the two pain groups in any demographic or clinical characteristics except KPS scores and global health status. Patients in the moderate to severe pain group had a significantly lower KPS

Table 1
Results of the MANOVA to Determine the Optimal Single Cutpoint Using Worst Pain Intensity Scores and the Interference Items From the BPI

Cutpoint	Pillai's trace		Wilk's lambda		Hotelling's trace	
	Rank	<i>F</i>	Rank	<i>F</i>	Rank	<i>F</i>
Worst pain						
CP 3	3	5.748	3	5.748	3	5.748
CP 4	1	7.191	1	7.191	1	7.191
CP 5	4	5.552	4	5.552	4	5.552
CP 6	2	6.101	2	6.101	2	6.101

Table 2
Differences in Demographic and Clinical Characteristics Between the Two Pain Groups

Characteristics	Total Sample (n = 224)	Mild (n = 99) ^a	Moderate to Severe (n = 125) ^b	Statistics*
	Mean (SD)	Mean (SD)	Mean (SD)	
Age (years)	60.7 (12.3)	62.4 (11.1)	59.3 (13.0)	$t = 1.86, P = 0.06$
Number of comorbidities	1.1 (1.1)	0.9 (1.0)	1.2 (1.1)	$t = -2.01, P = 0.05$
KPS	64.9 (15.6)	67.2 (14.7)	63.0 (16.1)	$t = 2.05, P = 0.04$
Length of time since diagnosis (years)	2.1 (3.5)	2.6 (4.3)	1.7 (2.8)	$t = 1.81, P = 0.07$
Global health status	38.3 (25.3)	46.6 (23.6)	31.7 (24.7)	$t = 4.59, P < 0.0001$
Gender (%)				
Male	47.8	53.5	43.2	$\chi^2 = 2.37, P = 0.14$
Female	52.2	46.5	56.8	
Marital status (%)				
Married	65.0	66.7	63.6	$\chi^2 = 0.35, P = 0.84$
Not married	22.6	22.2	22.9	
Widow/widower	12.4	11.1	13.6	
Education (%)				
Primary school	62.3	65.7	59.5	$\chi^2 = 0.93, P = 0.63$
Secondary school	14.9	14.1	15.5	
College/university	22.8	20.2	25.0	
Employment status (%)				
Not working	96.8	96.0	97.4	$\chi^2 = 0.37, P = 0.71$
Work full/part-time	3.2	4.0	2.6	
Cancer diagnosis (%)				
Other	23.7	19.2	27.2	$\chi^2 = 9.63, P = 0.38$
Gastrointestinal	14.7	19.2	11.2	
Gynecologic	13.8	12.1	15.2	
Lung	12.1	12.1	12.0	
Prostate	9.4	13.1	6.4	
Breast	9.4	9.1	9.6	
Urological	4.9	5.1	4.8	
Hematological	4.0	3.0	4.8	
Multiple causes	4.0	5.1	3.2	
Unknown origin	4.0	2.0	5.6	
Presence of metastatic disease (%)				
Yes	69.6	70.7	68.8	$\chi^2 = 0.10, P = 0.77$
No	30.4	29.3	31.2	

KPS = Karnofsky Performance Status.

^aMild pain = worst pain intensity ≤ 4 .

^bModerate to severe pain = worst pain intensity > 4 .

*Numbers in boldface are statistically significant ($P < 0.05$).

score ($P = 0.04$) and rated their global health status significantly lower ($P < 0.0001$).

Differences in Pain Characteristics Between the Pain Groups

As expected, significant differences were found between the two pain groups on all the pain intensity scores and pain interference items (Table 3). In addition, patients with moderate to severe pain were more likely to report BTP ($P = 0.003$).

Differences in Coping Strategies, Individual Items on the Catastrophizing Subscale, and Active/Passive Coping Between the Pain Groups

As shown in Table 4, no differences were found among the two pain groups on any of

the subscales of the CSQ, except catastrophizing ($P < 0.001$). The moderate to severe pain group scored significantly higher on the catastrophizing subscale as well as on five of the six individual items from this subscale (all P 's < 0.05). In addition, the moderate to severe pain group scored significantly higher on the passive coping sum score ($P = 0.02$).

Discussion

To our knowledge, this study is the first to compare the use of pain coping strategies between oncology inpatients with mild vs. moderate to severe pain. It is interesting to note that the only difference in the use of various pain coping strategies between the two pain groups was on the catastrophizing

Table 3
Differences in Pain Characteristics Between the Two Pain Groups

Characteristics	Total Sample (<i>n</i> = 224)	Mild (<i>n</i> = 99) ^a	Moderate to Severe (<i>n</i> = 125) ^b	Statistics *
Patients with BTP	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	
Yes	180 (80.7)	71 (71.7)	109 (87.9)	$\chi^2 = 9.27, P = 0.003$
No	43 (19.3)	28 (28.3)	15 (12.1)	
Pain intensity	Mean (SD)	Mean (SD)	Mean (SD)	
Pain now	2.7 (2.2)	1.4 (1.2)	3.7 (2.4)	$t = -9.37, P < 0.0001$
Least pain	1.9 (1.7)	1.1 (1.1)	2.5 (1.8)	$t = -7.38, P < 0.0001$
Average pain	4.3 (2.4)	3.2 (2.4)	5.1 (2.0)	$t = -6.49, P < 0.0001$
Worst pain	5.1 (2.6)	2.6 (1.4)	7.0 (1.5)	$t = -23.20, P < 0.0001$
Percentage of pain relief	68.7 (24.2)	76.7 (25.0)	62.2 (21.5)	$t = 4.56, P < 0.0001$
Total pain interference score	4.4 (2.4)	3.2 (2.3)	5.2 (2.1)	$t = -6.82, P < 0.0001$
Pain interference daily activity	5.7 (3.3)	4.1 (3.1)	6.9 (2.9)	$t = -7.21, P < 0.0001$
Pain interference mood	3.8 (3.1)	2.7 (2.9)	4.6 (3.1)	$t = -4.69, P < 0.0001$
Pain interference ability walk	4.3 (3.7)	3.1 (3.4)	5.2 (3.7)	$t = -4.33, P < 0.0001$
Pain interference work	6.5 (3.7)	5.2 (3.7)	7.6 (3.4)	$t = -4.89, P < 0.0001$
Pain interference relations to other	3.0 (3.1)	2.2 (3.0)	3.6 (3.0)	$t = -3.56, P < 0.0001$
Pain interference sleep	3.5 (3.3)	2.4 (2.9)	4.4 (3.4)	$t = -4.80, P < 0.0001$
Pain interference enjoyment of life	3.8 (3.3)	3.0 (3.2)	4.4 (3.3)	$t = -3.10, P = 0.002$

^aMild pain = worst pain intensity ≤ 4 .

^bModerate to severe pain = worst pain intensity > 4 .

*Numbers in boldface are statistically significant ($P < 0.05$).

subscale of the CSQ. The difference in catastrophizing scores between the patients with mild and moderate to severe pain equates with a moderate effect size (i.e., $d = 0.49$, where d is the difference between the two means in standard deviation units),⁴⁰ which suggests that this difference is clinically meaningful.⁴¹ This finding is consistent with previous reports in patients with chronic non-cancer pain.^{9,27,28}

In this sample of hospitalized patients in the palliative phase of their illness, the cutpoint of 4 between mild and moderate to severe pain is consistent with previous reports in oncology patients.^{5,6} The creation of these cutpoints is based on significant changes in interference with routine activities caused by cancer pain. In fact, an examination of differences in the various interference items between the moderate to severe vs. mild pain groups showed medium to large effect size that ranged from $d = 0.42$ to $d = 0.85$, which suggests clinically meaningful differences in function. In addition, the global health status between the mild and moderate pain group vs. severe pain group showed medium effect size (i.e., $d = 0.59$).

An evaluation of between-group differences on the individual items of the catastrophizing subscale found that patients with moderate to severe pain scored higher on all but one item. The largest between-group differences

were on the items "I feel life isn't worth living," "It is awful and I feel that it overwhelms me," and "I feel I can't stand it anymore" (i.e., all d 's > 0.30). These statements may reflect the emotional distress that these patients are experiencing and may be partially explained by the mean worst pain intensity score of 7.0 reported by patients in the moderate to severe pain group compared with only 2.6 reported by patients in the mild pain group.

It is interesting to note that no between-group differences were found with the CSQ item "I worry all the time about whether it will end." Why no differences were found on this item are not readily apparent but may reflect the anxiety that both groups of patients are feeling related to the hospitalization or to the stage of their disease. This idea is consistent with the work by Turk et al.,⁴² who found that cancer patients with or without metastases appeared to think and worry more about pain, avoid activities to prevent the initiation of pain, and generally feel more hopeless than patients with noncancer-related pain.

The oncology patients with moderate to severe pain use more passive coping strategies (i.e., catastrophizing and praying/hoping) than the patients with mild pain. This finding is consistent with previous reports of patients with noncancer pain.³⁹ In addition, Watkins et al.¹¹ found, in a sample of patients with rheumatoid arthritis (RA), that pain severity

Table 4
Differences in Pain Coping Strategies and Catastrophizing Between the Two Pain Groups

	Total Sample (<i>n</i> = 206)	Mild (<i>n</i> = 95) ^a	Moderate to Severe (<i>n</i> = 111) ^b	Statistics*
	Mean (SD)	Mean (SD)	Mean (SD)	
Coping strategies				
Diverting attention (0–36)	14.3 (8.5)	13.7 (8.4)	14.8 (8.5)	<i>t</i> = -0.85, <i>P</i> = 0.40
Reinterpreting pain sensation (0–36)	6.9 (7.2)	6.6 (7.4)	7.1 (7.03)	<i>t</i> = -0.49, <i>P</i> = 0.62
Coping self-statements (0–36)	18.9 (7.9)	17.7 (8.3)	19.9 (7.5)	<i>t</i> = -1.96, <i>P</i> = 0.05
Ignoring sensations (0–36)	11.8 (7.3)	11.4 (6.8)	12.2 (7.8)	<i>t</i> = -0.87, <i>P</i> = 0.38
Praying/hoping (0–36)	19.1 (8.4)	18.8 (8.6)	19.2 (8.4)	<i>t</i> = -0.34, <i>P</i> = 0.73
Catastrophizing (0–36)	11.4 (7.3)	9.5 (6.4)	13.1 (7.7)	<i>t</i> = -3.54, <i>P</i> < 0.001
Increase behavioral activities (0–36)	13.7 (7.5)	13.7 (7.7)	13.7 (7.3)	<i>t</i> = -0.01, <i>P</i> = 0.99
Control over pain (0–6)	4.5 (1.4)	4.6 (1.3)	4.4 (1.5)	<i>t</i> = -0.92, <i>P</i> = 0.36
Able to decrease pain (0–6)	4.2 (1.4)	4.4 (1.2)	4.1 (1.5)	<i>t</i> = -0.63, <i>P</i> = 0.10
Catastrophizing items				
CSQ 5: It is terrible and I feel it's never going to get any better (0–6)	1.6 (1.9)	1.3 (1.8)	1.8 (2.0)	MW = -2.02, <i>P</i> = 0.04
CSQ 12: It is awful and I feel that it overwhelms me (0–6)	2.5 (1.9)	2.1 (1.8)	2.8 (1.9)	MW = -2.45, <i>P</i> = 0.01
CSQ 14: I feel my life isn't worth living (0–6)	1.1 (1.7)	0.72 (1.4)	1.4 (1.9)	MW = -3.04, <i>P</i> = 0.002
CSQ 28: I worry all the time about whether it will end (0–6)	2.1 (2.0)	1.9 (1.9)	2.3 (2.1)	MW = -1.51, <i>P</i> = 0.13
CSQ 38: I feel I can't stand it anymore (0–6)	2.2 (1.9)	1.8 (1.9)	2.5 (2.0)	MW = -2.37, <i>P</i> = 0.02
CSQ 42: I feel like I can't go on (0–6)	2.0 (1.8)	1.7 (1.8)	2.2 (1.7)	MW = -2.14, <i>P</i> = 0.03
Active coping sum score (0–180)	65.8 (29.8)	63.2 (30.4)	68.0 (29.2)	<i>t</i> = -1.14, <i>P</i> = 0.26
Passive coping sum score (0–72)	30.4 (12.4)	28.3 (11.5)	34.9 (30.3)	<i>t</i> = -2.30, <i>P</i> = 0.02

t = *t*-test; MW = Mann-Whitney test.

^aMild pain = worst pain intensity ≤ 4.

^bModerate to severe pain = worst pain intensity > 4.

*Numbers in boldface are statistically significant (*P* < 0.05).

was a significant predictor of the use of different types of pain coping strategies. These patients reported that when their RA pain was mild, they used more active coping strategies. When their RA pain was severe, they used the more passive or internal types of coping strategies.

In this sample of oncology inpatients, both pain groups had high and similar scores on the hoping/praying subscale. Therefore, the catastrophizing subscale responses explained most of the difference in the passive coping score. As noted by Snow-Turek et al.,⁴³ although praying/hoping is considered a passive coping strategy, praying/hoping for pain relief may be an active coping strategy for some patients. Because the praying/hoping score is so high in both pain groups in the present study, this finding warrants additional investigation.

As shown in Table 5, the CSQ scores in this sample of oncology patients are similar to those reported by patients with noncancer pain for six of the seven subscales (i.e., *d* < 0.30). The only relatively large difference was found in the CSQ subscale of “increase behavioral activities” that equated with

a moderate effect size (i.e., *d* = 0.37). It is possible that the decreased use of behavioral activities in the oncology patients in this sample was due to the severity of their pain or the limitations in function associated with their cancer. In contrast, these oncology inpatients reported higher scores on the two effectiveness items (effect size ≥ 1), which may reflect that these patients were using opioid analgesics and were hospitalized.

When this sample of oncology inpatients' CSQ scores was compared with those of oncology outpatients,^{17–19,22} the Catastrophizing subscale score was higher in inpatients (i.e., *d* = 0.30) (Table 5). This difference may be related to the clinical setting and not to differences in demographic, clinical, or pain characteristics because the studies of oncology outpatients recruited heterogeneous samples at various stages of their disease and with variable pain intensity scores. Because of this heterogeneity, definitive conclusions cannot be drawn about differences in CSQ scores between inpatients and outpatients. The inpatients also reported higher scores on the items “control over pain” (i.e., *d* = 0.71) and

Table 5
Comparison of Coping Strategies Questionnaire Subscale Scores Between Oncology Inpatients with Cancer Pain and Other Published Studies

Coping Strategies	Total Sample of Oncology Inpatients (<i>n</i> = 206)	Lai et al. ²⁰ Weighted Means of Inpatients (<i>n</i> = 30) ^a	Weighted Mean Score Across Oncology Outpatient Studies ^b	Weighted Mean Score Across Noncancer Outpatient Studies ^c
	Mean (SD)	Mean	Mean	Mean
Diverting attention	14.3 (8.5)		15.5 ^d	15.5
Reinterpreting pain sensation	6.9 (7.2)		6.7 ^d	6.5
Coping self-statements	18.9 (7.9)		18.4 ^d	20.6
Ignoring sensations	11.8 (7.3)		12.3 ^d	13.4
Praying/hoping	19.1 (8.4)		17.9 ^d	17.1
Catastrophizing	11.4 (7.3)	18.1	9.2 ^e	12.7
Increase behavioral activities	13.7 (7.5)		15.8 ^d	16.5
Control over pain	4.5 (1.4)	2.3	3.5 ^f	2.4
Able to decrease pain	4.2 (1.4)	2.2	3.4 ^f	2.8

^aWeighted means from experimental group (*n* = 15) and control group (*n* = 15).

^bWeighted means are weighted by the sample size of each of the studies cited.

^c*n* = 620; weighted means are weighted from five samples of chronic pain patients (Lawson et al., 1990) used in the scoring manual for CSQ.

^d*n* = 228 (Barkwell;¹⁷ Gaston-Johansson et al;¹⁸ Wilkie and Keefe¹⁹).

^e*n* = 328 (Barkwell;¹⁷ Gaston-Johansson et al;¹⁸ Novy et al;²² Wilkie and Keefe¹⁹).

^f*n* = 228 (Gaston-Johansson et al;¹⁸ Novy et al;²² Wilkie and Keefe¹⁹).

“able to decrease pain” (i.e., *d* = 0.57) compared with the outpatients, which may reflect that they may feel greater control over pain when they are in a hospital setting surrounded by qualified professionals.

The two most frequently used pain coping strategies in this sample of inpatients were “praying/hoping” and “coping self-statements,” whereas “reinterpreting pain sensations” was the least used strategy. These findings are similar both to studies of oncology outpatients and patients with noncancer pain (Table 5). In addition, the use of prayer is consistent with the work by Zaza et al.,⁴⁴ who found that praying was the strategy most used by oncology outpatients to cope with their cancer.

This sample of oncology inpatients from Norway with pain reported lower scores on the catastrophizing subscale of the CSQ (i.e., *d* = 0.91), as well as higher scores on both of the effectiveness items (i.e., “control over pain” [*d* = 1.57] and “able to decrease pain” [*d* = 1.43]), compared with a sample of inpatients in Taiwan.²⁰ These differences may be explained by the fact that compared with Norwegian patients, the Taiwanese patients were younger, had metastatic disease, and had more severe pain. However, the differences between the two samples may reflect cultural differences in pain beliefs and in the use of pain coping strategies. In addition, studies have shown that hospitalized patients in Taiwan

with pain have very low levels of perceived control over their pain⁴⁵ and have moderate to high levels of pain catastrophizing thoughts.²⁰

In summary, the one subscale that seems most related to pain severity in Norwegian inpatients is catastrophizing. Several studies have suggested that cancer and noncancer pain may be more similar in terms of the psychosocial dimensions of the pain than previously thought.^{21,23,24} However, other authors have suggested that patients with cancer and noncancer pain may differ on their use of catastrophizing.⁴⁶ In two studies that compared levels of catastrophizing in patients with cancer and noncancer pain, one²³ found no differences in levels of catastrophizing, whereas the other²² found that patients with cancer pain reported lower levels of catastrophizing than those with noncancer pain.

Several limitations of this study must be noted. First, the entire sample was inpatients, and all were taking opioid analgesics for their pain. Therefore, the findings may not be generalizable to all oncology patients with pain. Second, because the patients in this study were fairly ill, only a limited number of pain characteristics were evaluated. Future studies need to include additional pain characteristics (e.g., distress associated with pain, self-efficacy) and other psychosocial variables that may mediate or moderate the relationships between coping and pain.

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References

1. Ahles TA, Blanchard EB, Ruckdeschel JC. The multidimensional nature of cancer-related pain. *Pain* 1983;17:277–288.
2. McGuire DB. Comprehensive and multidimensional assessment and measurement of pain. *J Pain Symptom Manage* 1992;7:312–319.
3. Zaza C, Baine N. Cancer pain and psychosocial factors: a critical review of the literature. *J Pain Symptom Manage* 2002;24:526–542.
4. Keefe FJ, Abernethy AP, Campbell LC. Psychological approaches to understanding and treating disease-related pain. *Annu Rev Psychol* 2005;56:601–630.
5. Paul SM, Zelman DC, Smith M, Miaskowski C. Categorizing the severity of cancer pain: further exploration of the establishment of cutpoints. *Pain* 2005;113(1–2):37–44.
6. Serlin RC, Mendoza TR, Nakamura Y, Edwards KR, Cleeland CS. When is cancer pain mild, moderate or severe? Grading pain severity by its interference with function. *Pain* 1995;61:277–284.
7. Jensen MP, Turner JA, Romano JM, Karoly P. Coping with chronic pain: a critical review of the literature. *Pain* 1991;47:249–283.
8. Edwards RR, Moric M, Husfeldt B, Buvanendran A, Ivankovich O. Ethnic similarities and differences in the chronic pain experience: a comparison of African American, Hispanic, and white patients. *Pain Med* 2005;6:88–98.
9. Keefe FJ, Brown GK, Wallston KA, Caldwell DS. Coping with rheumatoid arthritis pain: catastrophizing as a maladaptive strategy. *Pain* 1989;37:51–56.
10. Keefe FJ, Smith SJ, Buffington AL, et al. Recent advances and future directions in the biopsychosocial assessment and treatment of arthritis. *J Consult Clin Psychol* 2002;70:640–655.
11. Watkins KW, Shifren K, Park DC, Morrell RW. Age, pain, and coping with rheumatoid arthritis. *Pain* 1999;82:217–228.
12. Rosenstiel AK, Keefe FJ. The use of coping strategies in chronic low back pain patients: relationship to patient characteristics and current adjustment. *Pain* 1983;17:33–44.
13. Sullivan MJ, D'Eon JL. Relation between catastrophizing and depression in chronic pain patients. *J Abnorm Psychol* 1990;99:260–263.
14. Turner JA, Clancy S. Strategies for coping with chronic low back pain: relationship to pain and disability. *Pain* 1986;24:355–364.
15. Sullivan MJ, Stanish W, Sullivan ME, Tripp D. Differential predictors of pain and disability in patients with whiplash injuries. *Pain Res Manag* 2002;7(2):68–74.
16. Raak R, Wallin M. Thermal thresholds and catastrophizing in individuals with chronic pain after whiplash injury. *Biol Res Nurs* 2006;8:138–146.
17. Barkwell DP. Ascribed meaning: a critical factor in coping and pain attenuation in patients with cancer-related pain. *J Palliat Care* 1991;7(3):5–14.
18. Gaston-Johansson F, Ohly KV, Fall-Dickson JM, Nanda JP, Kennedy MJ. Pain, psychological distress, health status, and coping in patients with breast cancer scheduled for autotransplantation. *Oncol Nurs Forum* 1999;26:1337–1345.
19. Wilkie DJ, Keefe FJ. Coping strategies of patients with lung cancer-related pain. *Clin J Pain* 1991;7:292–299.
20. Lai YH, Guo SL, Keefe FJ, et al. Effects of brief pain education on hospitalized cancer patients with moderate to severe pain. *Support Care Cancer* 2004;12:645–652.
21. Lin CC. Comparison of the effects of perceived self-efficacy on coping with chronic cancer pain and coping with chronic low back pain. *Clin J Pain* 1998;14:303–310.
22. Novy D, Berry MP, Palmer JL, et al. Somatic symptoms in patients with chronic non-cancer-related and cancer-related pain. *J Pain Symptom Manage* 2005;29:603–612.
23. Buck R, Morley S. A daily process design study of attentional pain control strategies in the self-management of cancer pain. *Eur J Pain* 2006;10:385–398.
24. Bishop SR, Warr D. Coping, catastrophizing and chronic pain in breast cancer. *J Behav Med* 2003;26:265–281.
25. Sullivan MJ, Bishop SR, Pivik J. The Pain Catastrophizing Scale: development and validation. *Psychol Assess* 1995;7:524–532.
26. Keefe FJ, Lefebvre JC, Egert JR, et al. The relationship of gender to pain, pain behavior, and disability in osteoarthritis patients: the role of catastrophizing. *Pain* 2000;87:325–334.
27. Sullivan MJ, Thorn B, Haythornthwaite JA, et al. Theoretical perspectives on the relation between

- catastrophizing and pain. *Clin J Pain* 2001;17:52–64.
28. Turner JA, Jensen MP, Romano JM. Do beliefs, coping, and catastrophizing independently predict functioning in patients with chronic pain? *Pain* 2000;85(1–2):115–125.
29. Karnofsky DA, Abelmann WH, Craver LF, Burchenal JH. The use of nitrogen mustards in the palliative treatment of carcinoma. *Cancer* 1948;1:648–656.
30. Buccheri G, Ferrigno D, Tamburini M. Karnofsky and ECOG performance status scoring in lung cancer: a prospective, longitudinal study of 536 patients from a single institution. *Eur J Cancer* 1996;32A:1135–1141.
31. Schag CC, Heinrich RL, Ganz PA. Karnofsky performance status revisited: reliability, validity, and guidelines. *J Clin Oncol* 1984;2:187–193.
32. Mor V, Laliberte L, Morris JN, Wiemann M. The Karnofsky Performance Status Scale. An examination of its reliability and validity in a research setting. *Cancer* 1984;53:2002–2007.
33. Aaronson NK, Ahmedzai S, Bergman B, et al. The European Organisation for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in international clinical trials in oncology. *J Natl Cancer Inst* 1993;85:365–376.
34. Klepstad P, Loge JH, Borchgrevink PC, et al. The Norwegian brief pain inventory questionnaire: translation and validation in cancer pain patients. *J Pain Symptom Manage* 2002;24:517–525.
35. Ger LP, Ho ST, Sun WZ, Wang MS, Cleeland CS. Validation of the brief pain inventory in a Taiwanese population. *J Pain Symptom Manage* 1999;18:316–322.
36. Lydick E, Epstein RS, Himmelberger D, White CJ. Area under the curve: a metric for patient subjective responses in episodic diseases. *Qual Life Res* 1995;4:41–45.
37. Brislin RN. The wording and translation of research instruments. Beverly Hills, CA: Sage Publications, 1986.
38. Nicholas MK, Wilson PH, Goyen J. Comparison of cognitive-behavioral group treatment and an alternative non-psychological treatment for chronic low back pain. *Pain* 1992;48:339–347.
39. Brown GK, Nicassio PM. Development of a questionnaire for the assessment of active and passive coping strategies in chronic pain patients. *Pain* 1987;31:53–64.
40. Cohen J. The earth is round ($p < 0.05$). *Am Psychol* 1994;49:997–1003.
41. Sloan JA, Cella D, Frost MH, Guyatt G, Osoba D. Quality of life III: translating the science of quality-of-life assessment into clinical practice—an example-driven approach for practicing clinicians and clinical researchers. *Clin Ther* 2003;25(Suppl D):D1–D5.
42. Turk DC, Sist TC, Okifuji A, et al. Adaptation to metastatic cancer pain, regional/local cancer pain and non cancer pain: role of psychological and behavioral factors. *Pain* 1998;74:247–256.
43. Snow-Turek AL, Norris MP, Tan G. Active and passive coping strategies in chronic pain patients. *Pain* 1996;64:455–462.
44. Zaza C, Sellick SM, Hillier LM. Coping with cancer: what do patients do. *J Psychosoc Oncol* 2005;23:55–73.
45. Lai YH, Keefe FJ, Sun WZ, et al. Relationship between pain-specific beliefs and adherence to analgesic regimens in Taiwanese cancer patients: a preliminary study. *J Pain Symptom Manage* 2002;24:415–423.
46. de Wit R, van Dam F, Litjens MJ, Abu-Saad HH. Assessment of pain cognitions in cancer patients with chronic pain. *J Pain Symptom Manage* 2001;22:911–924.