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Can the Outcome of Spinal Cord Stimulation in Chronic Complex Regional Pain Syndrome Type I Patients Be Predicted by Catastrophizing Thoughts?

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BACKGROUND: In this study, we examined whether pain catastrophizing is a predictor of spinal cord stimulation (SCS) outcome in patients with complex regional pain syndrome type I (CRPS-I).

METHODS: Participants in this prospective cohort study were 32 patients with chronic CRPS-I, who received permanent SCS after a positive response to test stimulation. Baseline assessment was performed before test stimulation and included questions on demographic variables, disease information, pain intensity, pain catastrophizing, and health-related quality of life (QOL). Follow-up assessment was performed 9 mo after final implantation and included pain intensity, global perceived effect (GPE), and QOL. Successful SCS outcome was defined as a reduction of pain intensity of at least 50% on a visual analog scale or "much improved" or "total pain relief" on GPE.

RESULTS: After 9 months, 38% of the patients had a successful outcome in reduced pain intensity and 53% of the patients in GPE. In addition, improvements were apparent on several of the domains of QOL. However, no evidence was found for the predictive value of pain catastrophizing on the efficacy of SCS in reduction of pain intensity, GPE, or QOL.

CONCLUSIONS: This study showed that the efficacy of SCS in reduction of pain intensity, GPE, and QOL in a well-defined chronic CRPS-I population was not predicted by pain catastrophizing. Therefore, we conclude that a high level of pain catastrophizing in patients with CRPS-I is not a contraindication for SCS treatment.

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Complex regional pain syndrome (CRPS) is a pain syndrome characterized by extreme pain and dysfunction of the sympathetic nervous system. It is usually restricted to one region of the body, typically an extremity. CRPS is mostly initiated after a traumatic injury or surgical intervention in a limb. Two different types are distinguished: CRPS-I (formerly called reflex sympathetic dystrophy) and CRPS-II (formerly called causalgia). The yearly incidence of CRPS in The Netherlands is 26.2 per 100,000 people (95% confidence interval [CI]: 23.0–29.7), with the highest incidence occurring between 61 and 70 yr old.[1] A substantial portion (~20%) of patients with acute CRPS goes on to develop a chronic condition. Although the syndrome is relatively rare, it can be seen as a significant medical condition.[2,3]

Treatments for CRPS primarily focus on restoration of function of the affected limb. One of the treatment options is spinal cord stimulation (SCS), which has been recommended especially for patient with CRPS showing a poor response to conservative treatment.[2,4,5] SCS has been found to be effective in CRPS for pain relief and improvement in quality of life (QOL).[4,6–8] Despite the evidence of its efficacy, there are still unresolved issues. First, the long-term efficacy of SCS is still under debate.[9,10] Second, and most important for this study, not all patients profit from this procedure to the same degree.[11] Adequate selection of patients may avoid unnecessary costs and suffering.[10] Usually, the actual implantation is preceded by trial stimulation and only patients with a positive response to trial stimulation receive permanent SCS. However, this selection procedure does not guarantee long-term success[8] and may be supplemented by additional criteria. Prognostic studies on preimplantation predictor variables for successful outcome are needed to establish these criteria and guide clinical decision making.

Prognostic variables for the efficacy of SCS that have emerged from previous studies include dual

versus single-lead stimulators, site of placement, number of previous operations, and duration of pain before implantation.[11,12] Demographic variables were not consistently associated with outcome. It has also been suggested that psychological factors may play a role in determining long-term efficacy of SCS.[13] Only few studies have examined whether psychological factors influence treatment outcome and the evidence is inconclusive.[11,13,14] This study focuses on the role of one specific psychological factor that may be predictive of outcome in SCS, i.e., pain catastrophizing. Bruehl and Chung[15] suggested that pain catastrophizing may be critically involved in the maintenance of the primary features of CRPS, and that these dysfunctional cognitions should be addressed before implementing medical treatment strategies. Catastrophic cognitions and incorrect beliefs about the meaning of pain are indeed common in patients with CRPS.[16] Because of the intensity of pain and the somatic symptoms characteristic of CRPS (e.g., allodynia), patients with CRPS may be especially inclined to assume that pain signals damage.[15] Catastrophic misinterpretations of pain may be a primary contributor to disuse and in the end may have a deleterious effect on CRPS itself and its responsiveness to treatment.[15]

This study examines whether pain catastrophizing is indeed a predictor of SCS outcome in patients with CRPS-I. Pain catastrophizing was measured before implantation, and outcome in terms of pain reduction, global perceived effect (GPE), and QOL were assessed 9 mo after implantation. We hypothesized that high catastrophizing patients would have a less successful long-term outcome.

METHODS
Patient Selection
Participants in this prospective cohort study were selected from the population with CRPS of the outpatient clinic for Pain and Pain Management of the University Hospital Maastricht, The Netherlands. The study complied with the provisions of the Declaration of Helsinki with regard to research involving human subjects and was approved by the medical ethics committee of Maastricht University Hospital in Maastricht, The Netherlands. All patients gave written informed consent. Patients were eligible for inclusion if they met the diagnostic criteria for CRPS established by the International Association for the Study of Pain, with impaired function and symptoms beyond the area of trauma.[17] Additional inclusion criteria were 1) symptoms limited to one hand or one foot, with the entire hand or foot affected, 2) disease duration of at least 6 mo, 3) no long-term benefits of standard therapy (6 mo of physical therapy, sympathetic blockade, transcutaneous electrical nerve stimulation, and pain medication), and 4) a mean pain intensity of at least 5 on a visual analog scale (VAS) from 0 (no pain)

to 10 (worst possible pain), measured with a 4-day pain diary.

Patients were excluded from participation if they suffered from Raynaud's disease, current or previous neurological abnormalities other than CRPS, other conditions affecting the diseased or the contralateral extremity, a blood-clotting disorder or if they used an anticoagulant drug or a cardiac pacemaker.

Test Stimulation and Implantation
All patients first underwent test stimulation for 1 wk. Only patients showing a positive response after test stimulation received permanent SCS. A positive response to test stimulation was defined as a decrease in pain intensity on the VAS with at least 50% during the last 4 days of the testing period or a score of a least 6 (much improved) on a seven-point Likert scale measuring GPE.[18] For details on the technique of test stimulation and permanent implantation, we refer to Kemler et al.[19]

Measures
Demographic Variables
Patients recorded their sex, age, marital status, and highest level of education.

Disease Variables
Duration of pain in months and location of the pain (arm versus leg) were recorded.

Pain Intensity
Pain intensity was scored on a VAS, with end points "no pain" and "worst possible pain."

Global Perceived Effect
GPE was measured on a seven-point scale (1, worst ever; 2, much worse; 3, worse; 4, no change; 5, improved; 6, much improved; 7, total pain relief).

Quality of Life
QOL was measured with the 36-item short-form health survey (SF-36). This instrument was developed during the Medical Outcome Studies of the Rand Corporation and measures general health and QOL.[20] The SF-36 encompasses eight domains of health-related QOL: physical functioning, social functioning, role limitations physical, role limitations emotional, mental health, vitality, bodily pain, and general health perception. All raw scale scores are linearly converted to a 0–100 scale. Higher scores indicate a higher level of QOL. The psychometric properties of the SF-36 are adequate.[20–23]

Pain Catastrophizing
Pain catastrophizing was measured with the Dutch version of the Pain Catastrophizing Scale (PCS) (Crombez G, Vlaeyen JWS. The pain catastrophizing scale. Unpublished Dutch/Flemisch translation, 1996).[24] The PCS is a 13-item instrument. Items are scored on a five-point Likert scale, ranging from 0 (not at all) to 4

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(always), developed to identify catastrophic thoughts or feelings that patients experience in relation to their pain. A sample item for the PCS is "When I'm in pain, I worry all the time about whether the pain will end." The PCS has good psychometric properties.[25–27]

Procedure

Before their first appointment with the physician, eligible patients received a questionnaire package by mail, which they had to return (Appendix). The questionnaire package included the questions on demographic variables, disease information and pain intensity, the PCS and the SF-36. Next, patients received test implantation for 1 wk, and when successful, permanent SCS followed immediately thereafter. Follow-up assessment was performed 9 mo after final implantation. Patients received a questionnaire package (containing questions on pain intensity and GPE and the SF-36) by mail.

Statistical Analysis

Pain intensity was calculated by averaging the VAS measured for 4 days, three times a day. Successful outcome was defined as an improvement on the VAS of at least 50%.[28] In addition, for GPE successful outcome was defined as a score of 6 or 7 (i.e., "much improved" or "total pain relief").

Changes in pain and the health-related QOL domains from baseline to follow-up were tested using paired-sample t-tests. To give an indication of clinical relevance of the improvement after SCS, effect sizes were calculated by converting a t value into an r value.[29] We followed the widely accepted suggestions about what constitutes a large, medium, or small effect for a significance test of a sample: $r = 0.10$ (small effect), $r = 0.30$ (medium effect), and $r = 0.50$ (large effect). Logistic regression analysis was used to identify predictors of the dichotomous outcome variables successful pain relief and successful GPE. As potential predictors, we examined demographic variables, pain duration, pain location, pain intensity at baseline, and pain catastrophizing. To reduce the number of predictors, we first conducted univariate analyses, using t-tests for continuous and χ^2 analyses for categorical variables. Variables that differentiated between patients with or without successful outcome in the univariate analyses were subsequently included in the logistic regression analyses. In order not to miss a potentially important predictor, we used a significance level of 0.10 for these preliminary analyses. Pain catastrophizing was considered our crucial predictor variable and was always entered to the regression.

To ascertain whether PCS scores are normally distributed and regression analysis was allowed, the Kolmorgorov-Smirnov test was performed. Linear regression analysis was used to identify predictors of changes in health-related QOL from baseline to 9 mo follow-up. Significant variables from the previous univariate analyses together with pain catastrophizing

Table 1. Baseline Characteristics of the Complex Regional Pain Syndrome Patients

Characteristic	$N = 32$
Gender, %	
Men	21.2
Women	78.8
Age, yr (SD) [range]	38.9 (10.5) [15–58]
Pain duration, yr (SD) [range]	4.5 (3.3) [0.5–16]
Location of pain, %	
Arm	46.9
Leg	53.1
Marital status, %	
Married	75.0
Unmarried	12.5
Divorced	6.3
Education, %	
Lower vocational education	46.9
Secondary education	53.1
VAS score mean (SD) [range]	7.6 (1.4) [5.0–10.0]
PCS score mean (SD) [range]	31.0 (10.2) [2.0–47.0]
SF-36 domains	
Physical function	28.8 (24.6) [0–90.0]
Mean (SD) [range]	
Social function	41.3 (27.9) [0–100]
Role limitations physical	7.5 (18.7) [0–75.0]
Role limitation emotional	59.5 (44.8) [0–100]
Mental health	57.8 (22.9) [0–96.0]
Vitality	39.3 (20.9) [5.0–75.0]
Bodily pain	12.5 (12.8) [0–34.7]
General health perception	50.5 (15.8) [25.0–85.0]

SD = standard deviation; VAS = visual analog scale; PCS = pain catastrophizing scale.

were entered as independent variables. Moreover, the analyses for each domain were controlled for baseline level of QOL for that domain. All data were analyzed by using the SPSS Statistical Package, version 15.0, for windows (Chicago, IL). We used a significance level of 0.05 for the logistic and linear regression analyses.

RESULTS

Description of Population

Between January 2000 and September 2006, all patients with CRPS-I who were eligible for SCS were referred to our pain clinic. After the inclusion and exclusion criteria, 58 patients were considered for SCS. Of these, 26 patients (45%) did not receive permanent SCS for the following reasons: insufficient pain reduction after test stimulation ($n = 14$), low pain intensity at the day of test stimulation ($n = 2$), no paresthesias after test stimulation ($n = 2$), refusal of permanent implantation ($n = 3$), or psychological problems ($n = 2$). For three patients no follow-up assessment was available. The final study population thus consisted of 32 patients with chronic CRPS-I. Baseline characteristics are summarized in Table 1.

SCS Outcome at Follow-up

Pain relief on the VAS of at least 50% was reported by 12 patients (38%). Successful outcome on the GPE (much improved or total pain relief) was reported by 17 patients (53%). In addition, 10 patients (31%) reported to be slightly improved, 3 patients (9%) reported no

Table 2. Pain and Quality-of-Life Outcome Measures

Measuring instrument	Baseline score Mean (SD)	Follow-up score Mean (SD)	P	95% CI of mean difference	Effect size
Pain intensity (VAS)	7.6 (1.4)	4.2 (2.6)	<0.0001	2.4 to 4.2	0.81
SF-36					
Physical functioning	28.8 (24.6)	34.3 (29.1)	NS	−15.4 to 4.4	0.07
Social functioning	41.3 (27.9)	56.3 (26.9)	0.02	−27.4 to −2.4	0.40
Role limitations physical	7.5 (18.7)	26.7 (38.8)	0.007	−32.7 to −5.6	0.47
Role limitations emotional	59.5 (44.8)	64.3 (47.1)	NS	−30.1 to 20.5	0.08
Mental health	57.8 (22.9)	68.6 (20.1)	0.02	−19.6 to −2.0	0.42
Vitality	39.3 (20.9)	51.1 (20.5)	0.02	−21.2 to −2.4	0.44
Bodily pain	12.5 (12.8)	42.2 (24.8)	<0.0001	−37.8 to −21.7	0.81
General health	50.5 (15.8)	45.9 (21.7)	NS	−2.5 to 11.8	0.25

NS = nonsignificant; SD = standard deviation; VAS = visual analog scale.

Table 3. Univariate Analyses for Success on Pain Intensity and GPE

	Pain intensity				GPE			
Predictor	Successful, *n*	Not successful, *n*	χ	P	Successful, *n*	Not successful, *n*	χ	P
Gender								
Male	2	5	0.305	0.68	4	3	0.058	1.00
Female	10	15			13	12		
Education								
High	4	13	3.020	0.14	9	8	0.000	1.00
Low	8	7			8	7		
Localization								
Hand	6	9	0.075	1.00	9	6	0.536	0.50
Foot	6	11			8	9		
	Mean (SD)	Mean (SD)	*t*		Mean (SD)	Mean (SD)	*t*	
Age	40.5 (9.9)	38.2 (10.6)	−0.62	0.54	40.8 (9.8)	37.1 (10.7)	−1.02	0.32
Pain duration, yr	5.3 (4.6)	4.0 (2.2)	−1.08	0.29	5.4 (4.0)	3.5 (2.0)	−1.74	0.09
Pain intensity	7.6 (1.6)	7.5 (1.3)	−0.06	0.95	7.5 (1.4)	7.6 (1.5)	0.12	0.90
Pain catastrophizing	34.4 (4.9)	29.0 (12.0)	1.50	0.15	30.1 (10.4)	32.1 (10.2)	0.55	0.59

SD = standard deviation; GPE = global perceived effect.

change, and 2 patients (6%) reported a worsening of their condition. Table 2 shows average pain intensity and the scores on the SF-36 domains at baseline (preimplantation) and at follow-up. Pain intensity was significantly reduced from baseline to follow-up. In addition, 9 mo after SCS, patients scored significantly higher on the SF-36 domains social functioning, role limitations physical, mental health, vitality, and bodily pain. The effect sizes show that improvement on the VAS, role limitations physical and bodily pain were clinically relevant.

Prognostic Factors

The results of the Kolmorgorov-Smirnov test, to ascertain whether PCS scores are normally distributed, showed a P value of 0.97, which allowed us to perform regression analyses. Table 3 summarizes the results of the univariate regression analyses to identify variables associated with successful outcome in pain intensity and GPE. The demographic variables were not predictive for any of the outcome measures. Next, multivariate logistic regression analyses were performed to predict successful pain relief and

successful GPE, with pain duration and pain catastrophizing as the two independent variables. The regression model did not reach significance for pain intensity or GPE. Pain catastrophizing seemed unrelated to outcome of SCS in terms of pain relief and GPE.

Table 4 presents the multivariate regression analyses for the eight domains of the SF-36. All regression models included pain duration and the baseline score of the relevant SF-36 domain as control variables and catastrophizing as the crucial variable in the final model. Pain duration was found to be a significant predictor of social functioning and bodily pain at the follow-up. Moreover, for physical role limitations, vitality, and general health there was a nonsignificant trend for the association between pain duration and outcome. Patients with a longer duration of pain before SCS seem to profit more in various aspects of QOL. Pain catastrophizing was not predictive of any of the SF-36 domains at the follow-up.

Post hoc, we also tested whether any of the other demographic or pain-related variables were associated with outcome when these were entered instead of pain

Table 4. Multivariate Regression Analyses for the Domains of the SF-36

Dependent	Summary of the model	Predictors	β	P
Physical functioning follow-up	$R^2 = 0.28$, $F = 3.36$, $P = 0.03$	Pain duration	−0.01	0.96
		Physical functioning baseline	0.56	0.005
		Catastrophizing	−0.11	0.55
Social functioning follow-up	$R^2 = 0.20$, $F = 2.26$, $P = 0.10$	Pain duration	0.39	0.03
		Social functioning baseline	0.17	0.34
		Catastrophizing	−0.01	0.94
Role limitations physical follow-up	$R^2 = 0.26$, $F = 3.11$, $P = 0.04$	Pain duration	0.32	0.07
		Role limitations physical baseline	0.31	0.09
		Catastrophizing	0.18	0.29
Role limitations emotional follow-up	$R^2 = 0.03$, $F = 0.28$, $P = 0.84$	Pain duration	0.13	0.55
		Role limitations emotional baseline	−0.05	0.81
		Catastrophizing	−0.12	0.56
Mental health follow-up	$R^2 = 0.24$, $F = 2.76$, $P = 0.06$	Pain duration	0.23	0.19
		Mental health baseline	0.44	0.03
		Catastrophizing	0.21	0.29
Vitality follow-up	$R^2 = 0.19$, $F = 1.97$, $P = 0.15$	Pain duration	0.34	0.09
		Vitality baseline	0.41	0.05
		Catastrophizing	0.08	0.68
Bodily pain follow-up	$R^2 = 0.36$, $F = 5.28$, $P = 0.005$	Pain duration	0.41	0.01
		Bodily pain baseline	0.47	0.005
		Catastrophizing	0.06	0.72
General health follow-up	$R^2 = 0.37$, $F = 4.81$, $P = 0.009$	Pain duration	0.28	0.09
		General health baseline	0.59	0.002
		Catastrophizing	−0.02	0.93

catastrophizing, but no consistent predictive effect of any of these variables was found. Only education seemed to be related to general health at follow-up ($β = 0.32$; $P = 0.04$), with higher educated patients having a better general health at the follow-up.

DISCUSSION

This study examined whether pain catastrophizing is a predictor of SCS outcome in patients with CRPS-I. The results of this study showed that the efficacy of SCS in reduction of pain intensity, GPE, and QOL in a well-defined chronic CRPS-I population was not predicted by pain catastrophizing. For the SF-36 domains social functioning and bodily pain, pain duration seemed to be predictive, i.e., patients with a longer duration of pain profited more from SCS.

It has been suggested that pain catastrophizing may contribute to a negative emotional state, which is an important factor in the maintenance of CRPS and the responses to treatment.[15] The influence of pain catastrophizing on outcome of treatment in CRPS has not yet been examined. However, there is evidence from other pain conditions that preintervention pain catastrophizing predicts postoperative pain after abdominal surgery[30] and after total knee arthroplasty.[31] More pertinent to this study, a few investigators have examined the influence of pain catastrophizing on treatment for chronic pain conditions. Two studies found pain catastrophizing to be a negative predictor of treatment efficacy; it reduced patients' subjective rating of success after multidisciplinary treatment for low-back pain[32] and was related to less pain reduction

after radiofrequency lesions of the cervical spinal dorsal ganglion in cervicobrachialgia.[33] Another study did not find an association between pain catastrophizing and outcome of high frequency transcutaneous electrical nerve stimulation in a chronic outpatient pain population.[34]

In this study, we were not able to find evidence for the hypothesized influence of pain catastrophizing on the outcome of SCS in patients with CRPS. It may be noted that baseline scores of the outcome pain intensity were lower and baseline scores of the SF-36 domains were higher, compared with mean scores in a chronic pain population found by Nicholas et al.,[35] except for role limitation emotional, mental health, and vitality. Also, the mean score of the PCS in this study was quite high (mean = 31), indicating that patients with CRPS display a significant degree of pain catastrophizing. Indeed, compared with other chronic pain populations, where a median of 22 or 25 was found, in the present population 78% ($n = 25$) of the patients obtained a score that was higher than 25.[36] It may be hypothesized that the absence of an effect results from the fact that almost all patients scored in the high catastrophizing range. It may also be proposed that especially in this population, catastrophizing may be secondary to the seriousness of the complaints and the repeated failures of previous treatments, leading patients to believe that CRPS is an untreatable and progressively deteriorating condition.[15] The main pain duration was fairly long and possibly in less chronic patients the predictive value of pain catastrophizing could be present. Nevertheless, our results

do demonstrate that SCS may have long-term positive effects in patients with CRPS-I despite high levels of pain catastrophizing.

QOL is an upcoming issue in chronic disease conditions.[37] With regard to the impact of catastrophizing on QOL, findings in a large community sample with different pain subgroups and people without pain[38] and in chronic pain population[39] indicated that catastrophizing most prominently affects the mental and social aspects of QOL. In this study, we also found that pain catastrophizing was most closely related to mental health at baseline, although this correlation was moderate (Pearson's $r = -0.47$). However, there was no prospective relationship between pain catastrophizing and changes in QOL after treatment. The only prospective relation that we found in this study was between pain duration and social functioning and bodily pain at the follow-up. For pre- to postintervention changes in physical role limitations, vitality, and general health, a trend toward an association with pain duration was found. Patients suffering from pain for a longer period of time showed larger improvement on these aspects of QOL. This is in contrast to a previous study that found an inverse relationship between time from onset of first CRPS symptoms and efficacy of SCS.[12] At present, we do not have an explanation for these controversial results.

Several limitations of this study should be acknowledged. First, we used a mail-out method to collect our data. Although we urged the patient to complete the questionnaire alone, without help of others, and complete every item, there is no control in the at-home situation, which may have biased the results. Second, given the observational character of this study, we cannot determine whether the therapeutic success of SCS as assessed on the VAS and the GPE is due to the specific effects of SCS, a placebo effect, a regression to the mean (spontaneous recovery), or a combination of these factors. Third, although the sample size ($n = 32$) in this study was sufficient to reach a large effect size ($r = 0.50$),[40] we were not able to detect medium and small effect sizes. However, considering the odds ratios that we found for successful pain relief and GPE, for both catastrophizing (odds ratio [OR] GPE = 0.98, CI: 0.92–1.81; OR VAS = 1.04, CI: 0.96–1.12) and pain duration (OR GPE = 1.29, CI: 0.92–1.81; OR VAS = 1.23, CI: 0.91–1.68) as independent variables, we may conclude that the actual relationships are almost negligible and that the negative findings are not only due to a power problem.

Finally, we focused on a single psychological variable as a predictor of outcome. Although the selection of this variable was guided by theoretical considerations and based on the prior suggestion that pain catastrophizing is of critical importance in the maintenance of the primary features of CRPS,[15] future studies could include other potentially important factors (e.g., depression). This study also has several strengths. First, there was a very high response rate, because returning the questionnaire was required for a first medical visit. Second, we used a well-defined CRPS-I population. Finally, we had a fairly long follow-up period (9 mo) and thereby could really assess predictors of long-term efficacy of SCS.

This was the first study to test the assumption that pain catastrophizing may negatively affect responsiveness to treatment in CRPS. More specifically, we assessed its influence on long-term outcome after SCS. We found no evidence for the predictive value of pain catastrophizing for SCS outcome in terms of pain intensity, GPE, and QOL in patients with CRPS-I. Therefore, we conclude that a high level of pain catastrophizing in patients with CRPS-I is not a contraindication for SCS treatment.

APPENDIX: THE PAIN CATASTROPHIZING SCALE

Pain Catastrophizing Scale

Sullivan MJL, Bishop S, Pivik J. (1995)

Name:	Age:	Gender:	Date:
----------------------	----------	☐Male ☐Female	---------------------

Everyone experiences painful situations at some point in their lives. Such experiences may include headaches, tooth pain, joint or muscle pain. People are often exposed to situations that may cause pain such as illness, injury, dental procedures or surgery.

Instructions:
We are interested in the types of thoughts and feelings that you have when you are in pain. Listed below are thirteen statements describing different thoughts and feelings that may be associated with pain. Using the following scale, please indicate the degree to which you have these thoughts and feelings when you are experiencing pain.

RATING	0	1	2	3	4
MEANING	Not at all	To a slight degree	To a moderate degree	To a great degree	All the time

When I'm in pain ...

Number	Statement	Rating
1	I worry all the time about whether the pain will end.	
2	I feel I can't go on.	
3	It's terrible and I think it's never going to get any better	
4	It's awful and I feel that it overwhelms me.	
5	I feel I can't stand it anymore	
6	I become afraid that the pain will get worse.	
7	I keep thinking of other painful events	
8	I anxiously want the pain to go away	
9	I can't seem to keep it our of my mind	
10	I keep thinking about how much it hurts.	
11	I keep thinking about how badly I want the pain to stop	
12	There's nothing I can do to reduce the intensity of the pain	
13	I wonder whether something serious may happen.	

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