

Determinants of health-related quality of life in patients with persistent somatoform pain disorder

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Abstract

Background. Health-related quality of life (HRQOL) has been investigated widely in patients with chronic pain, but no study has focused particularly on the situation of patients with persistent somatoform pain disorder.

Aims. To survey the impairments of patients with somatoform pain disorder (ICD-10: F45.4) and to predict pain-related impairments and HRQOL on the basis of coping styles.

Method. A consecutively recruited sample of 100 patients (65% female) was examined in a cross-sectional study. Questionnaires were administered to assess pain intensity (visual analogue scale), pain-related disabilities (Pain Disability Index), quality of life (Short-Form Health Survey-36), and ways of coping with pain (Coping Strategies Questionnaire). To predict pain-related impairments and HRQOL, a multiple linear regression analysis was carried out.

Results. HRQOL of patients with somatoform pain is strongly and significantly reduced compared with the general population. Among the coping measures, Increasing Pain Behaviors and Catastrophizing have a negative influence on patients' pain-related impairments and the physical components of HRQOL. The mental component of HRQOL was predicted solely by Catastrophizing. No positive effect of active coping styles on health-related outcome variables could be observed.

Conclusion. Patients with persistent somatoform pain disorder feel severely impaired. A clear pattern emerges for negative effects of the coping styles Increasing Pain Behaviors and Catastrophizing, while the identification of beneficial coping failed.

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Keywords: Persistent somatoform pain disorder; Pain disorder associated with psychological factors; Health-related quality of life; Coping

1. Introduction

The impact of chronic pain on subjective well-being and functioning has been widely investigated (Turk and Okifuji, 2002). Likewise, the search for psychosocial determinants of pain chronification and impact is the subject of numerous studies (Proctor et al., 2000). Most of these studies deal with samples where the pain etiology is heterogenous or remains unclear (for an overview see: Proctor et al., 2000; Turk and Okifuji, 2002). In contrast, it is noteworthy that relatively little is known

about the psychosocial situation of patients who suffer from persistent somatoform pain disorder.

As defined by the ICD-10 classification system of the WHO (World Health Organization, 1992), persistent somatoform pain disorder (F45.4) is characterized by the predominant complaint of persistent, severe and distressing pain, which cannot be explained adequately by a physiological process or a physical disorder. The pain occurs in association with emotional conflict or psychosocial problems that are sufficient to allow the conclusion that they are the main causative influences. As exclusionary criteria, pain does not occur in the presence of schizophrenia or related disorders, or only during mood disorders or other somatoform disorders.

It is important to notice that in the ICD-10 description, persistent somatoform pain disorder is defined not only by the exclusion of causal somatic factors in the

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etiology of the pain. It additionally requires the presence of a psychosocial factor related to the onset of the pain, a criterion that is frequently ignored in medical and research practice. Ignoring this psychosocial criterion often leads to a simplistic and dualistic conceptualisation of “psychogenic” versus “organic” causes of chronic pain, a view that has been the subject of widespread criticism (e.g., Grace, 1998; Van Houdenhove, 2000). In view of recent theoretical models focusing on the interaction of stress factors and neural network (Melzack, 1999, 2001) or the “vulnerability-diathesis-stress model” of pain chronification (Dworkin et al., 1999), it seems to be appropriate to conceptualize the causality of chronic pain in a multidimensional psychoneurobiological continuum. In this theoretical framework, somatoform pain does not display a distinct category with clear delimitations but a pain etiology close to the “neuropsychosocial” pole. In contrast, other pain syndromes such as rheumatoid arthritis are located mainly towards the “neurobiological” pole.

Due to the fact that by definition (World Health Organization, 1992) psychosocial factors are seen as important for the etiology of this disorder, it seems to be especially worthwhile to look at psychosocial determinants of HRQOL in these patients.

The impact of chronic pain due to different etiologies on the HRQOL of patients has been investigated previously (e.g., chronic peripheral neuropathic pain: Meyer-Rosberg et al., 2001; migraine: Terwindt et al., 2000). To summarize, present evidence suggests that patients with chronic pain syndrome due to different etiologies may have an impaired HRQOL in most domains compared to a healthy population.

A highly sensitive PUBMED literature search (descriptors: “HRQOL and pain”) failed to identify studies with clearly diagnosed somatoform pain disorder. Few studies investigated patients with “fibromyalgia”, a condition where a considerable overlap to persistent somatoform pain disorder can be assumed. For example, in the study of Schlenk (Schlenk et al., 1998), patients with fibromyalgia had lower HRQOL than patients with prostate cancer and patients with hyperlipidaemia and more variability for the role-emotional dimension compared to normative data. The authors concluded that various chronic disorders are associated with reduced HRQOL. However, there may be important differences in the domains of HRQOL affected; in addition, the extent of variation seems to vary across specific chronic disorders. Against this background there is a lack of evidence regarding the HRQOL in patients diagnosed with persistent somatoform pain disorder.

Besides studies investigating how pain affects patients’ lives, extensive research activities have identified psychosocial predictors of adjustment to chronic pain (e.g., Burns et al., 1996; Strahl et al., 2000; Jensen et al.,

2002) Perhaps the most interesting issues in this area are the cognitive and behavioral strategies patients use to cope with pain. A consistent and central result has been that catastrophizing is maladaptive (e.g., Jensen et al., 1992; Geisser et al., 1994). Some evidence suggests that pain-contingent resting (Jensen et al., 2002) and the use of sedative-hypnotic medication (Jensen et al., 1995) are as well related to poorer functioning as praying and hoping (Hill et al., 1995). The role of adaptive coping strategies is less soundly understood, but it seems that coping self-statements, regular exercise, seeking social support, positive social comparison, and task persistence may be correlated with good adaptation (for a comprehensive overview of the actual evidence, see Boothby et al., 1999).

Against this background our study pursues two aims:

1. To sketch a picture of the pain-related impairments and the generic HRQOL of patients with persistent somatoform pain disorder.
2. To develop a statistical model for predicting pain-related impairments and HRQOL on the basis of coping styles and selected sociodemographic and medical data.

2. Materials and methods

2.1. Sample recruitment

The collection of data was carried out between November 1999 and July 2001. Participants in this study were 100 of 162 consecutively recruited patients who were referred to the department for Psychosomatic Medicine (a center of tertiary care for patients with persistent pain) at the University in Mainz for the psychosomatic evaluation of chronic pain. Patients were included in the study if they had persistent pain (> 6 months) without an adequate physical explanation and if they were competent German-language speakers and readers. Exclusion criteria were age > 65 years, psychosis, severe substance dependency and a continuing request to retire because of the disease. The latter criterion was adopted because in some cases the self-reportings may be biased by the wish to obtain an early retirement. Patients were referred by their general practitioners or other physicians in- or outside the university hospital.

One hundred patients were diagnosed as having a persistent somatoform pain disorder, ICD-10 F 45.4 (resp. DSM-IV “Pain Disorder Associated With Psychological Factors”, 307.80). Of the 62 nonparticipant patients, 39 patients had other diagnoses that accounted better for the complaints (e.g., Somatization Disorder, Anxiety disorders). Eight patients declined participation in the study before completing the diagnostic procedure. Five patients were excluded due to a standing or plan-

ned request to retire because of the disease. Finally, 10 patients were excluded for other reasons (e.g., illiteracy, severe substance dependency). A summary of patients' demographics is shown in Table 1.

2.2. Assessment of persistent somatoform pain

Assessment of the patient's complaints followed a structured procedure. The patients had at least four outpatient visits lasting about 7–9 h overall. As a part of the diagnostic procedure, the German version (Wittchen et al., 1997) of the Structured Clinical Interview for the DSM-IV (SCID) (First et al., 1996) was administered by a trained psychologist. To ensure that the pain was somatoform and not caused by a medical condition, an interdisciplinary physical evaluation was performed. If necessary we arranged additional examinations in other departments of our clinic (esp. anesthesia, orthopedics, rheumatology, neurology, or dentistry).

In some cases we became aware of iatrogenic damage, which our team thoroughly discussed (see Table 1). There were two major types of damage: first, we found surgeries that were not indicated and often lead to an increase of pain (i.e., operations of carpal tunnel, spinal column, or dental treatments). Second, there were problematic medications of analgesics or sedatives,

sometimes justifying the diagnosis of "harmful use" (ICD-10: F 1x.1) or "dependence syndrome" (ICD-10: F 1x.2).

The intensity of pain was measured by ratings using visual analogue scales (VAS), 100 mm lines whose endpoints are anchored by pain descriptors, ranging from 0 (no pain) to 100 (cannot hold out). Respondents are asked to place a mark along the scale to indicate their actual level of pain ("How intense was your typical pain during the last four weeks?").

2.3. Psychological measures

A large set of psychological tests were administered to the patients at the time of the examination in the clinic. The tests and the dimension they measured included:

Pain-related disabilities: A validated German version (Dillmann et al., 1994) of the Pain Disability Index (PDI) (Tait et al., 1990) was used to assess the degree to which chronic pain interferes with various domains of daily life. The PDI score ranges from 0 to 70.

Health-related quality of life: HRQOL was assessed by the Short-Form Health Survey (SF-36), a 36-item self-rating questionnaire developed by the Medical Outcome Trust (Ware et al., 1993) to investigate some primary aspects of quality of life. The first four subscales refer to physical aspects, while the last four subscales indicate psychosocial aspects (see Fig. 1). Subscores were computed according to the German manual (Bullinger and Kirchberger, 1998). The resulting individual values were compared to means and standard deviations (SD) of age- and sex-matched reference groups (total $N = 2914$, 55% female, mean age = 47.7 years) out of the German normal population (taken from the manual). The results of the SF-36 were computed as z values ($(x_i - \text{mean})/\text{SD}$). A z value of zero means it is exactly iden-

Table 1
Sociodemographic and pain-related characteristics of the sample

Age (in years, mean; SD)	44.9	10.0
Gender (% female)	64.0%	(64/100)
Marital status		
Single	24.0%	(24/100)
Married/cohabitation	76.0%	(76/100)
Years of formal education		
≤ 9	53.0%	(53/99)
≤ 13	29.0%	(29/99)
> 13	17.0%	(17/99)
Occupation		
Regular work	48.0%	(48/100)
< 10 h regular work per week	5.0%	(5/100)
Vocational training/occupational retraining	6.0%	(6/100)
Disabled/pensioner	11.0%	(11/100)
Housewife/house husband	18.0%	(18/100)
Unemployed	12.0%	(12/100)
Pain duration (years, median, interquartile range)	5.9	(2.7–13.3)
Number of physicians consulted regarding pain (median, interquartile range)	9.0	(6–15)
Iatrogenic damage		
Yes	29.9%	(29/97)
No	70.1%	(68/97)

Note. $N = 97$ –100. Differences in the indicated N result from missing data. For nominally scaled variables, percentage, frequencies, and reference values are indicated (in parentheses). Variables on proportional scale level are described by means and standard deviations when the data are normally distributed. Otherwise they are described with median and interquartile range (in parentheses).

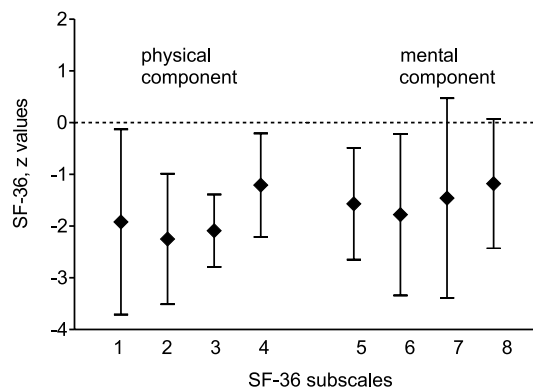


Fig. 1. Health-related quality of life in patients with persistent somatoform pain disorder. Scales of SF-36 (z values, mean, SD): 1, physical functioning; 2, role limitation-physical; 3, bodily pain; 4, general health perception; 5, vitality (energy/fatigue); 6, social functioning; 7, role limitation-emotional; and 8, emotional well-being.

tical to the population mean, a value of -1 is one SD below the mean, etc. This transformation was done for two reasons. Firstly, it is well known that in some aspects the HRQOL decreases differently according to age and differently in men versus women. Secondly, reference values are at different levels for the different subscores (Bullinger and Kirchberger, 1998). Total values were computed for the physical and mental components of HRQOL by averaging the eight weighted subscales using the coefficients generated in the MOS study (Hays et al., 1994).

Pain coping: Ways of coping with pain were assessed by the German version (Luka-Krausgrill et al., 1994) of the Coping Strategies Questionnaire (CSQ) (Rosenstiel and Keefe, 1983), one of the most widely used measures of pain coping strategies. The CSQ has eight subscales: Diverting Attention, Reinterpreting Pain Sensation, Coping Self-statements, Ignoring Pain Sensations, Praying or Hoping, Catastrophizing, Increasing Activity Level and Increasing Pain Behaviors. One item (16) on the Increasing Pain Behaviors scale was eliminated due to low corrected item-total correlation. Scores represent the mean subscale values ranging from 1 to 7.

2.4. Hypotheses

1. Health-related quality of life: In comparison to the general population, HRQOL among patients who have persistent somatoform pain disorder is significantly reduced (SF-36).
2. The reduction of HRQOL reaches a clinically meaningful level.
3. Consideration of coping leads to a clinically relevant and statistically significant prediction model in HRQOL and pain-related impairments. In particular, it is expected that the following coping styles are associated with deterioration in HRQOL: Catastrophizing, Praying or Hoping, Increasing Pain Behaviors. If there are positive associations, it is expected that Coping Self-statements, Diverting Attention, Reinterpreting Pain Sensation, Ignoring Pain Sensations and Increasing Activity Level will have moderate positive effects on pain related impairment and HRQOL.

2.5. Statistical analyses

Results concerning the first and second hypotheses were reported with descriptive measures of the variables. Age and gender-matched z values based on a reference population were reported for each domain in HRQOL. The third hypothesis was tested via multiple, linear regression analysis for the four outcome variables (pain-related disabilities, pain intensity, mental and physical components of HRQOL) controlled for sex, age, pain duration and number of physicians consulted regarding

pain (as an indicator of “doctor shopping”). Predictor selection in the regression analysis for the mental and physical health components followed a stepwise forward procedure (using SPSS 8.0). The significance level was set to $\alpha < .05$ for each statistical test.

3. Results

3.1. Patients

Approximately half of the patients were able to perform regular work. As far as the medical characteristics are concerned, a considerable proportion of the patients had iatrogenic damage; accordingly, most of them had consulted many physicians due to their pain symptoms. The sample spans a broad spectrum of duration of the pain disorder, with a median pain duration of almost 6 years. The socio-demographic and medical characteristics of the sample are shown in Table 1.

3.2. Pain-related impairment and HRQOL

Patients reported a considerable intensity of pain on the visual analogue scale. The pain-related disabilities in the PDI were reported as being moderate. HRQOL is extremely low on all subscales of SF-36 (see Fig. 1). Most pronounced is the impairment in the physical component of HRQOL, where the z value lies nearly two standard deviations below the normal population. In the mental component the decline reached more than one standard deviation. Table 2 shows the descriptive statistics of pain-related impairment and HRQOL.

3.3. Coping

The ranking of the ways of coping with pain shows that the most pronounced coping styles were Coping self-statements, Increasing Pain Behaviors and Increasing Activity Level, followed by Catastrophizing and Praying or Hoping, while Diverting Attention, Ignoring Pain Sensations and Reinterpreting Pain Sensations were reported as being used seldomly (see Table 2).

3.4. Prediction model for pain-related impairment and HRQOL

The results of the regression analysis are shown in Table 3.

With regard to the pain intensity (VAS), only one parameter – Increasing Pain Behaviors – shows a significant influence in the regression model. This variable explained 20% of the variance. High values of Increasing Pain Behaviors were associated with stronger pain. As to the pain related disabilities (PDI), a model emerges

Table 2
Pain-related impairment, HRQOL and coping in patients with somatoform pain

Variables	Mean	SD
Pain Disability Index, PDI (range 0–70)	32.40	13.67
Visual analogue scale (range 0–100)	64.14	21.45
Short-Form Health Survey, SF-36 (<i>z</i> values)		
Physical functioning	−1.92	1.79
Role limitation-physical	−2.25	1.26
Bodily pain	−2.09	0.70
General health perception	−1.21	1.00
Vitality (energy/fatigue)	−1.57	1.08
Social functioning	−1.78	1.56
Role limitation-emotional	−1.46	1.93
Emotional well-being	−1.18	1.25
SF-36 physical component	−1.86	0.88
SF-36 mental component	−1.46	1.03
Coping Strategies Questionnaire, CSQ, (range 1–7)		
Coping self-statements	4.52	1.09
Increasing pain behaviors	4.40	1.10
Increasing activity level	4.17	0.95
Catastrophizing	3.76	1.20
Praying or hoping	3.50	1.23
Diverting attention	3.37	1.15
Ignoring pain sensations	3.34	1.22
Reinterpreting pain sensation	2.05	1.03

Note. $N = 96$ –100, due to some missing data.

consisting of two predictors that jointly explain 18.4% of the variance. Increasing Pain Behaviors as well as Catastrophizing are positively associated with disability. The prediction model for physical HRQOL also shows two predictors, with an explained variance of 37.1%. There is a negative influence of Increasing Pain Behaviors on physical HRQOL. In older patients the physical HRQOL is less reduced than in younger ones. Finally, on the mental HRQOL Catastrophizing is the only significant predictor and has a strong negative influence that explains 22.9% of the variance.

4. Discussion

4.1. Pain-related impairment and HRQOL

This is the first study that examined HRQOL in a carefully diagnosed, homogenous sample of patients with persistent somatoform pain disorder. Although it was hypothesized that patients would report significantly reduced HRQOL, the magnitude of their impairment was startling. The physical components of HRQOL were linked to an especially high degree of impairment; the observed decrease of nearly two standard deviations signifies that, on average, the patients had a HRQOL as low as approximately the lowest five percent of the normal population. Likewise, the mental components of HRQOL showed a decline of more than

one standard deviation, which make them comparable to the lowest 10% of the normal population. The reported intensity of pain was consistently relatively high. Compared to patients with chronic pain of heterogeneous etiologies, the reduction in HRQOL of patients with somatoform pain seems to be approximately the same (e.g., Becker et al., 1997) or even stronger (e.g., Wang et al., 2001).

In contrast to HRQOL our patients described their pain-related disabilities as being only moderate compared to data (mean 44.6, SD 13.4) based on patients with chronic pain syndromes of different etiologies (Chibnall and Tait, 1994) and data of the German translation of the PDI (Dillmann et al., 1994). As a clinical observation we had the impression that despite severe impairments regarding the HRQOL, patients intensively and often successfully tried to maintain their daily life functioning even if, in some cases, such attempts led to worsening of the HRQOL in the long run. As a hypothesis the discrepancies between the extremely reduced HRQOL and the only moderate disabilities could be explained by the foregoing observation. Additionally, the exclusionary criterion of a standing request for retirement because of the disease could lead to the presence in our sample of a lower proportion of patients who experienced severe impairments in different areas of daily life functioning.

4.2. Coping

The most often used coping styles of our patients were Increasing Pain Behaviors and Catastrophizing, both of which were negative coping strategies. Coping Self-statements and Increasing Activity Level also were reported as being predominantly used; they represent coping styles where positive effects on pain-related impairment and HRQOL were hypothesized. The comparison of coping strategies with those of other surveys illustrates that there is a considerable heterogeneity of preferred coping styles depending on sample characteristics of different studies. For example, in a study that included a large number of patients with heterogeneous pain etiology, the most pronounced coping strategies were Praying or Hoping, while Increasing Activity Level played only a moderate role (Tan et al., 2001). The minor role of Increasing Activity Level in a heterogeneous sample of patients with chronic pain also was supported in another study with a smaller sample (Stewart et al., 2001). In contrast, our patients had a high level of Increasing Activity Level and most seemed not to use Praying or Hoping. To summarise, patients with somatoform pain disorder show some particularities in their predominantly used coping strategies. But given the heterogeneity of previous results of coping research, it seems premature to generalise these results before replication in an independent sample.

Table 3
Determinants of pain intensity, pain-related disabilities and health-related quality of life in patients with persistent somatoform pain disorder

Response	Explanatory variables	r^a	Contrib. when variable(s) added last		Parameter estimates			
			Expl. Prop. of var.%	DF	β^b	95% Conf. interv.	t	$p \leq$
<i>Pain intensity</i>	Increasing pain behaviors	.45***	20.0	1	8.968	5.217 to 12.719	4.69	.001
	Constant				25.178	8.738 to 41.619		
	MODEL		$R^2 = .200$	df = 1;88		$F = 21.954$.001
Variables not in the equation								
	Diverting attention	.18			.056			.577
	Reinterp. pain sensation	.03			-.025			.802
	Coping self-statements	-.01			-.058			.548
	Ignoring pain sensations	-.18			-.098			.321
	Praying or hoping	.20*			.137			.161
	Catastrophizing	.24*			.149			.143
	Increasing activity level	.15			.082			.400
	Sex	—			.077			.443
	Age	.02			-.044			.650
	Pain duration (log) ^d	.12			.010			.932
	No. physicians consulted	-.02			-.092			.341
<i>PDI</i>	Increasing pain behaviors	.36*** ^c	6.7	1	3.440	0.992 to 5.888	2.76	.007
	Catastrophizing	.34***	5.7	1	2.981	0.692 to 5.270	2.55	.012
	Constant				6.351	-5.070 to 17.772		
	MODEL		$R^2 = .184$	df = 2;93		$F = 10.487$		$p \leq .001$
Variables not in the equation								
	Diverting attention	.08			-.048			.631
	Reinterp. pain sensation	-.07			-.136			.157
	Coping self-statements	-.11			-.163			.083
	Ignoring pain sensations	-.26**			-.163			.092
	Praying or hoping	.16			.027			.783
	Increasing activity level	-.08			-.108			.262
	Sex	—			-.085			.403
	Age	.03			-.028			.768
	Pain duration (log) ^d	.06			-.219			.069
	No. physicians consulted	.06			-.007			.946
<i>HRQOL: Physical</i>	Increasing pain behaviors	-.55***	33.1	1	-.468	-0.599 to -0.3367	-6.959	.000
	Age	.20*	6.7	1	.023	0.009 to 0.0367	3.135	.002
	Constant				-.891	-1.710 to -0.0717		
	MODEL		$R^2 = .371$	df = 2;92		$F = 27.153$		$p \leq .001$

Response	Explanatory variables	Contrib. when variable(s) added last			Parameter estimates			
		r^a	Expl. Prop. of var.%	DF	β^b	95% Conf. interv.	t	$p \leq$
Variables not in the equation								
	Diverting attention	-.20			-.065			.474
	Reinterp. pain sensation	-.01			-.003			.974
	Coping self-statements	-.04			.007			.930
	Ignoring pain sensations	-.22*			.104			.220
	Praying or hoping	-.05			.038			.662
	Catastrophizing	-.27**			-.134			.130
	Increasing activity level	-.13			-.067			.425
	Sex	—			.078			.386
	Pain duration (log) ^d	.02			.137			.196
	No. physicians consulted	-.08			.011			.901
<i>HRQOL:</i>	Catastrophizing	-.48***	22.9	1	-.414	-0.565 to -0.2631	-5.37	.000
<i>Mental</i>	Constant				.096	-0.500 to 0.6918		
	MODEL		$R^2 = .229$	df = 1;97		$F = 28.827$		$p \leq .001$
Variables not in the equation								
	Diverting attention	-.10			-.026			.772
	Reinterp. pain sensation	.04			.102			.261
	Coping self-statements	-.08			-.071			.427
	Ignoring pain sensations	.15			.031			.738
	Praying or hoping	-.04			.092			.325
	Increasing activity level	-.07			.036			.689
	Increasing pain behaviors	-.31**			-.164			.085
	Sex	—			-.052			.578
	Age	.06			.111			.219
	Pain duration (log) ^d	.03			.102			.342
	No. physicians consulted	-.02			.034			.708

^a Bivariate correlations (Pearson).

^b Not standardised β 's.

^c * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$.

^d Pain duration was markedly non-normally distributed; therefore a logarithmic transformation has been carried out. $N = 100$.

4.3. Determinants of pain-related impairment and HRQOL

As a central result of our study, we could predict clinically important outcome parameters by considering the coping strategies of the patients. Our hypothesis regarding negative effects of some coping styles could be validated for Increasing Pain Behaviors and Catastrophizing but not for Praying or Hoping.

Increasing Pain Behaviors could be identified as having the most powerful effect on increased pain intensity and pain-related disabilities as well as on the physical component of HRQOL. In our model, the physical component of HRQOL also was influenced by the age of the patients, in the direction that younger age leads to a negative estimation of physical HRQOL.

Catastrophizing was a strong predictor for mental HRQOL, and also predicted pain-related disabilities. It seems that the main impact of this cognitive coping strategy lies in the mental and emotional domains. The results are consistent with the well-known maladaptive effect of catastrophizing (e.g. Jensen et al., 1992; Geisser et al., 1994). Preliminary evidence (Boothby et al., 1999) suggested that pain-contingent resting and the use of sedative-hypnotic medication are linked to negative outcomes. As both behaviors are part of the dimension Increasing Pain Behaviors in the CSQ, this finding could be substantiated for patients with somatoform pain, too. Interestingly, patients' gender, pain duration or "doctor-shopping" does not influence the adaptation of patients to their pain disorder.

Our hypothesis about beneficial effects of coping strategies could not be confirmed. Once again, consistent with most results of pain research (Boothby et al., 1999), it seems more difficult to identify beneficial behaviors than maladaptive ones. But one has to consider that the statistical analysis chosen here leads to fewer significant associations than a simple correlational analysis would have yielded. The advantage of the procedure we used lies in the fact that common variance of correlated coping strategy is considered only once; otherwise, an overestimation of effects would be probable. On the other hand, some of the predictors have a negative relationship to outcome-variables where a positive association theoretically would be assumed (e.g., Ignoring Pain Sensations and physical component of HRQOL).

In addition to the identification of predictors of HRQOL, it seems worth mentioning that a set of variables usually regarded as crucial for the cognitive-behavioral therapy of patients with chronic pain (e.g., Basler and Kröner-Herwig, 1995) did not show any significant results among the patients in this sample: Thus, our data do not support the hypothesized beneficial effect of coping strategies such as Diverting Attention or Coping Self-Statements on outcome parameters. It is

important to notice that the measure of coping strategies was performed on patients who were not treated with psychotherapy. A reevaluation of the same structure after a cognitive-behavioral treatment would be the appropriate way to test whether the generally encouraged coping strategies are linked to outcome after psychotherapeutic treatment.

4.4. Limitations and strengths of the study

A limitation of the study is the possibility that we obtained a biased sample, as the data were collected at a specialty clinic for patients with chronic pain disorders. Bias seems not to be the case for socio-demographic variables and the duration of the pain disorder, but one cannot rule it out with respect to other specific characteristics of the sample. On the other hand, a strength of the study lies in the homogeneity of the sample. The way diagnoses of persistent somatoform disorders were made enhanced the validity of the diagnosis. The combination of a structured interview (SCID-I) with an extended interdisciplinary diagnostic procedure was especially valuable for the often difficult exclusion of causal somatic factors and the identification of psychosocial factors related to the onset of the pain.

5. Conclusion

Patients with persistent somatoform pain reported a strikingly impaired HRQOL and considerable pain intensity, despite only moderate pain related disabilities. Predominant coping styles included negative strategies such as Increasing Pain Behaviors and Catastrophizing.

The coping strategies Increasing Pain Behaviors and, subsequently, Catastrophizing were identified as predictors of poor health-related outcomes, while the recognition of beneficial effects of coping strategies failed.

For use in clinical practice, the following conclusions can be drawn:

Clinicians who treat patients with somatoform pain disorder may want to pay attention to subjective impairment in various areas of daily living. Additionally, specific questions regarding the ways of coping with pain should routinely be addressed. It seems to be promising to focus especially on cognitive distortion and dysfunctional pain behavior. Such an emphasis helps to identify patients who are highly stressed and who use unfavorable coping styles and have excessively pessimistic attitudes. This focus could facilitate the decision as to whether psychotherapeutic treatment is appropriate.

To evaluate the benefits and modes of action of psychotherapy, future research should investigate the role of coping strategies in a randomized intervention trial.

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