Health-related Quality of Life and Pain Beliefs Among People Suffering From Chronic Pain

Elin Dysvik, RN, MSN,*
Torill Christine Lindstrøm, MA, PhD,[†]
Ole-Johan Eikeland, MA,[‡] **and**
Gerd Karin Natvig, RN, MSN, PhD[∫]

ABSTRACT:

Chronic pain, when not effectively treated and relieved, may have a harmful effect on all aspects of health-related quality of life (HRQL). Furthermore, pain beliefs are considered an important mediating psychological factor in chronic pain. The present study focused on HRQL as measured by the Medical Outcomes Survey-Short Form (SF-36) and addressed possible relationships between pain beliefs as measured by the Pain Beliefs and Perceptions Inventory (PBAPI). The possible impact of background variables such as age, gender, social support, pain intensity, pain duration, and analgesics on HRQL were controlled for in the analyses. The study sample consisted of 81 people who were recruited from a multidisciplinary pain management program. Data were collected as the first part of a routine pretreatment evaluation. The chronic-pain patients reported lower scores on all dimensions of HRQL compared to normal controls and other patient groups. No significant association was found between pain beliefs and the physical health dimension of HRQL whereas gender, pain duration, and pain intensity were significant predictors of that dimension. In addition, one of the dimensions of pain beliefs (i.e., mystery) was found to be predictive of the mental health dimension of HRQL. Social support made an additional contribution to the explained variance in mental health. The implications of these results for assessing HRQL and pain beliefs in chronic pain are discussed.

**From the School of Health and Social Work Education, Stavanger University College, Stavanger, Norway, [†]Department of Psychosocial Psychology, University of Bergen, Bergen, Norway, [‡]Eikeland Research and Teaching, Bergen, Norway, and [∫]Department of Public Health and Primary Health Care, University of Bergen, Bergen, Norway.*

Address correspondence and reprint requests to Elin Dysvik, RN, MSN, Assistant Professor, Stavanger University College, School of Health and Social Work Education. P.O. Box 8002, N-4068 Stavanger, Norway. E-mail: elin.dysvik@hs.his.no

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Chronic pain, when not effectively treated and relieved, may have a harmful effect on all aspects of health-related quality of life (HRQL). Chronic pain is defined as "pain that has lasted 6 months or longer, is ongoing, is due to non-life-threatening causes, has not responded to currently available treatment methods, and may continue for the remainder of the patient's life" (Dunajcik, 1999, p. 471). It produces emotional stress; interferes with functional capacity; and hinders family, social, and vocational roles (Turk, 1996). More effective treatments for chronic pain are needed. Consequently, multidisciplinary treatment approaches have gained more attention in improving HRQL in chronic-pain patients (Becker, Sjøgren, Bech, Olsen, & Eriksen, 2000; Flor, Fydrich, & Turk, 1992; Morley, Eccleston, & Williams, 1999). A common conceptual framework within these approaches is a biopsychosocial understanding of chronic pain (Gatchel, 1999). This understanding views pain as influenced by biological, psychological, and social factors that combine and interact in various ways. Furthermore, it often incorporates cognitive behavioral therapy (CBT), which aims at improving the quality of life and pain beliefs of chronic-pain patients (Turk, Meichenbaum, & Genest, 1983).

HRQL is a multidimensional construct given a number of more or less broad interpretations, depending on which aspects concerning the patient's life are included. In this study, HRQL was defined as personal health status and refers to aspects of the patients' lives that are dominated or significantly influenced by mental and physical well-being (Ware, Snow, Kosinski, & Gandek, 2000). It is argued that the main goal of nursing care is to identify the professional activities that may promote and safeguard the quality of life of patients (Draper, 1997). HRQL is also increasingly being recognized as one of the most important outcome parameters in chronic conditions, including those for pain management. In practical situations, HRQL data can be used as guidelines to identify specific patient problems as well as decisions about health programs and resource allocations (Wiklund, 1990). Chronic-pain patients often experience a burden of disease that has a negative effect on HRQL (Schlenk et al., 1998), and all dimensions of HRQL may be reduced (Becker et al., 1997; Katz, 2002). However, the relationship between pain and HRQL is complex (Anderson & Burckhardt, 1999) and may be mediated by biopsychosocial factors (Wilson & Cleary, 1995). Research findings suggest that patients with various chronic disorders may have lower HRQL in most domains compared to a healthy population (Nortvedt, Riise, Myhr, & Nyland, 1999; Schlenk et al., 1998; Wahl, Loge, Wiklund, & Hanestad, 2000). It must be added that these findings are unclear regarding the specific dimensions of HRQL that are influenced by chronic disorders, and few comparisons across these patient groups exist (Schlenk et al., 1998). Thus, when comparing chronic-pain patients to groups with various chronic disorders, it may help to build up a database of chronic conditions, which is a major aim in HRQL research.

In a cognitive behavioral model, pain beliefs are considered to be an important factor in chronic pain conditions and are defined as "the patients' own conceptualizations of what pain is, and what pain means to them" (Williams & Thorn, 1989) or as "assumptions about reality, which serve as a perceptual lens through which events are interpreted" (Lazarus & Folkman, 1984). Pain beliefs are often linked to culturally shared values and powerful emotions (Morris, 1999). In various reports, significant associations have been observed between pain beliefs and functioning in people with chronic pain. For example, pain duration (Williams & Thorn, 1989) and pain constancy (Herda, Siegeris, & Basler, 1994; Williams, Robinson, & Geisser, 1994) have been associated with greater pain intensity. Pain beliefs in constancy (Herda et al., 1994; Stroud, Thorn, Jensen, & Boothby, 2000) and permanence (Turner, Jensen, & Romano, 2000; Williams et al., 1994) have shown higher correlations with psychological symptomatology. Furthermore, time permanence has been related to decreased physical functioning (Turner et al., 2000). Beliefs about the mysterious nature of pain have been related to poorer treatment outcomes and greater psychosocial distress (Herda et al., 1994; Williams & Thorn, 1989; Williams et al. 1994). Lastly, self-blame has been associated with depression (Williams et al. 1994). Health professionals who ignore the patients' pain beliefs may complicate or entirely undermine effective treatment (Williams & Thorn, 1989).

Several studies in pain indicate that sociodemographic differences exist. Gender differences are reported in chronic pain, which indicate that women are more sensitive to painful stimuli than men (Fillingim, 2000; Miaskowski, 1999). Research has suggested that social factors also play a central role in the maintenance of chronic pain and disability (Turk, 1996). In the medical tradition, pain has been studied as a physical symptom often related to duration and intensity. Despite advances in medicine, there is a general agreement that physical factors cannot completely account for reported physical symptoms (Turk, 1996).

Exploring HRQL in chronic-pain patients seems important for several reasons. Research reveals that a reduction in HRQL is a common problem in chronic pain (Becker et al., 1997; Katz 2002) and that more effective treatments are needed. In this respect, information about HRQL data is considered useful to estimate the burden of chronic pain and evaluate possible differences between patient groups. Research findings also show that pain beliefs may have an impact on pain intensity, functioning, and treatment compliance (Herda et al., 1994; Turner et al., 2000; Williams & Thorn, 1989; Williams et al., 1994). Thus, information about pain beliefs may provide insight into important psychological factors of the pain experience that may have a negative impact on HRQL and complicate effective treatment. To our knowledge, reports focusing on the relationship between pain beliefs and HRQL are still missing. Additionally, understanding how sociodemographic and medical variables are related to HRQL may be helpful in identifying the multidimensionality of pain and risk factors that limit physical and psychological adjustment. Based on theory and previous research, the aims of the present study were (a) to evaluate for differences in HRQL among people with chronic pain compared to other patient groups and (b) to explore the impact of pain beliefs (i.e., mystery, self-blame, time constancy, time permanence), sociodemographic variables (i.e., gender, age, social support), and medical variables (i.e., pain duration, pain intensity, analgesics) on HRQL. Because the Pain Beliefs and Perceptions Inventory (PBAPI) has gained recognition as a cross-cultural instrument to measure pain beliefs, its psychometric properties in a Norwegian population were investigated in this study.

METHODS

Design and Sample

A survey design was used to identify the impact of pain beliefs and various sociodemographic and medical variables on HRQL in patients with chronic pain. The patients were consecutive referrals to a multidisciplinary pain management program based on a group approach. The sample consisted of 81 outpatients with various chronic pain conditions, described below. Data were collected as the first part of a routine pretreatment evaluation. Although this was not a random sample, it was considered to represent the different counties in Norway as the Norwegian society is rather homogeneous. The subjects met the following inclusion criteria: (a) were between 18 and 67 years of age, (b) reported chronic nonmalignant pain that had lasted for more than 6 months, (c) completed medical investigation and/or treatment prior to referral, (d) demonstrated motivation to participate in an active rehabilitation program, and (e) had no ongoing litigation due to the pain problem. Prior to being accepted for the pain management program, all patients had undergone a medical evaluation. They also met for a clinical interview with their group leader, who presented the program and outlined expectations and obligations.

All patients were fully informed during the clinical interview, and written instructions were delivered. It was emphasized that voluntary participation was required and that the participants could leave the program at any time. Confidentiality was guaranteed, and a written consent form was obtained at inclusion. The study was accepted by the Regional Ethical Committee and the Data Inspectorate and was conducted according to the Helsinki Declaration.

Instruments

The participants completed at home several self-report measures (described below), which were delivered to the rehabilitation unit when the participants entered the pain management program:

The Medical Outcomes Survey-Short Form (SF-36) (Ware et al., 2000) is a frequently used measure of HRQL, and norm-based comparisons are available (Loge & Kaasa, 1998). The instrument has been validated and tested for reliability in several international and Norwegian studies (Loge, Kaasa, Hjermstad, & Kvien, 1998). The SF-36 is considered useful in documenting differences in HRQL in patient groups and for estimating the burden of different chronic disorders (Ware & Gandek, 1994). It includes eight subscales measuring physical functioning (PF), role physical (RP) (i.e., physical problems with work or other daily activities), bodily pain (BP), general health (GH), vitality (VT), social functioning (SF), role emotional (RE) (i.e., emotional problems with work or other daily activities), and mental health (MH). Two global scores, labeled physical health score (PCS) and mental health score (MCS), can be calculated (Ware & Kosinski, 2001). The higher the score, the better the HRQL.

The PBAPI (Williams & Thorn, 1989) was translated into Norwegian according to standard procedures (Frank-Stromborg & Olsen, 1997), and the original author (D. A. Williams) was consulted for further clarity. The PBAPI originally assessed three dimensions of pain beliefs: self-blame (S-B), pain as mysterious (MYST), and duration (TIME). However, new factor analytic studies have proposed that the TIME scale be split into two scales, labeled "permanence" (PERM), referring to pain as a permanent part of life, and "constancy" (CONST), focusing on the immediate perception of pain being constant or intermittent (Herda et al., 1994; Williams et al., 1994; Morley & Wilkinson, 1995). This instrument has 16 items scored on a 4-point Likert scale (i.e., -2 = *strongly disagree* to 2 = *strongly agree*), and there is no zero point. Positive scores indicate endorsement of the belief being described.

The Visual Analogue Scale (VAS) (Huskisson, 1983) is a 100 mm line that was used to measure average pain intensity. One end is defined as *no pain* and the other as *severe pain*. The patient is asked to mark the line at a point corresponding to the present severity of the pain experience. Particular advantages of the VAS are its sensitivity, simplicity, reproducibility, and universality (Huskisson, 1983).

Social support was measured by one single item: "In general, how many close friends do you have (people that you feel at ease with, can talk with about any problem or worry)?" Pain duration was measured by one other single item asking for the year of diagnosis related to the pain problem.

Analgesics were scored on a 5-point Likert scale asking how often the participants had used analgesics during the last month (i.e., from 5 = *several times daily* to 1 = *never*). Types of analgesics were not specified.

Data Analysis

Descriptive statistics were used to report the characteristics of the participants. The SF-36 values were calculated according to the manual for each of the subscales (Ware et al., 2000), and two global scores (PCS and MCS) were obtained (Ware & Kosinski, 2001). For instrument validation, the 16 items from the PBAPI were factor analyzed using the principal components method of factor extraction. Pearson bivariate correlation coefficients were performed between PCS, MCS, and the independent variables (pain beliefs, sociodemographic variables, and medical variables) used in the regression analyses. Multiple regression analyses were performed predicting PCS and MCS from pain beliefs and sociodemographic and medical variables.

RESULTS

Demographic Characteristics of the Sample

The average age of the patients was 47 years (range: 27 to 66). There were 66 females, 15 males, and 20 who were widows, widowers, or single. Educational data showed that 31% had not completed high school, 38% had completed high school or the equivalent, and 31% had some college or university education. Among them, 21% were currently employed either full or part time, and 16% of the sample was on sick leave. Furthermore, 22% were engaged in retraining programs, and 30% were receiving disability compensation due to their pain problem. Mean severity of pain, using the VAS, was 70 mm. Average time since diagnosis related to the pain problem was 10 years (range: 1 to 46), representing 22% of their total life. Primary pain complaints varied; 56% suffered from musculoskeletal pain, 17% from headaches, 14% from abdominal/pelvic pain, 8% from whiplash injury, and the remaining 5% represented various other conditions related to neuropathic pain. Among the participants, 48% were categorized as using a low amount of analgesics (i.e., no use or some days per week), and 52% were using a high amount (i.e., once or several times daily).

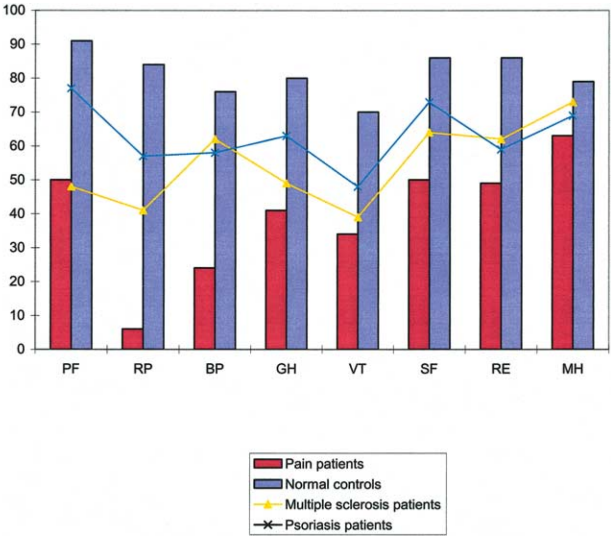

Figure 1. ■ Mean health-related quality-of-life scores (SF-36) among pain, multiple sclerosis, and psoriasis patients, and normative data for the Norwegian general population. (Total sample $n = 2323$). *Note*: PF = physical functioning, RP = role physical, BP = bodily pain, GH = general health, VT = vitality, SF = social functioning, RE = role emotional, MH = mental health.

SF-36 Data

Lower values were found on all SF-36 subscales compared to normative data from a Norwegian population (Loge & Kaasa, 1998). Mean differences between the pain patients and the normal Norwegian population were significant ($p < .0001$), and the lowest observed t value of these differences was 7.3. We also observed lower values compared to Norwegian psoriasis patients (Wahl et al., 2000) and multiple sclerosis patients (Nortvedt et al., 1999), the values from the latter group being significantly reduced on most SF-36 subscales except for PF and VT. The most affected domain in chronic pain was the RP, referring to limitations in daily activities. The results are presented in Figure 1.

PBAPI Data

The PBAPI was factor analyzed using the principal components method of factor extraction. Four factors with eigenvalues greater than 1.0 were extracted, accounting for 56% of the variance. As can be seen in Table 1, the factor structure partly supports the 4-factor solution reported earlier (Herda et al., 1994; Morley & Wilkinson, 1995; Williams et al., 1994). The orthogonal varimax rotation revealed that the TIME scale was divided according to previous recommendations except for item number 5, labeled "Pain is here to stay." This item had low and nearly equal loadings on both factors and was therefore excluded. The S-B

TABLE 1.
Four-Factor Solution of PBAPI Items With Principal Component Analysis. Varimax Rotation. PC Extraction

Item Descriptor and Number	Scale	F1	F2	F3	F4
Pain is continuous (6)	CONST	0.91			
Varies in intensity (16)	CONST	0.84			
Some pain-free periods (3)	CONST	0.75			
Wake up and sleep with pain (10)	CONST	0.73			
There is a cure for my pain (12)	PERM		0.79		
Will be pain-free (15)	PERM		0.73		
Pain is temporary (9)	PERM		0.73		
I caused my pain (11)	S-B			0.83	
Pain is my fault (7)	S-B			0.82	
I blame myself (13)	S-B			0.51	
No known cause (1)	MYST				0.73
Can't make sense of pain (14)	MYST				0.63
Lost hope for cure (2)	MYST				0.57
Pain is confusing (4)	MYST				0.49

Note: CONST = time constancy; PERM = time permanence; S-B = self-blame; MYST = mysterious.

factor emerged as a reliable component of the scale. However, a consistent MYST scale was not found, and four items were included in this scale. Here item number 8, "Need more information about pain," was excluded because of low communality, and no acceptable factor loadings were found. Item number 2, originally from the TIME PERM dimension, loaded significantly on the MYST scale. Internal consistency (Chronbach's alpha) of PBAPI suggests that the subscales possessed satisfactory reliability estimates except for the MYST scale (TIME CONST = 0.84, TIME PERM = 0.66, S-B = 0.61, MYST = 0.49).

Correlations

Pearson bivariate correlation coefficients were performed between physical and mental health (PCS, MCS) and independent variables (pain beliefs and sociodemographic and illness variables) used in the regression analyses (Table 2). The correlations ranged from low to moderate, showing that physical health was significantly correlated with TIME CONST ($r = -0.36, p < .05$), pain duration ($r = 0.25, p < .05$), and pain intensity ($r = -0.30$, $p < .05$). On the other hand, mental health was significantly correlated with social support ($r = 0.36$, $p < .05$).

Multiple Regression Analyses

Results of the multiple regression analyses predicting PCS and MCS from pain beliefs and sociodemographic and medical variables are presented in Table 3. The coefficient of determination (R^2) indicated that 33% of the variance in physical health and 24% in mental

TABLE 2.
Pearson Bivariate Correlation Coefficients Between Physical and Mental Health (PCS, MCS) and Independent Variables, Used in the Regression Analyses. Means and Standard Deviations of Pain Beliefs, Sociodemographic Variables and and Medical Variables. *N* = 81

	Physical Health	Mental Health	Mean	Standard Deviation
Time constancy	−0.36*	0.05	0.94	0.95
Time permanence	−0.02	−0.11	0.61	0.86
Self-blame	−0.02	0.13	−1.03	0.77
Mysterious	−0.14	−0.19	0.54	0.74
Gender (0 = male)	−0.12	0.08	0.81	0.39
Age	0.11	−0.10	46.62	10.07
Social support	−0.21	0.36*	3.67	2.40
Pain duration	0.25*	−0.05	22.02	17.73
Pain intensity	−0.30*	−0.17	66.72	19.14
Analgesics	−0.21	−0.16	3.53	1.30

Note: * = $p<.05$ (two-tailed). Pain duration = % of life with a pain diagnosis.

TABLE 3.
Regression Analyses (OLS, Method Enter) of Physical and Mental Health (PCS, MCS) From SF-36 by Factor Dimensions From PBAPI, Sociodemographic Variables, and and Medical Variables

	Physical Health			Mental Health		
df = 10/70.	b	Beta	$p<$	b	Beta	$p<$
Pain beliefs						
Time constancy	−1.69	−0.20	.07	2.10	0.17	.15
Time permanence	−0.18	−0.02	.86	−0.05	−0.00	.97
Self-blame	−1.09	−0.11	.31	1.78	0.12	.30
Mysterious	−1.16	−0.11	.29	−3.69	−0.24	.03
Sociodemographic variables						
Gender (0 = male)	−4.31	−0.21	.04	0.89	0.03	.79
Age	0.12	0.15	.15	0.00	0.00	.98
Social support	−0.49	−0.15	.14	1.56	0.32	.00
Medical variables						
Pain duration	0.10	0.23	.03	−0.92	−0.03	.77
Pain intensity	−0.09	−0.22	.05	−0.08	−0.14	.25
Analgesics	−1.13	−0.19	.08	−1.64	−0.18	.11
Constant	35.16	—	.00	49.21	—	.00
R^2-F/significance		0.330–3.44/.001			0.241–2.22/.03	

Note: Unstandardized (b), standardized (Beta) regression coefficients and two-tailed level of significance. Multiple R^2, F-values, and level of significance. Pain duration = % of life with a pain diagnosis.

health were accounted for by the combined simultaneous influence of the independent variables. Gender (women reported poorer physical health than men), pain duration, and pain intensity gave significant contributions to the variance in physical health. MYST and social support provided significant contributions to the variance in mental health.

DISCUSSION

The aims of this study were to evaluate for differences in HRQL among people with chronic pain and compare the results to other patient groups. Furthermore, we wanted to identify which pain beliefs and sociodemographic and medical variables influenced HRQL.

The present study reveals a reduction in HRQL in all of the SF-36 health domains, also reported by others (Becker et al., 1997; Katz, 2002). This consistency implies that these results must be taken seriously and used in clinical situations as guidelines to establish interventions according to the complexity of the patients' pain problem. A particular issue in our sample was the decrease in physical capacity connected to daily activities. This decrease represents a challenge to health professionals. As stated by Wittink, Michel, Cohen, and Fishman (1997), chronic-pain patients often lack the motivation for physical activity because they may fear that the pain will get worse. Our results also indicate that the severity of impairment was remarkably lower in all health domains when compared not only to normative Norwegian data (Loge & Kaasa, 1998) but also to other Norwegian patient groups with various chronic disorders (Nortvedt et al., 1999; Wahl et al., 2000). In a broader perspective, making such group comparisons seems important in building a knowledge base for chronic disorders and making decisions and priorities that are cost effective across patient groups (Schlenk et al., 1998). In light of our findings, the chronic-pain patients may be undertreated or unsuccessfully treated, and more resources are needed in order to increase their HRQL.

Five factors, that is, a view of pain as mysterious, gender, pain duration, pain intensity, and social support, appeared to explain the poor HRQL in patients in chronic pain. Those who considered their pain mysterious reported poorer mental health, which is consistent with earlier findings (Herda et al., 1994; Williams & Thorn, 1989; Williams et al., 1994). This pain belief was not associated with poor physical health, a finding also reported by others (Williams et al., 1994). As the construct implies, the lack of causal explanation of pain and a weak conceptual framework to understand why pain occurs may be present in our sample. Thus, their problems might be more related to cognitive and emotional factors and represent a challenge in rehabilitation. It is suggested that the participants in the present study who consider their pain as mysterious may benefit from receiving information about the multidimensional nature of pain and from learning new coping strategies. Additionally, beliefs in pain as mysterious have increasingly been recognized as major risk factors in a poor response to treatment (Williams & Thorn, 1989). Therefore, information about such pain beliefs seems important to provide insight into how the participants understand their own situation and what can be done to improve their situation.

In this study it was revealed that women in pain were inclined to report poorer physical health than men do. Both psychological and biological differences have been used to explain such a finding (Fillingim, 2000), and experimental studies in pain are often interpreted to mean that women are more sensitive to painful stimuli than men are (Miaskowski, 1999). Health care professionals need to be aware of these gender differences when planning care for chronic-pain patients. Moreover, pain duration was positively related to physical health in the present study. The interpretation of this unexpected finding may indicate that a response shift has occurred as a result of adaptive psychological mechanisms for dealing with chronic pain. Previous beliefs, expectations, and goals are no longer viewed as tenable for adaptation and are therefore abandoned (Wilson, 2000). As expected, increased pain was inversely related to physical health. Increased pain is often met with inactivity, which may further impair patient functioning (Wittink et al., 1997). Furthermore, reduced physical health related to pain, inactivity, and decreased tolerance of pain mutually reinforce one another and thereby create a vicious cycle (Wittink et al., 1997). Consequently, a treatment goal should be active participation and increased physical activity with professional guidance, which is often an integrated part of CBT programs. Finally, social support had a positive influence on mental health in this study. Getting social support has received attention for a long time as an important resource in chronic health problems. Therefore, our finding may indicate that a focus on social network and group approach may be beneficial because openness and mutual support are highlighted.

Understanding how pain beliefs, sociodemographic variables, and medical variables are related to HRQL may identify possible risk factors in adjustment and help treatment programs to suit the individual situation. Although the PBAPI has revealed several dimensions of pain beliefs related to physical and psychological functioning (Herda et al., 1994; Turner et al., 2000; Williams et al., 1994), few such relations were found in this study. We found that viewing pain as a constant or permanent phenomenon was not associated with HRQL. Even viewing pain as one's own fault was not associated with HRQL, which is in accordance with other findings (DeGood & Tait, 2001) and may reduce the utility of this scale. Our work suggests that sociodemographic variables such as social support and gender and medical variables such as pain intensity and duration are at least as important as pain beliefs in determining HRQL. Viewing the burden of living with chronic pain exclusively from a biomedical perspective is often criticized for its failure to account for psychosocial variables and is generally considered as insufficient. From the present data, a biopsychosocial understanding of the nature of pain and CBT may also offer approaches that aim at modifying the pain experience and improving HRQL as well as the pain beliefs of chronic-pain patients.

In previous studies, the PBAPI received support as a valid measure of dysfunctional pain beliefs that could negatively impact adjustment and participation in multidisciplinary pain management programs (Stroud et al., 2000; Turner et al., 2000). Translation and use of the PBAPI with a Norwegian sample of pain patients enabled us to make a pretest evaluation as well as cross-cultural comparisons. A forced 4-factor analysis solution recommended in earlier studies (Herda et al., 1994; Morley & Wilkinson, 1995; Williams et al., 1994) was supported. Differences in factor structure may be due to the different samples, sociocultural backgrounds, and treatment circumstances. However, PBAPI is considered to have acceptable psychometric characteristics—although refinement seems necessary, particularly with regard to the internal consistency of the MYST scale (Chronbach's alpha = 0.49). Further research is needed to find support for these findings in other samples of patients seeking similar help.

There are several limitations to this study. Due to the methods of recruitment, the generality of these findings to patients seeking treatment at a rehabilitation unit is unclear. A second limitation is the limited number of participants—although the results seem representative because the participants represented various rural and urban areas and the population is rather homogeneous. A third limitation is the exclusive reliance on the patients' self-reports—although self-report is considered the best way to obtain data about subjective phenomena such as pain intensity, pain beliefs, and HRQL. To improve this study design, a random sample, increased sample size, and the use of objective information about physical capacity are proposed.

In conclusion, we observed lower values on all domains of HRQL compared to normal controls and other patient groups, which represents a great challenge for nurses as well as other health professionals. Several factors, such as a view of pain as mysterious, gender, pain duration, pain intensity, and social support, join together to explain the poor HRQL in patients in chronic pain. Despite the importance of focusing on pain beliefs in chronic pain, only mysterious beliefs contributed to explain the reduction in HRQL in this study. As the biopsychosocial model of chronic pain and disability emphazises that psychological factors are strongly influential (Gatchel, 1999), other factors, such as coping and depression, may also be important predictors in HRQL. We think that understanding the relationship among HRQL, psychosocial factors, and medical factors may contribute to the understanding of the pain experience and can assist in development of strategies to increase HRQL. This idea implies that CBT programs in which these factors are incorporated may be effective for this group of people. In the absence of a cure or total pain relief for this group, improving the quality of life is a major goal of treatment. According to CBT, altering pain beliefs and improving coping skills may modify the pain experience and thereby improve the health-related quality of life.

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