The relationship between psychosocial variables and measures of health status in fibromyalgia

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Abstract

Background: Fibromyalgia is considered to be a multifactorial condition in which a number of biological and psychological variables interact. However, the exact pathogenesis and effective treatment of fibromyalgia are still unknown.

In this study the relationship between psychosocial variables of self-efficacy, helplessness, perceived social support, and pain-related beliefs and several measures of health status of patients with fibromyalgia were examined.

Methods: Thirty-one patients diagnosed with fibromyalgia participated in the study. Patients diagnosed with concomitant rheumatological conditions were excluded from the study. Each patient was individually assessed by the same physician in terms of functional status and pain experience and then measured on psychosocial variables in a cross-sectional study. Correlations between these psychosocial and health status variables were calculated.

Results: Significant correlations were found between the psychosocial variables and health status. Consistent with previous research, self-efficacy was found to be the most important psychosocial variable in the present study, correlating with several measures of health status. Quality of social support and cognitive beliefs hardly showed any relationship with health status.

Conclusions: It is recommended that self-efficacy enhancement programmes be included in the treatment of patients with fibromyalgia. However, further research is still needed to investigate the effect of self-efficacy enhancement on the overall quality of life of these patients.

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Introduction

Fibromyalgia is a nonarticular, noninflammatory rheumatic disorder, characterised by the presence of pervasive, chronic muscular pain punctuated by acute flare-ups, hypersensitivity to palpation at specific points on the body and additional symptoms such as fatigue, sleep disturbance and morning stiffness.[1] In addition to impaired functional ability, fibromyalgia is also associated with a range of psychosocial problems and psychiatric disorders, including depression, anxiety, somatisation and phobias.[2, 3]

However, the exact aetiology and pathogenesis of fibromyalgia are still unknown.[4] Although it is considered to be a multifactorial condition in which a number of biological and psychological variables interact, no definitive association between these variables has consistently been demonstrated.[5, 6]

Several studies have investigated the relationship between fibromyalgia and psychosocial variables such as self-efficacy, locus of control, perceived social support, pain-coping strategies, helplessness and pain-related cognitions.[7–19] In general, these studies suggest that a poorer health status in persons with fibromyalgia may be associated with lower self-efficacy, more passive or avoidant pain-coping strategies, a more external locus of control, higher helplessness scores, less satisfaction with the quality and availability of social support and more dysfunctional health-related beliefs.

Several studies supported the importance of self-efficacy as a direct prospective predictor of pain behaviour and impairment in fibromyalgia.[9, 10, 17, 20, 21] Self-efficacy was also found to be a good predictor of treatment outcome in fibromyalgia, where higher pretreatment self-efficacy scores significantly predicted better post-treatment activity.[22]

However, the relationship between psychosocial variables and fibromyalgia remains poorly understood. For example, compared to self-efficacy studies, relatively fewer studies were reported on the association between fibromyalgia and variables such as pain-coping strategies, helplessness, perceived social support, locus of control and pain-related cognitions. In addition, existing studies are also criticised for frequently not including measures of functional status (e.g. perceived disability) and psychological distress.[6]

The objective of the present study was to examine the relationship between psychosocial variables (self-efficacy, helplessness, perceived social support and pain-related beliefs) and measures of health status in patients with fibromyalgia (using both self-report and objective indices of pain severity, pain behaviour and disability).

Method

Participants

Participants were 31 female patients (M = 44.0 years; SD = 12.5) from a large, urban medical practice, all previously diagnosed with fibromyalgia. This diagnosis was made by the same physician for all patients, using the American College of Rheumatology's criteria.[23] Patients were excluded from the study if they had been diagnosed with any concomitant rheumatological conditions such as rheumatoid arthritis, systemic lupus erythematosus, Hashimoto's disease, Sjögren's disease, or schleroderma, or other conditions such as cardiovascular disease, central nervous system disorders or psychiatric disorders such as psychosis or bipolar mood disorder. Cases of substance abuse or involvement in litigation for disability income were also excluded. The average duration of fibromyalgia since its diagnosis was 4.9 years. To control their fibromyalgia symptoms, 71.0% of the participants reported use of analgesics, 41.9% reported use of non-steroidals and 54.8% reported use of low doses of tricyclic antidepressants.

Measurements

Health status variables

Myalgia Score. Tenderness of muscles was assessed by the physician by applying pressure maximally to approximately 4 kg/cm^3 in nine bilateral anatomically distinct tender points according to the protocol established by the American College of Rheumatology (occiput, low cervical, mid-point of the trapezius muscle, supraspinatus origin above the scapula spine near the medial border, second rib at the costochondral junctions, lateral epicondyle, gluteal in upper outer quadrants of buttocks, greater trochanter and the fatpad of the knee over the medial collateral ligament). A score of 0: not tender or mildly tender, 1: moderately tender or 2: severely tender was assigned for each site according to the verbal report of the patient. A total myalgia score, ranging from 0 to 18, was derived by summing scores across all sites.

Visual Analogue Scale. The Visual Analogue Scale (VAS), consisting of a 10 cm horizontal line with endpoints 0: no symptoms and 10: worst symptoms, has been validated as a measure for chronic and experimental pain[24,25] and was found to correlate with tender point ratings on physical examination.[26] Patients rated the average intensity of the three most central fibromyalgia symptoms (pain, disturbed sleep and fatigue/lack of energy) over the previous six months on three separate scales. On a fourth scale they had to indicate the perceived global severity of their condition, while the physician upon examination of each patient indicated a global severity assessment of the condition on a fifth scale.

Global Subjective Improvement. On this five-point verbal rating scale participants were asked to rate perceived improvement since the beginning of treatment as either 1: deteriorated, 2: unchanged, 3: slightly improved, 4: moderately improved or 5: much improved.[27]

Modified Health Assessment Questionnaire. The Modified Health Assessment Questionnaire (MHAQ),[28] an abbreviated version of the Stanford Health Assessment Questionnaire, is a self-report measure of health status. It includes eight activities of daily living on which patients have to rate their performance according to (a) difficulty, (b) satisfaction and (c) change in capacity. Difficulty is rated on a four-point scale – 0: without any difficulty, 1: with some difficulty, 2: require assistance or 3: unable to do. The total difficulty score is the mean rating on the eight activities. Satisfaction or dissatisfaction with capacity to perform the eight activities is assessed by asking patients for each activity "How satisfied are you with your ability to ….?" Responses are scored as either 0: satisfied or 1: dissatisfied. Change in difficulty is assessed by asking patients for each activity "Compared to 6 months ago, how difficult is it now (this week) to ….?" Responses are scored as 0: less difficult now, 1: no change or 2: more difficult now. The modified questionnaire's reliability and validity are comparable to those of the lengthier version,[29] and it has been used in several studies on fibromyalgia.[30, 31]

Psychosocial variables

Arthritis Self-Efficacy Scale. Self-efficacy was assessed by means of the Arthritis Self-Efficacy Scale.[32] This scale includes three subscales measuring self-efficacy for function (performing certain daily activities), self-efficacy for pain management and self-efficacy for controlling other fibromyalgia or arthritis symptoms. A higher score indicates more self-efficacy. Adequate construct and concurrent validity and test-retest reliability for the scale have been demonstrated.[32] The scale was used in several studies to assess self-efficacy in fibromyalgia.[11,22,33]

Helplessness Subscale of the Rheumatology Attitudes Index. The five-item Helplessness Subscale of the Rheumatology Attitudes Index was used to assess helplessness beliefs.[34] This subscale of the Rheumatology Attitudes Index, which is based on the Arthritis Helplessness Inventory,[35] evaluates perceptions of helplessness to control symptoms, including pain (e.g. "I would feel helpless if I couldn't rely on other people for help with my condition") and disease course (e.g. "My condition is controlling my life"). Higher reported helplessness was associated with a higher degree of difficulty, dissatisfaction and pain in carrying out activities of daily living as well as with the general perception of worsening clinical status. The Helplessness Subscale has been shown to be internally consistent and more strongly correlated with other measures of clinical outcome than the full-length version of the scale.

Quality of Social Support Scale. The Quality of Social Support Scale assesses patients' perceptions of the quality of social support received from significant others in several areas.[36] Its 17 items, assessed on four-point Likert scales, cover the following dimensions: information and feedback, task assistance, opportunity for confiding, physical affection, affirmation or ego support and relationship strain (reverse scored). A general index of the perceived quality of social support received is obtained by summing across items with a range of 17 (no social support) to 68 (complete support in all areas). Higher social support levels, as measured by the scale, were found to be associated with fewer declines in the performance of home and family activities.[36]

Pain-Related Self-Statement Scale. This 18-item scale assesses situation-specific cognitions that may either promote or hinder patients' attempts to cope with pain. It has two subscales, Catastrophising and Coping, which were demonstrated to be valid and sensitive to change.[37] The scale is considered a reliable and valid measure for the assessment of the cognitive patterns associated with chronic pain.[18, 38]

Procedure

Forty-three fibromyalgia patients from this specific medical practice responded to an invitation to participate in the study, and written informed consent was obtained from each patient. They were then individually assessed by the same physician, trained in pain medicine. This assessment includes demographic data for the patient, previous medical history, current medication and symptoms at disease onset. Based on this examination 12 patients were excluded from the study because they met at least one of the criteria for exclusion from the study as previously indicated. The remaining 31 patients were then assessed in terms of functional status and pain experience by the same physician. Following this assessment, patients completed the psychological measures individually, guided by the first author.

Results

The relationship between psychosocial variables and measures of health status was investigated by calculating Pearson correlation coefficients. The psychosocial variables were self-efficacy for performing certain daily activities (SE Activities), self-efficacy for pain management (SE Pain), self-efficacy for controlling other fibromyalgia symptoms (SE Control), perceptions of helplessness to control symptoms (Helplessness), perceptions of quality of social support received from important others (Quality Support) and pain-related cognitive beliefs (Cognitive Beliefs). The health status variables were the physician's myalgia score for tenderness (Myalgia Tenderness), the visual analogue score for patients' ratings of pain intensity (VAS Pain), disturbed sleep (VAS Sleep) and lack of energy (VAS Energy), perceived global severity as rated by the patient (Global Severity Patient), perceived global severity as rated by the physician (Global Severity Physician), patients' subjective ratings of their perceived global improvement since the beginning of treatment (Subjective Improvement) and the Modified Health Assessment Questionnaire score for patients' ratings of the difficulty in performing daily activities (MHAQ Difficulty), satisfaction with ability to perform these activities (MHAQ Satisfaction) and the change in difficulty in performing these activities compared to six months ago (MHAQ Change). The correlation coefficients are reported in Table I.

No significant correlations were found between any of the psychosocial variables and tenderness ratings, the VAS score for disturbed sleep and the MHAQ score for the change in difficulty in performing daily activities compared to six months ago.

Self-efficacy for performing certain daily activities showed significant negative correlations with perceived global severity as rated by the patient ($r = -.31$, $p < .05$; $r^2 = .10$), patients' ratings of the difficulty in performing daily activities ($r = -.71$, $p < .01$; $r^2 = .50$), satisfaction with ability to perform these activities ($r = -.61$, $p < .01$; $r^2 = .37$) and a significant positive correlation with patients' subjective ratings of their perceived global improvement since the beginning of treatment ($r = .38$, $p < .05$; $r^2 = .14$).

Table I: Pearson correlations between psychosocial variables and measures of health status

	SE Activities	SE Pain	SE Control	Helpless-ness	Quality Support	Cognitive Beliefs
Myalgia Tenderness	- .24	.06	-.04	.27	.13	.11
VAS Pain	-.25	-.45**	-.13	.39*	.13	.20
VAS Sleep	-.11	-.03	-.23	-.07	.04	-.09
VAS Energy	-.14	-.04	-.11	.10	.40*	.08
Global Severity Patient	-.31*	-.21	-.17	.52**	-.05	.15
Global Severity Physician	-.28	-.21	-.18	.49**	-.05	.18
Subjective Improvement	.38*	.36*	.12	-.28	.18	-.30
MHAQ Difficulty	-.71**	-.32*	-.30	.20	-.18	.34*
MHAQ Satisfaction	-.61**	-.24	-.25	.26	-.29	.12
MHAQ Change	-.23	-.02	.03	.01	-.10	.18

* $p < 0.05$ ** $p < 0.01$

Self-efficacy for pain management showed significant negative correlations with the visual analogue score for patients' ratings of pain intensity ($r = -.45$, $p < .01$; $r^2 = .20$), patients' ratings of the difficulty in performing daily activities ($r = -.32$, $p < .05$; $r^2 = .10$) and a significant positive correlation with patients' subjective ratings of their perceived global improvement since the beginning of treatment ($r = .36$, $p < .05$; $r^2 = .13$).

Self-efficacy for controlling other fibromyalgia symptoms did not correlate with any measure of health status.

Perceptions of helplessness to control symptoms showed significant positive correlations with the visual analogue score for patients' ratings of pain intensity ($r = .39$, $p < .05$; $r^2 = .15$), perceived global severity as rated by the patient ($r = .52$, $p < .01$; $r^2 = .27$) and perceived global severity as rated by the physician ($r = .49$, $p < .01$; $r^2 = .24$).

Perceptions of quality of social support received from important others and pain-related cognitive beliefs showed significant positive correlations with the visual analogue score for patients' ratings of lack of energy ($r = .40$, $p < .05$; $r^2 = .16$) and patients' ratings of the difficulty to perform daily activities ($r = .34$, $p < .05$; $r^2 = .12$) respectively.

Discussion

Only one psychosocial variable, self-efficacy for controlling other fibromyalgia symptoms, did not correlate with any measure of health status. The other two indices of self-efficacy, to perform certain daily activities and pain management, showed significant correlations with several measures of health status. Patients with high self-efficacy to perform certain daily activities reported lower global severity of the condition reported more improvement since the beginning of treatment, rated performance of activities of daily living as less difficult and were also more satisfied with the performance of these activities. Patients with high self-efficacy for pain management rated the average pain intensity over the previous six months as less severe, reported more improvement since the beginning of treatment and rated performance of activities of daily living as less difficult.

As previously indicated, several studies supported the importance of self-efficacy, defined as beliefs that one can competently cope with a challenging situation and that one has the ability to influence behaviour,[39] as a direct prospective predictor of pain behaviour and impairment in fibromyalgia.[9,20,21] Buckelew et al (1996) also found self-efficacy to be a good predictor of treatment outcome in fibromyalgia, showing that higher pretreatment self-efficacy scores significantly predicted posttreatment activity.[8] Kores et al (1990) showed that patients with higher self-efficacy scores following treatment rated themselves as more improved and had better overall functioning.[40] Lefebvre et al (1999) found that ratings of arthritis self-efficacy were related to patients' daily pain experiences. Patients with high self-efficacy reported much lower levels of pain.[41] Thus, the results of the present study are congruent with past research in highlighting the positive relationship between self-efficacy and physical health outcomes in patients with chronic pain conditions.

Smarr et al (1997) provided evidence that changes in self-efficacy following a stress-management programme were significantly related to other clinically important outcome measures in patients with rheumatoid arthritis.[42] Krein et al (2007) found that self-efficacy plays an important intervening role between the experience of chronic pain and performing certain essential self-management activities in older adult patients. Specifically, higher self-efficacy reduced the association between chronic pain and reported difficulty taking medications and exercising. They argued that promoting self-efficacy among patients with chronic pain is a promising strategy to improve their ability to perform daily self-management activities.[43] These results, together with the results of the present study, suggest that intervention programmes should be developed for the treatment of patients with fibromyalgia, focusing on the enhancement of self-efficacy.

In the present study helplessness, defined as a psychological state in which individuals expect their efforts to be unsuccessful, correlated significantly with three measures of health status. Patients with high perceived helplessness rated the average pain intensity over the previous six months as more severe, reported higher global severity of the condition and also obtained a higher rating of global severity of the condition by the physician. The first finding is consistent with the results of Nicassio et al (1999) who found that helplessness fully mediated the effects of pain on self-reported pain behaviour.[15] One must keep in mind that the present study was correlational in nature and that directionality of the relationship between variables cannot be determined. It could be that feelings of helplessness lead to higher ratings of pain intensity. It may also be that the experience of intense pain (and thus higher ratings of pain intensity) leads to feelings of helplessness. Ahles et al (1991)[7] and Schoenfeld-Smith et al (1995)[19] also found a positive association between helplessness and health status in fibromyalgia.

Perceptions of the quality of social support received from significant others in several areas and situation-specific cognitions that may either promote or hinder patients' attempts to cope with pain each correlated only with one measure of health status. Patients who received more social support reported higher energy levels, while patients with negative situation-specific cognitions rated performance of activities of daily living as more difficult. These results suggest that the relationship of quality of social support and cognitive beliefs to measures of health status is negligible. This does not mean that social support per se is not important in the daily lives of patients with chronic pain. Scleicher et al (2005) found a relationship between positive personal relationships and psychological well-being in female patients with fibromyalgia.[44] But the quality of social support does not seem to play an important role in health status, as measured in the present study. The finding that patients with positive situation-specific cognitions rated performance of activities of daily living as less difficult underscores the importance of self-efficacy, defined as beliefs (cognitions) that one can competently cope with a challenging situation and that one has the ability to influence behaviour in coping with symptoms of fibromyalgia.

Conclusion

The most important finding in the present research, supporting the results of previous research, is that perceived self-efficacy is related to health status of patients with fibromyalgia. In general, patients with high self-efficacy, especially for performing certain daily activities and for pain management, showed more positive perceptions of their health status. Along with other treatments of fibromyalgia, practitioners should thus also consider interventions that focus on the enhancement of patients' self-efficacy. This could lead to further research investigating the effects of self-efficacy enhancement programmes on the overall quality of life of patients with fibromyalgia and other chronic pain conditions.

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