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Original experimental

A comparison of fibromyalgia symptoms in patients with Healthy versus Depressive, Low and Reactive affect balance styles

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HIGHLIGHTS

- Compared symptoms across affect balance styles in a large sample of patients with FM.
- Patients with a Depressive style had significantly worse symptom profiles.
- Patients with a Healthy style had the most favourable symptom profile.
- Having high positive affect is as important as having low negative affect.

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ABSTRACT

Background and aims: Affect balance reflects relative levels of negative affect (NA) and positive affect (PA) and includes four styles: Healthy (low NA/high PA), Depressive (high NA/low PA), Reactive (high NA/high PA) and Low (low NA/low PA). These affect balance styles may have important associations with clinical outcomes in patients with fibromyalgia. Herein, we evaluated the severity of core fibromyalgia symptom domains as described by the Outcomes Research in Rheumatology-Fibromyalgia working group in the context of the four affect balance styles.

Methods: Data from 735 patients with fibromyalgia who completed the Brief Pain Inventory, Multidimensional Fatigue Inventory, Profile of Mood States, Medical Outcomes Sleep Scale, Multiple Ability Self-Report Questionnaire, Fibromyalgia Impact Questionnaire-Revised, Medical Outcomes Study Short Form-36, and Positive and Negative Affect Schedule were included in this analysis.

Results: The majority (51.8%) of patients in our sample had a Depressive affect balance style; compared to patients with a Healthy affect balance style, they scored significantly worse in all fibromyalgia symptom domains including pain, fatigue, sleep disturbance, dyscognition, depression, anxiety, stiffness, and functional status (P = <.001 to .004). Overall, patients with a Healthy affect balance style had the lowest level of symptoms, while symptom levels of those with Reactive and Low affect balance styles were distributed in between those of the Depressive and Healthy groups.

Conclusions and implications: The results of our cross-sectional study suggest that having a Healthy affect balance style is associated with better physical and psychological symptom profiles in fibromyalgia. Futures studies evaluating these associations longitudinally could provide rationale for evaluating the effect of psychological interventions on affect balance and clinical outcomes in fibromyalgia.

1. Introduction

Negative affect encompasses undesirable emotional states such as anger, contempt, sadness, and fear and has been strongly associated with poor health outcomes [1]. In contrast, positive affect is defined by a person's capacity for positive emotion-bound processes like enthusiasm, determination, engagement and alertness

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[1]. An association between both positive and negative affect has been established across a number of chronic pain states including osteoarthritis, rheumatoid arthritis, and chronic low back pain [2–9]; however, the relationship between affect and fibromyalgia may be particularly relevant.

For patients with fibromyalgia, not only are high rates of depression and anxiety commonly observed [10–12] and associated with greater symptom severity and poorer functional outcomes [13,14], but such psychiatric comorbidity implies that the broader spectrum of negative affect is likely present and important. Negative affect has been found to predict clinical pain intensity [15–18], pain in subsequent weeks [19], symptom burden [20] and whether an individual meeting criteria for fibromyalgia is more likely to be a patient or a non-patient (not seek treatment) [21]. Yet, a large subset of fibromyalgia patients do not exhibit affective disturbance and may in effect be more resilient. It has been observed that in fibromyalgia, positive affect has been related to lower levels of pain [19], less pain catastrophizing [4], decreased levels of fatigue [22], greater pain tolerance [18] and increased levels of functioning [4,18]. More importantly, it has been hypothesized that much more can be gleaned about a patient's potential vulnerability or resilience in regard to poor outcomes if both positive and negative affect are taken into consideration [4].

Individuals exhibit varying levels of both positive and negative affect; moreover, because positive and negative affect do not represent opposite ends of a continuum, a person may have elevated or diminished levels of both positive and negative affect simultaneously. Yet, negative affect and positive affect are typically studied in isolation. Another way to consider emotional functioning is affect balance style, which takes into account one's relative levels of positive and negative affect [4]. Hassett et al. have described four patterns of affect balance styles [4]. These include *Healthy affect balance* (high positive affect and low negative affect), *Low affect balance* (low positive affect and low negative affect), *Reactive affect balance* (high positive affect and high negative affect), and *Depressive affect balance* (low positive affect and high negative affect) [4].

To date, only two studies have examined potential associations between affect balance styles and pain [4,23]. In the first study, Hassett et al. demonstrated that Depressive and Reactive affect balance styles were predominant in patients with fibromyalgia and these affect balance styles were associated with significantly higher odds of having worse pain, poorer functional status and psychiatric comorbidity [4]. In the second study, Sibille et al. demonstrated lower levels of experimentally-induced pain sensitivity in healthy adults with Healthy affect balance styles compared to those with Reactive, Depressive or Low affect balance styles [23].

Both Sibille [23] and Hassett [4] reported an association between affect balance styles and measures of pain, but the symptom spectrum of fibromyalgia includes other important symptoms including fatigue, sleep disturbances and dyscognition [24]. It has been recommended by the Outcome Measures in Rheumatology (OMERACT) fibromyalgia working group that these and other symptoms including depression, anxiety, stiffness and multidimensional function be included in all fibromyalgia studies [25]. As such, we aimed to provide a comprehensive evaluation of associations between affect balance with both physical and psychological symptoms in fibromyalgia. Because depression and anxiety are themselves correlates of fibromyalgia outcomes, we also sought to understand the incremental predictive validity of affect balance on fibromyalgia symptoms after controlling for depression and anxiety [10,14,26,27].

Based on the observations of Hassett [4], we hypothesized that the largest proportion of fibromyalgia patients would classify as Depressive affect balance style and patients in both the Depressive and the Reactive affect balance styles would have more severe depression and anxiety, as compared to Healthy and Low affect balance styles. Also, we predict that the observed association between affect balance styles and the non-psychiatric OMERACT recommended symptoms will remain statistically significant after controlling for depression and anxiety.

2. Participants and methods

Surveys were mailed to 1303 randomly selected patients from a fibromyalgia registry established at Mayo Clinic in Rochester, Minnesota and is maintained annually [28]. Patients included in this registry had a current diagnosis or history of fibromyalgia present in their medical record at Mayo Clinic between January 2000 and December 2010 (confirmed by chart review), completed the ACR Fibromyalgia Research Survey, were informed, and agreed to be contacted for future research. The overall response rate to this survey was 65.5% ($n = 858$). This study was approved by the Mayo Clinic Institutional Review Board.

2.1. Participants

Only respondents who met Fibromyalgia Research Survey Criteria [29] were included in the present analyses ($n = 735$, 56.4% of the original sample). This is defined as having a widespread pain index (WPI) score of ≥ 7 and a Symptom Severity (SS) score ≥ 5 or a score on the WPI of 3–6 and SS score of ≥ 9.

2.2. Measures

For this analysis, we included all available OMERACT outcome measures including pain, fatigue, sleep disturbance, dyscognition, depression, anxiety, stiffness, and multidimensional functioning.

2.2.1. Pain-Brief Pain Inventory (BPI)

The BPI is a 15-item validated self-report measure of chronic, non-cancer pain and is considered an appropriate measure of pain in fibromyalgia [30,31]. It has an internal consistency of 0.80–0.92. In this analysis both pain severity and pain interference subscales were selected to represent the OMERACT symptom domain of pain.

2.2.2. Fatigue-Multidimensional Fatigue Inventory (MFI)

The MFI-20 is a 20-item validated self-report measure of fatigue and assesses general fatigue, physical fatigue, reduced activity, reduced motivation, and mental fatigue and is considered an appropriate measure of fatigue in fibromyalgia [31,32]. It has an internal consistency of 0.84. For this analysis, we selected the MFI physical fatigue subscale to represent the OMERACT symptom domain of fatigue.

2.2.3. Depression and anxiety-Profile of Mood States (POMS)

The 30-item POMS is a validated, self-report measure of mood [33]. It has an internal consistency of 0.76–0.95. For this analysis, we selected the depression–dejection and the tension–anxiety subscales of POMS to represent the OMERACT symptom domains of depression and anxiety.

2.2.4. Sleep-Medical Outcomes Sleep Scale (MOS-Sleep)

The MOS- Sleep scale is a 12-item, validated, self-report measure of sleep. It has been used in several fibromyalgia clinical trials and is considered to be an appropriate measure of sleep in fibromyalgia [31,34]. It has an internal consistency of 0.73. For this analysis, we selected the Sleep Problems Index II to represent the OMERACT symptom domain of sleep disturbance.

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