

The role of illness perception and emotions on quality of life in fibromyalgia compared with other chronic pain conditions

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SUMMARY

Objective: Fibromyalgia syndrome (FMs) is a chronic widespread pain condition that can negatively impact on all aspects of patient's life. The purposes of this study were: i) to evaluate illness perception (IP), quality of life (QoL) and affective-emotive variables (EAV) of patients with FM; and ii) to compare these variables to different pain conditions.

Methods: Consecutive 34 women (mean age 47.4±8.3 years) affected by FM were enrolled for the study from December 2009 to May 2011. IP was evaluated by means of the Revised Illness Perception Questionnaire, QoL through Nottingham Health Profile and EAV through the Beck Depression Inventory. Scores were compared with rheumatoid arthritis (RA) (n=20; mean age 53±12.8 years) and low back pain (LBP) (n=20; 51.3±7.8 years) groups.

Results: FM patients scored higher than RA and LBP groups on IP (Identity scale mean: FM=8.8±2.3, AR=5.5±3.3, LBP=4.1±2.9; Kruskal-Wallis=24.42). Moreover FM patients show higher EAV (mean FM=21±9.6, AR=8.9±5.6, LBP=14.9±6.5; Kolmogorov-Smirnov Z=2.17) and lower QoL (Pain scale mean: FM=74.2 ±24.1; AR:35.7±19.9; LBP:56.5±20.4; Kolmogorov-Smirnov Z=2.27; Energy scale mean: FM=86.2±28.5; AR=46.8±35.4; LBP=61.6±63.7; Kolmogorov-Smirnov Z=1.98) than RA group.

Conclusion: Our study highlighted dysfunctional IP, low QoL, high EAV scores in FM patients and the significant relations between these variables. Research results provided support for relevance of a multidisciplinary approach to the management of FM, including psychological interventions, according to a biopsychosocial perspective.

Key words: Fibromyalgia, illness perception, quality of life, psychological assessment, chronic pain.

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■ INTRODUCTION

Fibromyalgia syndrome (FM) is a controversial condition of widespread pain characterized by the presence of several clinical symptoms such as sleep disturbance, fatigue, irritable bowel syndrome, headache, depression and anxiety (1-6). The FM affects the 2-3% of the general population in Western countries (4), with higher rates in 50/60 year-old women (7). The diagnosis is based on the American College of Rheumatology criteria (1) and the index proposed by Wolfe et al. (2). They require the presence of chronic widespread pain (pain widespread index)

and consider the scores of somatic, cognitive and sleep quality-related symptoms (symptom severity score). Because of the impossibility to confirm the diagnosis by instrumental and laboratory data, for many years FM has been considered a subjective disorder of undefined musculoskeletal pain (8). Despite the growing number of recent researches, the etiology of FM remains as yet unknown, although its course seems to be influenced by a large number of physical, psychological, behavioural and environmental variables (8, 9). Because of limited understanding of FM causes, there are few universally accepted treatment programs (10). But considering the complex

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ity of the syndrome, at this present time, it is recommended a multidisciplinary approach, composed of pharmacological, physical and psychological interventions (11, 12).

Recently, theorists and researchers have shown interest in understanding illness coping abilities (13). Consequently, Leventhal and colleagues created the theoretical model of the mental representation of illness (14). The illness perception (IP) is the mental representation of pathology and symptoms, developed by the patient, with the aim to get a sense of disease and finding ways to cope with it. Each individual has an active system for the acquisition of information that leads him or her to produce two types of interconnected responses to the disease: a mental and an emotional response (15, 16). The components of the cognitive representation of illness are the following:

1. the beliefs about the disorder etiology (cause);
2. the symptoms and the name of the disease (identity);
3. the perception of the short and long-term effects, and their social, economic and emotional implications (consequences);
4. the expectations regarding the disease duration and course (time line);
5. the subjective perception of being able to control, either personally or with the help of specialists, the disease course (control/cure) (16).

These components are closely associated with the subject coping strategies, with different seeking of healthcare assistance, and compliance levels (17). Some studies have shown that patients with FM have a more negative illness perception compared to patients with rheumatoid arthritis (RA) (18, 19), chronic fatigue syndrome and cardiovascular disease (18). The authors explained these results as the lack of a clear etiology in FM (18).

As regards the emotional response to disease, the studies performed so far show that FM patients are prone to live their condition as highly stressful and to feel completely powerless to control the sympto-

matic manifestations (20). Moreover, several investigations support the hypothesis of a predominance of negative rather than positive emotions in the FM (21-28). Depressive symptoms are present in 26-71% of patients with FM; the rate appears to be very high if it is compared, for example, with subjects with RA, who are depressed in 14-23% of cases (29, 30). Anxiety problems arise in 13-64% of patients with FM, a percentage that is significantly higher than the 7% reported for the normal population (12, 30). Finally, FM seems to be associated with a more significant reduction in quality of life than RA (31, 32), osteoarthritis and osteoporosis (22).

Given the background, this study aims to analyze the illness perception in patients with FM in order to highlight a possible relationship between such disorder and the emotional-affective state and the quality of life of the patient. For this purpose, we compared three different chronic pain conditions: fibromyalgia, characterized by widespread pain without a clearly etiology; rheumatoid arthritis, in which the widespread pain has a clear organic cause; and chronic low back pain (LBP), characterized by a condition of localized pain. It is believed that understanding how people perceive and categorize their illness may help specialists to develop interventions that take into account the somatic and psychosocial needs of each individual.

■ PATIENTS AND METHODS

Patients

We consecutively enrolled patients diagnosed with fibromyalgia (1), rheumatoid arthritis (33) and chronic low back pain (34). Inclusion criteria were the following: age between 18-70 years, good understanding of Italian language and absence of significant medical comorbidities and/or psychiatric disorders (psychotic disorders or major depression).

Tools

- *Illness Perception Questionnaire-Revised* (IPQ-R, 16): questionnaire that assesses

patient's perception regarding the disease. In the "Identity of illness" part, the subject has to indicate, among the 14 symptoms listed, those he experienced, and those he considers to be specifically associated with his disease.

The "Opinions about illness" section investigates the illness perception, according to the five dimensions proposed by Leventhal. Finally, in the "Cause of the disease" part, subjects have to express their level of agreement/disagreement in considering each of the 18 items as a cause of their disease.

- *Beck Depression Inventory II (BDI-II, 35)*: 21-item self-administered questionnaire used to determine the intensity of a possible depressive reaction, assessing both the cognitive component and the somatic component. Total scores at or above the 95th percentile are indicative of a clinically significant depressive reaction.

- *Trait Anxiety Inventory-State Y (STAI-Y, 36)*: 40-item questionnaire assessing the level of patient anxiety, referring to two subscales: state anxiety (experienced at compilation time) and trait anxiety (usually experienced). Total scores at or above the 95th percentile are considered clinically significant.

- *Positive and Negative Affect Schedule (PANAS, 37)*: 20-item self-administered questionnaire in which the subjects must assess on a 5-point Likert scale (from "slightly or not at all" to "extremely") the intensity of the emotions (positive or negative) that he/she usually experiences. Two total scores are derived: "Positive activation" and "Negative activation".

- *Nottingham Health Profile (NPH, 38)*: tool that examines the quality of life referred to 6 content areas: physical mobility, energy, sleep, pain, social isolation and emotional reactions.

- *Visual Analogue Scale (VAS)*: 10 cm long horizontal line on which the start and end points are labeled "no pain" and "worst possible pain". The patient is asked to mark the precise points corresponding to his/her maximum, minimum, habitual pain in the last month and the intensity of pain acceptable.

- *Multidimensional Pain Inventory (MPI, 39)*: is a self-administered questionnaire that allow a multidimensional assessment of the pain experience. The tool is divided into 3 parts: the first focuses on assessing the intensity of the pain, its interference in the life of the patient, the patient's perceived control of the pain and of events in his/her life. The second part investigates the patient's perception of the responses of his or her significant others to his or her pain communications. The third part examines the frequency with which the patient carries out common daily activities.

- *McGill Pain Questionnaire (MPQ; 40)*: is a tool consisting of a list of 78 adjectives related to pain grouped into 20 subclasses of homogeneous content; within each subgroup the descriptors are arranged in order of increasing intensity. The tool allows the pain to be assessed as an experience with three major dimensions: sensory-discriminative, motivational-affective and cognitive-evaluative.

- *Pain Related Self-Statement Scale (PRSS, 41)*: self-administered scale developed to assess the cognitions specifically triggered in the pain situation that might inhibit or promote coping responses. The tool consists of 18 items, from which two total scores can be obtained with respect to the subscales called Catastrophizing and Coping.

Data collection

The research was conducted as part of a diagnostic-therapeutic protocol established between the Services of Rheumatology (ULSS 6 and ULSS 4), the Unit Care of Pain and Palliative Care and the Psychology Service of Vicenza Hospital. Patients selection was performed by a physician and a psychologist at the clinic visits, during the period December 2009-May 2011. Eligible subjects who adhered to the study were required to complete the questionnaires mentioned above. The study protocol was approved by the local Ethics Committee and all enrolled patients provided their informed consent to participating in the study.

Statistical analysis

Statistical analysis were performed with SPSS 17 software. The variables were described with mean, standard deviation, range, absolute frequencies and percentages. In order to compare groups the Pearson Chi square, the Student's *t*-test and the multivariate ANOVA were used, where appropriate.

The nonparametric Wilcoxon-Mann-Whitney test for independent samples was used for the intergroup comparison of patients with FM. The Spearman's non-parametric coefficient was used for the correlation analysis. The level of statistical significance α was set to 0.01. For the purposes of the present research, only comparisons that were found to be significant in the group with fibromyalgia are exposed.

■ RESULTS

Patients

Seventy four women were enrolled: 34 suffering from fibromyalgia (FM), 20 from rheumatoid arthritis (AR) and 20 from low back pain (LBP) (Tab. I).

Most of them were married, low/average educated and employed at the time of the

study. There were not significant differences in social-demographic variables between groups.

Pain related variables

The FM patients group has got a more recent diagnosis than the other 2 groups (Kruskall-Wallis=30.2), while there are no statistically significant differences on pain duration mean.

Considering the pain intensity (VAS 0-100), the FM patients reveal an higher mean intensity of pain with respect to the AR patients only (Kolmogorov-Smirnov $Z=1.59$) (Table II).

At MPI test, the FM patients show higher mean scores than the AR group on the following scales: Pain Intensity (mean: FM=4.3±1, AR=2.2±1.2; Kolmogorov-Smirnov $Z=2.27$), Pain Interference (mean: FM=4.4±0.9, AR=2.2±1.4; Kolmogorov-Smirnov $Z=2.57$), and Punitive reaction to pain behavior (mean: FM=21±4, AR=0.7±0.5; Kolmogorov-Smirnov $Z=1.74$). At PRSS test, at the subscale Catastrophizing the FM patients reveal mean scores comparable to the LBP group (mean=3.2±1.1) and significantly higher than the AR one (mean: 1.8±0.7; Kolmogorov-Smirnov $Z=2.27$).

Table I - Socio-demographic characteristics.

Variable	Fibromyalgia (n=34)	Rheumatoid arthritis (n=20)	Low-back (n=20)	P
Age				
	47.35 (8.33) 33 – 65	53 (12.76) 22 – 70	51.3 (7.8) 37 - 64	ns
Marital status				
Married	28 (82.4%)	15 (75%)	12 (60%)	ns
Single	2 (5.9%)	1 (5%)	2 (10%)	
Separated/divorced	3 (8.8%)	1 (5%)	5 (25%)	
Widow	1 (2.9%)	3 (15%)	1 (5%)	
Education (years)				
5	2 (5.9%)	5 (25%)	2 (10%)	ns
8	21 (61.8%)	7 (35%)	8 (40%)	
8-13	10 (29.4%)	6 (30%)	7 (35%)	
>13	1 (2.9%)	2 (10%)	3 (15%)	
Occupation				
Employee	17 (50%)	11 (55%)	10 (50%)	ns
Unemployed	3 (8.8%)	1 (5%)	4 (20%)	
Housewife	9 (26.5%)	5 (25%)	3 (15%)	
Retired	5 (14.7%)	3 (15%)	3 (15%)	

ns, not significant.

Table II - Clinical variables.

Variable	FM (n=34)	AR (n=20)	LBP (n=20)	P
Diagnosis (months)	19.6 (28.7) 1-120	156.7 (96.5) 48-348	81.6 (103.4) 10-456	P<0.01
Duration of pain (months)	114.8 (98.6) 12-420	158.2 (91.1) 48-348	101.1 (113.3) 12-456	ns
VAS max (last month)	81.2 (20.3) 32-100	58.1 (28.0) 8-100	76.6 (13.7) 55-95	ns
VAS min (last month)	24.3 (20.5) 0-76	9.8 (10.4) 0-31	15 (18.3) 0-55	ns
VAS habitual (last month)	49.9 (18.7) 18-94	31.6 (14.0) 8-55	57.3 (24.2) 15-90	P<0.01
VAS acceptable	25.8 (17.7) 0-65	30.8 (21.2) 0-75	18.6 (17.2) 0-64	ns

VAS, Visual Analogue Scale; ns, not significant.

Scores of Active Coping Strategies of MPQ are comparable among all 3 groups. Instead there are no differences between groups on the scale Description of Pain Experience.

Illness perception and quality of life

The FM group highlights significantly higher mean scores than the other 2 groups on the Identity scale of IPQ-R (Kruskal-Wallis=24.42). On the Psychological Attribution scale instead, the FM patients show significantly higher mean scores with respect to the AR group only (Kolmogorov-Smirnov $Z=2.17$) (Fig. 1).

Regarding the quality of life assessment (NHP), FM patients evidence significantly higher mean scores than the AR group on the following: Pain (mean: FM=74.2±24.1; AR=35.7±19.9; Kolmogorov-Smirnov $Z=2.27$), Lack of energy (mean: FM=86.2±28.5; AR=46.8±35.4; Kolmogorov-Smirnov $Z=1.98$); Emotive Reactions (mean: FM=38.5±26.4, AR=11.7±14.8; Kolmogorov-Smirnov $Z=1.78$).

Affective-emotive variables

We observed that the FM patients are characterized by a total mean score at BDI-II of 21±9.6, significantly higher (Kolmogorov-Smirnov $Z=2.17$) than the AR group (mean: 8.9±5.6). Moreover, this difference remains constant distinctly considering the 2 subscales: somatic-affective factor (mean: FM=14.6±6.1; AR=7±3.7; Kolmogorov-Smirnov $Z=1.88$) and cognitive factor (mean: FM=6.4±4.9; AR=1.9±2.7; Kolmogorov-Smirnov $Z=1.98$). Therefore, 55.9% of FM patients show clinically significant depression scores (>95%), in comparison to 11.8% of AR patients and 28.6% of LBP patients. These differences are sta-

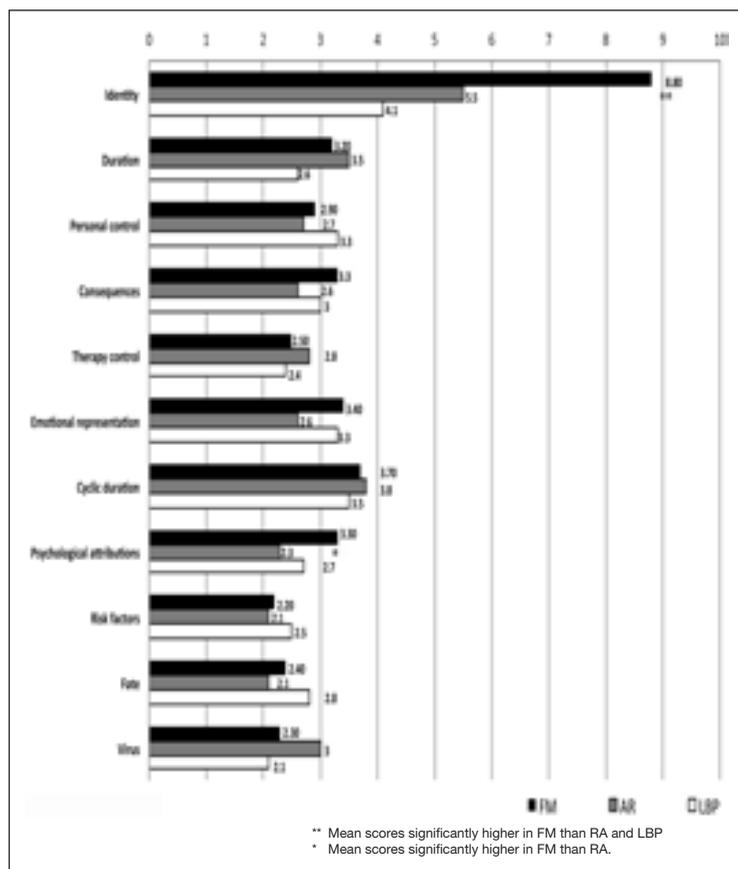


Figure 1 - Mean scores on Illness Perception Questionnaire - Revised (IPQ-R).

tistically significant (Chi-squared=44.1). On anxiety assessment (STAI-Y), the FM patients reveal significantly higher mean scores with respect to the AR group on Trait Anxiety scale only (mean: FM=53±13.3, AR=39.5±6.1; Kolmogorov-Smirnov $Z=2.17$). Moreover, clinically significant anxiety scores (>95%) result for 26,5% of FM patients, while anxiety in patients of the other 2 groups appears normal. On PANAS test, FM patients show significantly higher mean scores than AR patients on Negative Emotional Activation (mean: 24.2±9.7; 17.1±4.9; Kolmogorov-Smirnov $Z=1.68$).

Correlative analysis

Hereinafter, only statistically significant correlations within the FM group are explained. Regarding the relation between Illness perception and Quality of life, we found a positive correlation ($\rho=0.45$) between the Consequences scale of IPQ-R and Physical Mobility of NHP. In addition the Emotional Representation Scale of IPQ-R correlate positively with the scales of NHP: Emotive Reaction and Isolation ($\rho=0.64$; $\rho=0.58$, respectively). In addition, the analysis of the relation between illness perception and affective-emotive variables shows a positive correlation between Emotional Representation and Cyclical Duration of IPQ-R and global score at BDI-II ($r\rho=0.63$; $r\rho=0.50$, respectively). The Emotional Representation scale of IPQ-R correlates positively with Trait Anxiety scale of STAI-Y ($\rho=0.50$). Finally, the analysis of the relation between affective-emotive variables and quality of life highlights significant positive correlations between high scores of depression (BDI-II) and trait anxiety (STAI-Y), and a major deterioration of quality of life on NHP scales: Emotive Reaction and Isolation.

Fibromyalgia and depressive symptoms

The FM group was divided into 2 groups depending on the BDI-II score: the first one composed by subjects with scores $\geq 95^\circ$ ($n=19$), and the second one by patients with scores $\leq 90^\circ$ ($n=12$). At MPI, patients with BDI-II $\geq 95^\circ$ show significantly higher scores

at Pain Interference subscale (Mann-Whitney $U=36$) and significantly lower scores at the following subscales: Control Perception (Mann-Whitney $U=28.5$), Far away Activities (Mann-Whitney $U=38.1$), Social Activities (Mann-Whitney $U=19.5$) and General Activities (Mann-Whitney $U=48$).

There are no significant differences on Pain Intensity (VAS) and Pain Symptomatology Description (MPQ). At PRSS, BDI-II $\geq 95^\circ$ patients show significantly higher scores than patients with BDI-II $\leq 90^\circ$ at Catastrophizing scale (mean: 3.59±0.75; 1.86±0.8; Mann-Whitney $U=46.2$). Moreover, at IPQ-R significantly higher scores at Emotional Illness Representation scale are produced for BDI-II $\geq 95^\circ$ patients (Mann-Whitney $U=51.3$). Finally, regarding quality of life, BDI-II $\geq 95^\circ$ patients show higher deterioration on Emotive Reaction and Isolation scales (respectively: Mann-Whitney $U=45$; Mann-Whitney $U=42.3$).

■ DISCUSSION

Groups' composition turned out to be homogeneous in regards to social-demographic features. Our study did not suggest pain duration differences between groups, however the diagnosis in FM group was more recent than in the other groups, as how FM nosographic category (41). The FM patients reported higher pain intensity and interference than the AR patients: the lack of specific diagnostic interventions and drugs may involve a less effective pain management.

According to the literature (13), FM patients reveal at MPI hostile or uninterested attitude of family members towards their pain symptoms, which is more considerable compared to AR patients. Familiar hostile and unsupportive attitude may be attributed to a doubting disposition towards the real nature of the symptoms, since there are no final diagnostic tests and the real existence of FM has been debated for years (42). Because of the proved association between low familiar support and depressive symptoms on patients with pain diseases (43), it looks very important to involve

close people through psychoeducational interventions aimed to a better understanding of communicative and relational dynamics.

FM patients are more used to catastrophic thoughts about pain and physical disease, compared to AR patients. It can be hypothesized that the lack of a globally accepted management of FM may lead patients to a negative and fatalistic behavior toward pain. Since high levels of catastrophizing are related to higher pain intensity perception (44, 45), it seems clearly necessary to adopt a multidisciplinary approach to FM (11, 12), comprising a psychological counseling aimed to change the patient's negative cognitions about the disease and to adopt more functional thinking approaches. Our study suggests that there is a different effect of illness perception and emotions over quality of life between FM and AR patients. FM patients report more illness-related symptoms than the other 2 groups, confirming clinical observations. Moreover, FM patients blame psychological causes (for example stress and personality) for illness pathogenesis more often than AR patients, according to the results of a recent research (46). The low resistance at a psychological origin of the disease, shown in FM patients, may help clinicians to think over the relevance of a multidisciplinary approach to the illness. Furthermore, such low resistance emphasizes the importance of refusing absolutistic conceptions attributing only psychological and psychiatric causes to FM. Finally, when patients perceive a higher degree of understanding from clinicians, they may willingly accept potential psychological interventions.

According to the literature (16, 17), FM patients highlight higher quality of life impairment than AR patients, especially on intensity pain rate, energy reduction and frequency of negative emotions (12, 47, 48). FM patients report higher scores of depression (BDI-II, just considering the cognitive scale) and anxiety (STAI-Y), and feel negative emotions (PANAS) more frequently.

Also, FM patients show in our study an association between negative emotions, cog-

nitve representation, anxious-depressive symptomatology and the disposition to retirement. Therefore it looks important to act for a suitable supporting approach to anxious-depressive problems and then to empower relational-communicative abilities against social isolation. Despite the fact that all the considered clinical pictures are typically cyclic illness, only the FM group shows an association between higher illness cyclicality and depression scores: it is likely that the uncertainty about symptoms prospect and illness management can produce a harder acceptance of possible future exacerbations.

The analysis results highlight that negative expectations about illness progress are connected with a physical functionality impairment. The analysis conducted on two FM subgroups with BDI-II scores $\geq 95^\circ$ and $\leq 90^\circ$ highlights that, on equal pain intensity and conditions, depressed patients experience higher pain interference on daily activities and life roles playing. Furthermore, depressed patients report less control on the symptomatology perception and more frequent negative thoughts about illness than non-depressed subjects. In addition, relational areas connected to quality of life seem more impaired in depressed patients.

The major limitations of our study are:

1. small sample size and different sizes of the compared samples;
2. exclusive female composition of the sample, because of the major incidence of FM in this population.

In conclusion, our study underlines for FM higher incidence of depressive symptomatology, stronger quality of life impairment and worst illness perception, especially with respect to AR patients. We observe a relationship between illness perception, affective-emotive variables and quality of life in FM subjects.

These results should further induce clinicians to adopt a multidisciplinary approach towards FM, boosting the attention to the psychological aspects of the treatment in order to ensure its efficacy and the patient's wellbeing. We also highlight that involving the patient's relatives in the treatment can help to hit the mark.

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