

THE IMPACT OF PSYCHIATRIC COMORBIDITY ON HEALTH-RELATED QUALITY OF LIFE IN WOMEN WITH FIBROMYALGIA

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Abstract

Objective: To investigate the prevalence rate of psychiatric disorders in a sample of patients with fibromyalgia (FM) and to assess and compare the Health-Related Quality of Life (HRQoL) in those with and without psychiatric comorbidity.

Methods: One-hundred seventeen Italian FM patients were enrolled in the study. The diagnosis of FM was assessed according to the criteria of the American College of Rheumatology. Psychiatric diagnoses were carried out following the criteria of the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition. The HRQoL was measured by means of the Medical Outcomes Study 36-item Short-Form Health Survey questionnaire (MOS SF-36).

Results: FM patients showed a high percentage of lifetime ($n=86$; 73.5%) and current ($n=50$; 42.7%) psychiatric comorbidity, as well as significantly lower scores on almost all MOS SF-36 subscales, the Mental Health scale excepted, compared to patients with diabetes ($p<.05$). FM patients with psychiatric comorbidity were significantly more impaired ($t=2.704$; $p=.008$) on the Mental Health scale, compared with those without psychiatric comorbidity. In particular, the patients with major depression showed lower scores ($p<.005$) at all MOS SF-36 scales than those with anxiety disorders. The presence of lifetime psychiatric comorbidity and a low education level predicted a lower ($b=-5.726$; $p=.03$ and $b=6.586$; $p=.003$, respectively) Mental Component Summary score, while a high number of tender points predicted a lower ($b=-.645$; $p=.024$) Physical Component Summary score.

Conclusions: As psychiatric disorders are quite common in FM and may contribute to an additional impairment of HRQoL, they should be assessed routinely during the clinical evaluation of this condition and managed in an appropriate manner.

Key Words: Fibromyalgia – Psychiatric Comorbidity – Quality of Life – Chronic Pain – Mood Disorders – Anxiety Disorders

Declaration of Interest: None

Abbreviations: Fibromyalgia (FM); tender points (TPs); American College of Rheumatology (ACR); Health-Related Quality of Life (HRQoL); Structured Clinical Interview for DSM-IV (SCID); Medical Outcomes Study 36-item Short-Form Health Survey (MOS-SF-36); Major Depression (MD); Laura Bazzichi (LB); Antonio Ciapparelli (AC)

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Introduction

Fibromyalgia (FM) is a chronic, non-articular rheumatic condition characterized by diffuse aching, pain or stiffness in the muscles or joints, and presence of tenderness on examination at specific, predictable anatomic sites known as tender points (TPs) (Bennet et al. 1989). According to the American College of Rheumatology (ACR), the criteria for defining FM are the following: a) widespread pain of at least 3 months' duration; and b) tenderness of at least 11, out of the 18 specific TPs on examination (Wolfe et al. 1990). By using the ACR criteria, the prevalence of FM in the

general population in the United States has been estimated to range between 0.5 and 4%, with higher rates in women than in men (Wolfe et al. 1995). However, there is a wide variability of its clinical presentation, including fatigue, sleep disturbances, irritable bowel syndrome, memory difficulties, and mood disturbances that overlap the so-called "functional somatic syndromes" (Barsky and Borus 1999, Aaron et al. 2001). As currently hypothesized, functional somatic syndromes are linked to central nervous system disturbances leading to enhanced pain transmission and perception (Staud and Domingo 2001, Gracely et al. 2002). The pathophysiology of FM is

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still unclear, but the involvement of both environmental and polygenetic factors has been proposed (Buskila and Sarzi-Puttini 2006).

As other chronic disabling conditions, like diabetes (Eren et al. 2007) or other musculo-skeletal disorders characterized by chronic pain, FM can impair work abilities, family and social relationships and, more generally, quality of life (Burckhardt et al. 1993, Neumann et al. 2000). According to the World Health Organization definition, Health-Related Quality of Life (HRQoL) refers to the emotional, physical and social aspects of the daily experience that are influenced by a disease and/or its treatment (Strand and Russel 1997). FM has been shown to produce negative impact on almost all aspects of HRQoL and to provoke a more severe disability in daily activities than other rheumatic conditions involving the axial skeleton (Wolfe and Hawley 1997, Martinez et al. 1995), or chronic regional pain syndromes (Bergman 2005).

A growing body of North American literature has been investigating psychiatric comorbidity in FM and reported high rates of lifetime and current psychiatric disorders ranging between 74.8% and 87.6 % for lifetime disorders and 35.7% and 48% for current disorders (Epstein et al. 1999, Thieme et al. 2004, Raphael et al. 2006). These results, as well as those emerging from family studies showing that FM co-aggregates in families with mood, anxiety and eating disorders, irritable bowel and migraine (Hudson et al. 2004), would suggest that these conditions might share common alterations (Staud 2006). Therefore, it can be concluded that the psychopathological evaluation of FM patients might shed more light on the individual features that would influence the pain sensation and impair their quality of life and functioning (Mease 2005).

In the present study, we evaluated the HRQoL of 117 Italian FM patients by means of the Medical Outcomes Study 36-item Short-Form Health Survey (MOS-SF-36) (Ware and Sherbourne 1992), a valid and reliable self-report instrument widely used in musculo-skeletal disorders (Hagen et al. 1999). We also assessed the co-occurrence of psychiatric disorders in the same patients by means of structured interviews. Finally, we aimed to estimate the impact of lifetime or current psychiatric comorbidity on quality of life measures.

Methods

Patient population

A cohort of 117 Italian patients (all women, mean age $\pm$ SD: 52.0 $\pm$ 12.5 years) suffering from primary FM, attending the Rheumatology outpatient Unit of the University of Pisa, was consecutively recruited. They were required to meet the 1990 American College of Rheumatology criteria for FM diagnosis (Wolf et al. 1990). Subjects were excluded if they reported an inflammatory cause of the pain, concomitant rheumatic diseases, neurologic complications, or pregnancy. Subjects were asked about their availability to participate in the study and undergo a psychiatric assessment after a routinely scheduled appointment. They were fully informed about benefits and risks and were assured that they could withdraw from the study

at any time without affecting the treatment they received. They signed a written informed consent after procedures were explained to them. The study was approved by the Local Ethics Committee at Pisa University, in accordance with the Declaration of Helsinki (1996) and with the Guidelines for Good Clinical Practice (1995).

Procedures

Clinical course and sociodemographic data were collected using interviewer-administered questionnaires. A structured interview format was used to record sex, age, educational level, marital status, employment and duration of illness.

The diagnosis of FM was made according to the ACR criteria by a senior rheumatologist (LB). For each patient, the count and the tenderness at TPs were evaluated by means of the Fisher dolorimeter. A rheumatologist advanced the instrument at a rate of 1 Kg/s and the patient was instructed to say when this procedure became painful. The pressure was then stopped, and the threshold measurement was recorded in kg/cm². The myalgic score was the sum of the dolorimetry results for all 18 points. The tender point count was determined by the number of TPs that had a threshold of $\leq$ 4 kg/cm². Each positive TP had a pain score between 0 and 3.

Psychiatric diagnosis were carried out by residents in psychiatry with at least 3 years of clinical experience using the Structured Clinical Interview for DSM-IV Axis I Disorders-Patient Edition (SCID-I/P) (First et al. 1995) and confirmed by a senior psychiatrist (AC).

Assessment of quality of life

The MOS SF-36 was used to assess general health status. It consists of 36 items, 35 of which are aggregated into 8 multi-item scales that measure: Physical Functioning (extent to which health limits physical activities); Role Physical (extent to which physical health interferes with work or other daily activities); Bodily Pain (intensity of pain and effect on normal work); General Health (personal evaluation of health, current and outlook); Vitality (feeling energetic); Social Functioning (extent to which physical health or emotional problems interfere with normal social activities); Role Emotional (extent to which emotional problems interfere with work or other daily activities); and Mental Health (general mental health, including depression, anxiety, behavioral and emotional control, general positive affect). The sum of the first four scales represents the Mental Component Summary score, while the sum of the other four represents the Physical Component Summary score. Subscale raw scores are standardized and range from 0 to 100, where 0 is the worst and 100 the best possible health status. The MOS-SF36 scale scores observed in our sample were compared with normative values derived from the Italian female population and with the values of an Italian sample of diabetes patients (data from the International Quality of Life Assessment, IQOLA project) (McHorney et al. 1994, Apolone and Mosconi

1998). Each scale of the MOS SF-36 was coded high or low whether above or below the Italian norm, respectively.

Statistical analysis

All mean scores of MOS SF-36 scales of FM patients were compared with those of the Italian female normative population and diabetic patients, as reported in the Italian SF-36 Health Survey (Apolone and Mosconi 1998), by means of Z-test of the difference between two means. Independent sample T-test was utilised to compare mean scores of the MOS SF-36 scales between the groups: FM patients with and without lifetime psychiatric comorbidity, those with and without current psychiatric comorbidity, and those with major depression (MD) and with anxiety disorders. Chi-square was performed to compare socio-demographic and clinical characteristics between the same groups. To test if demographic and clinical variables, as well as lifetime and current psychiatric comorbidity, adequately predicted both Mental and Physical Component Summary scores, stepwise regression models were performed by using, alternatively, Mental and Physical Component Summary scores as dependent variables. In these models, the independent variables were lifetime and current psychiatric comorbidity, education level, the number of TPs and the "duration of illness/age" ratio. Data were analyzed using SPSS, version 15.0.

Results

Demographic and clinical characteristics of the 117 FM patients are reported in **Table I**.

Figure 1 shows that FM patients' mean scores at all physical and mental scales of the MOS SF-36 questionnaire were significantly lower than those of the Italian normative female population. In addition, when compared with patients with diabetes, FM patients showed a significantly greater impairment on all the MOS SF-36 subscales, except the Mental Health scale.

FM patients showed a high rate of lifetime ($n=86$; 73.5%) and current ($n=50$; 42.7%) psychiatric comorbidity. In particular, MD was present in 59 (50.4%) and anxiety disorders in 26 patients (22.2%) (Table II). Significant differences between patients with and without lifetime (**Figure 2**, panel a) and current (**Figure 2**, panel b) psychiatric comorbidity were detected at the Mental Health scale, while no differences were found in regard to demographic and clinical variables. In addition, MD patients showed lower scores on all MOS SF-36 scales than patients with anxiety disorders (**Figure 2**, panel c).

In stepwise regression models, the Mental Component Summary score was predicted by a low education level ($b=6.586$; $p=.003$) and lifetime psychiatric comorbidity ($b=-5.726$; $p=.03$). In fact, FM patients with a low education level had a significantly lower Mental Component Summary score ($t=-2.963$; $p=.004$) compared to those with higher levels of education.

The Physical Component Summary score was

predicted by the number of TPs ($b=-.645$; $p=.024$).

Discussion

In the present study, the HRQoL of 117 female FM patients was evaluated by using a general health assessment tool, the MOS SF-36, whose validity in assessing the health burden and impact on HRQoL of rheumatic syndromes, including fibromyalgia, has been previously demonstrated (Kosinski et al. 1999, Birtane et al. 2006). Consistent with the findings of others, when compared with the Italian female normative population, the scores of the 8 scales of the MOS SF-36 questionnaire were significantly lower in FM patients (Schlenk et al. 1998, Neumann et al. 2000).

Although FM is characterized by no visible clinical finding, its severe impact on Mental Health and Physical Functioning has been demonstrated by the presence of lower MOS SF-36 mean scores, as compared with other chronic disorders, such as chronic obstructive pulmonary disease, acquired immune deficiency syndrome (Schlenk et al. 1998), Sjögren syndrome (Strombeck et al. 2000), and rheumatoid arthritis (Walker et al. 1997, Strombeck et al. 2000, Birtane et al. 2007). For a further comparison, we selected a group of 98 patients with diabetes, a chronic, disabling, albeit non-rheumatic syndrome with a high prevalence of comorbid psychiatric disorders (Gavard et al. 1993, Alonso et al. 2004, Eren et al. 2007). The results showed that FM patients had greater impairment on all the MOS SF-36 scales, except the Mental Health scale. Psychopathological conditions affect significantly HRQoL in patients with chronic disorders, such as diabetes or FM (Gavard et al. 1993, Peyrot and Rubin 1997, Thieme et al. 2004). In fact, as already reported in the literature (Epstein et al. 1999, Hudson et al. 2004, Thieme et al. 2004, Mease 2005, Arnold et al. 2006, Raphael et al. 2006), our FM patients showed a high rate of psychiatric comorbidity (73.5% lifetime, with 50.4% of patients suffering from MD and 22.2% from an anxiety disorder).

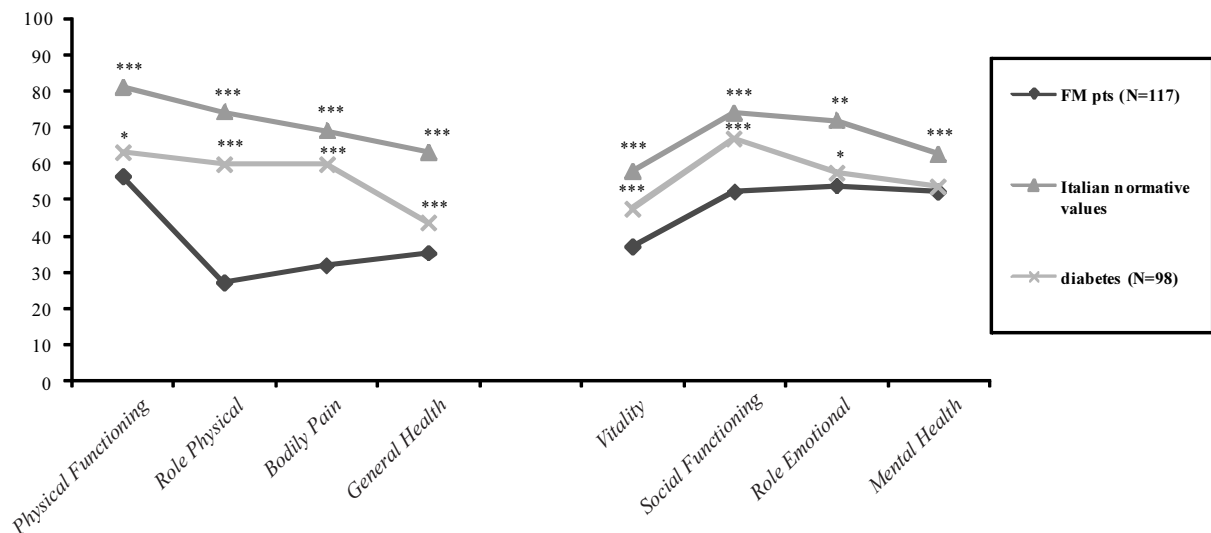
Moreover, we observed that FM patients with psychiatric disorders did not differ from those without them in terms of demographic and clinical variables related to FM. This finding is in agreement with previous data showing that pain intensity and interference were not significantly related to psychiatric comorbidity and that anxiety and depression were independent from the levels of pain (Kurtze et al. 1998, Thieme et al. 2004). In fact, as expected, the Mental Component Summary score was predicted by lifetime psychiatric comorbidity and educational level, while the Physical Component Summary score was predicted by the number of TPs.

Our results are partially in agreement with those of previous studies that, while exploring the impact of comorbid depression on chronic medical illnesses, described higher levels of impairment in patients suffering from both clinical conditions (Wells et al. 1989; Kurtze et al. 1999, Pagano et al. 2004). Indeed, depression may further increase psychological dysfunction in both psychiatric and medical outpatients (Sherbourne et al. 1994), and it has been linked to an increased functional disability, decreased energy, less

Table I. Demographic and clinical characteristics of the sample (N=117)

Age	52.0±12.5
Ethnic origin	Italian (100%)
Education	
Low	77 (65.8)
High (high school and graduate)	40 (34.2)
Marital status	
Unmarried (single, separated, or divorced)	28 (23.9)
Married	89 (76.1)
Work status	
Housewife	49 (41.9)
Employed	43 (36.8)
Unemployed	2 (1.7)
Retired	23 (19.7)
Number of tender points	14.6±2.8
Duration of illness	103.5±121.7
“duration of illness/age”	15.92%±17.18%

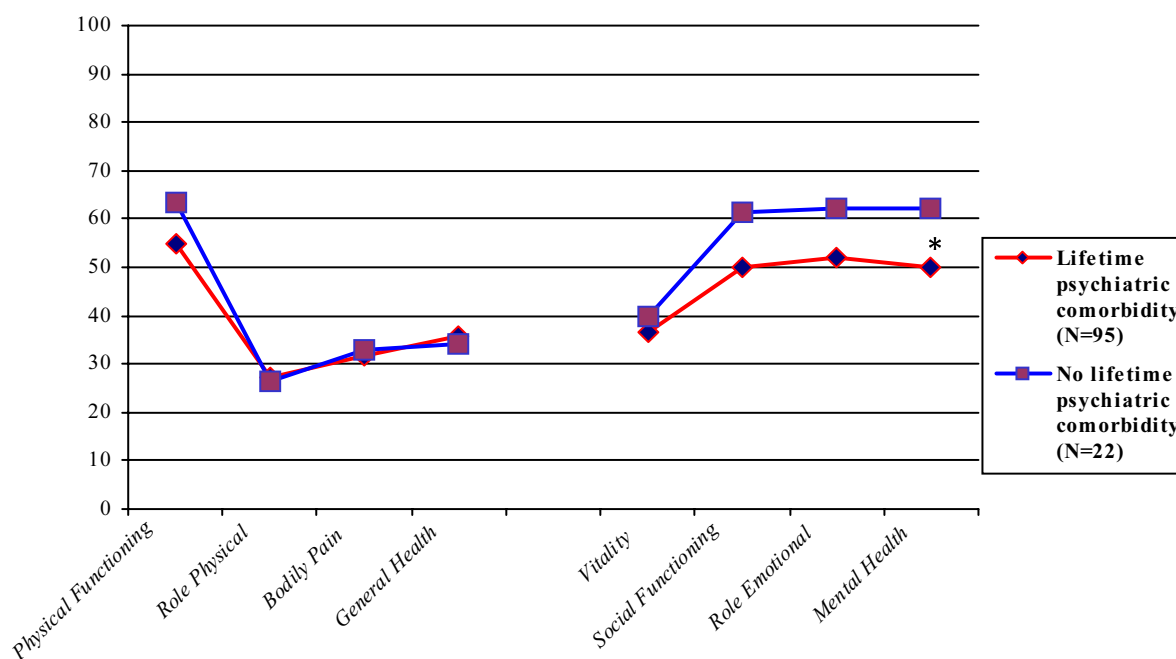
Age: years, mean(±SD); education, marital status, work status: N (%); number of tender points, “duration of illness/age”: mean (±SD); duration of illness: months, mean(±SD).

Figure 1. Comparison of the mean scores of the MOS SF-36 scales between FM patients, female Italian normative population and patients with diabetes


* significant: $p < .05$
 ** significant: $p < .01$
 *** significant: $p < .001$

Table II. *Psychiatric comorbidity in FM patients (N=117)*

	<u>Lifetime</u> N (%)	<u>Current</u> N (%)
Psychiatric comorbidity	86 (73.5)	50 (42.7)
Major depression	59 (50.4)	39 (33.3)
Anxiety disorders	26 (22.2)	14 (12)
- Panic disorder	16 (13.7)	9 (7.7)
- Generalized anxiety disorder	10 (8.5)	5 (4.3)
Eating disorder	5 (4.3)	3 (2.6)

Figure 2. Panel a) *Comparison of the mean scores of the MOS SF-36 scales between FM patients with and without lifetime psychiatric comorbidity*

* significant: $t=2.704$; $p=.008$

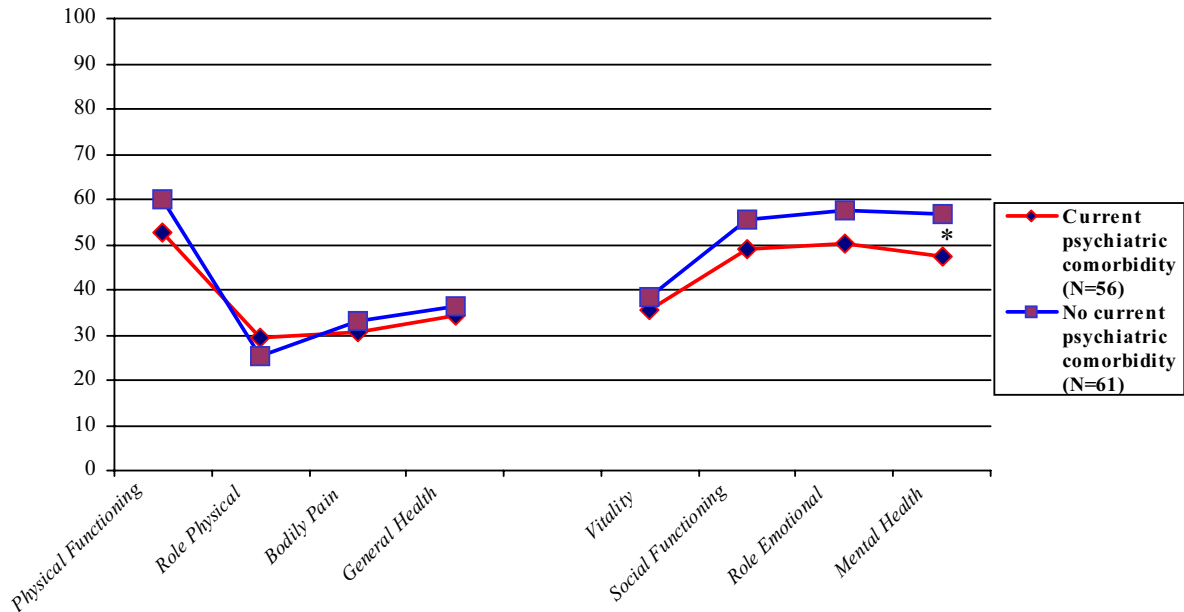
interest in leisure, lower motivation, and problem with interpersonal relationships (Sherbourne et al. 1994, Judd et al. 2000). On the contrary, Epstein et al. (1999) did not find differences in HRQoL levels between FM patients with and without lifetime depression and/or anxiety and observed that functional impairment was negatively predicted only by current anxiety. It may be argued that the presence of subthreshold depressive symptoms in non-depressed FM patients might have

prevented the detection of statically significant intergroup differences on the HRQoL measures (Hudson et al. 2004). Furthermore, since the majority of our patients with psychiatric comorbidity were affected by MD, which has been shown to impair subjective feeling of well-being (Atkinson et al. 1997), this condition might explain their low self-reported perception of functioning.

When interpreting these data, several limitations

Panel b)

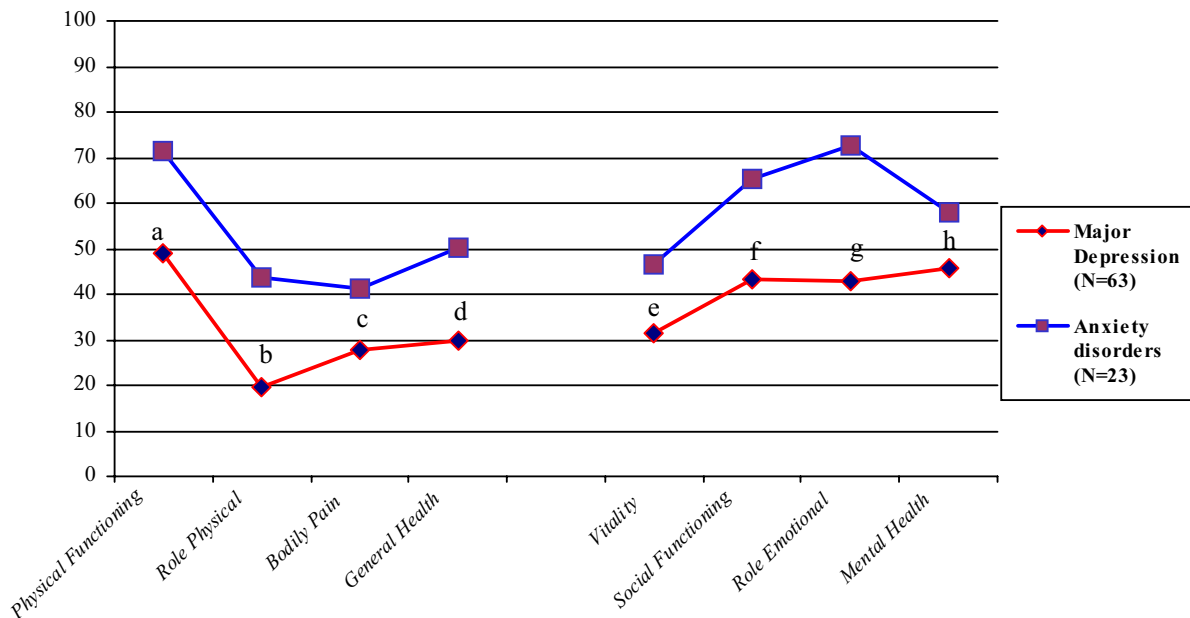
Comparison of the mean scores of the MOS SF-36 scales between FM patients with and without current psychiatric comorbidity



* significant: $t=2.608$; $p=.010$

Panel c)

Comparison of the mean scores of the MOS SF-36 scales between FM patients with major depression and those with anxiety disorders



a: significant: $t=-4.018$; $p=.000$; b: significant: $t=-2.921$; $p=.004$; c: significant: $t=-3.147$; $p=.002$; d: significant: $t=-4.944$; $p=.000$; e: significant: $t=-3.418$; $p=.001$; f: significant: $t=-3.393$; $p=.001$; g: significant: $t=-3.095$; $p=.003$; h: significant: $t=-3.425$; $p=.001$

should be kept in mind. A sample restricted to subjects seeking treatment from a tertiary-care center in Italy may limit the generalizability of these data to all patients with FM. In addition, certain confounding factors, such as severity of other medical comorbidities, diet, exercise, and other lifestyle factors, that potentially could affect health status, were not taken into account. Finally, in our study only a single outcome measure was considered. Future studies using multiple measures of HRQoL, as well as more objective measures of functioning, are needed.

In conclusion, psychiatric disorders seem to occur at high rates in patients suffering from FM and significantly impair their HRQoL. Therefore, the clinical evaluation of FM patients should include routine careful psychiatric assessment, as effective diagnosis and treatment of comorbid psychiatric disorders likely will improve their HRQoL. Furthermore, longitudinal studies comparing different treatment strategies are needed to better understand the possible benefits of psychopharmacological or psychotherapeutic interventions on HRQoL and functioning of FM patients.

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