Using questionnaires to assess the quality of life and multidimensionality of fibromyalgia patients

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ABSTRACT

Fibromyalgia syndrome (FMS) is a painful condition of unknown etiology, highly prevalent, and associated with other conditions, which causes great impact on daily life and quality of life. **Objective:** To assess, due to the multifactorial character of the FMS, the discriminating power of instruments used to identify good indicators of self-assessment and self-knowledge. **Patients and methods:** This is a descriptive, exploratory, comparative, cross-sectional study with quantitative approach, and sample comprising a treatment group (T), diagnosed with FMS (n = 63) and a control group (C), undergoing interconsultation at the Pain Outpatient Clinic (n = 75). The following instruments were used: Fibromyalgia Impact Questionnaire (FIQ); visual analogue scale (VAS); McGill Pain Questionnaire; and the Post-Sleep Inventory (PSI). To evaluate the quality of life, Medical Outcomes Study 12-item Short-Form Health Survey (SF-12) was used. **Results:** In the two groups, female gender predominated. The mean age of the sample was 42.3 ± 4.3 years, 45% were married, and the average schooling was 8 ± 3.5 years. The mean duration of pain was 3.2 years, and a mean time of two years were required for the clinical diagnosis of FMS in group T. Group T had higher levels of pain, anxiety, and depression, worse quality of sleep, less flexibility, and worse quality of life, although some of these symptoms were also present in group C. **Conclusions:** All instruments had good discriminating power ($P < 0.05$), especially FIQ, VAS and PSI, whose areas under the ROC curve were greater.

Keywords: fibromyalgia, quality of life, evaluation, pain clinics.

INTRODUCTION

Fibromyalgia syndrome (FMS) is a rheumatic syndrome of unknown etiology that affects mainly women. It is characterized by diffuse and chronic musculoskeletal pain and tenderness on palpation in specific anatomic sites, called tender points. Other symptoms, such as fatigue, sleep disorders, and morning stiffness and psychological disorders, such as anxiety and depression, are frequently associated.[1]

In genetically predisposed individuals, FMS can be triggered by factors such as physical and psychic traumas, climate changes, sedentary lifestyle, and anxiety. Emotional stress is also responsible for aggravating or triggering the symptoms.[2]

Marques et al.[3] have assessed and compared the pain reported by patients with fibromyalgia, osteoarthrosis, and low back pain. These authors have concluded that fibromyalgia pain includes not only physical, but also affective and emotional components.

Epidemiological studies for determining the prevalence of fibromyalgia are scarce.[4,5] Until 1990, data were conflicting, due to differences between reference patterns of each service, different diagnostic criteria used, and regional differences between populations.

There is consensus that FMS is a significant clinical condition in the general population, highly prevalent in individuals with chronic pain and women aged from 30 to 60 years.[6] In

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Brazil, despite the lack of epidemiological data, it is estimated to be similar to those of the international literature.

Some studies classify FMS as primary (characteristic findings of fibromyalgia with no underlying recognizable cause) or secondary (characteristic findings of fibromyalgia secondary to a known cause or an underlying disease, with improvement of fibromyalgia symptoms with specific treatment of the underlying condition).[7,8]

Diagnosis is essentially clinical, and laboratory tests are required for the differential diagnosis.[1]

Recent studies have reported central alterations in pain modulation and sleep physiology, but they are inconclusive. According to such studies, non-rapid eye movement sleep disorders leads to fibromyalgia or is the consequence of fibromyalgia or other nocturnal pain syndromes.[9,10] In addition, they have also reported that disordered sleep leads to a reduction in serotonin production, and, consequently, to the reduction of pain modulating effects of endorphins, and to the increase in substance P levels, combined with changes in the sympathetic nervous system, resulting in muscular ischemia and increased sensitivity to pain.[9,11]

In addition to substance P, norepinephrine can also be involved in FMS, and circadian rhythms of the autonomous nervous system can be weakened in fibromyalgia patients, resulting in a constant level of sympathetic nervous system activity and a reduced response to the stimuli causing stress.[11,12] Such disorders could contribute to the development of FMS.

Treatment is divided into pharmacological and non-pharmacological. The former comprises multiple medications, such as anti-inflammatory drugs, antidepressants, anticonvulsants, and muscle relaxants.[1,13–15] Non-pharmacological treatment comprises educational activities, psychological treatments, physical and occupational rehabilitation, cognitive-behavioral therapy, exercises involving isometric contractions, aerobic exercises, and relaxation.[14,15]

The physiopathology of FMS is multicausal, and several experiments have shown that the lack of coordination of the mechanisms of nociception and pain inhibition results in sensory distortion. This sensory distortion is a global alteration of attention, in which global perception of the environment, increased by dysfunctions located in more rostral regions of the brain, would cause the change of thermal, tactile, and proprioceptive stimuli into painful sensations.[16]

In addition, clinical trials have reported that individuals with fibromyalgia have sleep alterations that have already been associated with chronicity of the painful complaints. Those trials have also considered the importance of social, emotional and family factors related to the characteristic of major response to painful stimuli, low level of cardiovascular fitness and muscle performance, which, together in the same individual, jeopardize his/her quality of life.[17–19]

Thus, a comprehensive approach with instruments capturing a large amount of information would allow better knowledge of those individuals, identifying questions that often pass unnoticed.

This study aimed at assessing the discriminating power of instruments used to evaluate fibromyalgia patients, to identify good indicators that allow the expression of self-assessment, providing better self-knowledge and quality of life.

CASE SERIES AND METHODS

This is a descriptive, exploratory, comparative, cross-sectional cohort study with quantitative approach. The research project was approved by the Research Ethics Committee of FAMERP (2384/2010) and carried out at the Pain Outpatient Clinic of the Hospital de Base (FUNFARME/FAMERP). The study included individuals of both genders, with sufficient cognitive level to understand the procedures and follow the orientations provided, to agree to participate in the study and to sign the written informed consent form. In addition, fibromyalgia patients had to have been diagnosed according to the American College of Rheumatology criteria.[1] Patients with psychiatric disorders and no follow-up in the Pain Outpatient Clinic were excluded.

Patients were divided into the following two groups: treatment group (T), patients diagnosed with fibromyalgia (n = 63); and control group (C), patients undergoing interconsultation in the Pain Outpatient Clinic, who neither were diagnosed with pathologies in the musculoskeletal and neurological systems, nor had disabling complaints in those systems, and were advised to walk for exercise (pelvic pain, vascular and hormonal causes). Group C comprised individuals paired by age and educational level with those of group T (n = 75). Individuals were assessed by use of the following: Fibromyalgia Impact Questionnaire (FIQ),[19] comprising 20 questions distributed into 10 items (functional capacity, well-being, absence from work, work capacity, pain, fatigue, morning stiffness, sleep, anxiety and depression); Visual Analogue Scale (VAS),[20] which measures pain intensity and is an important tool to more reliably assess patient's progression during treatment and even at each consultation; McGill Pain Questionnaire,[20] which is a list of 78 descriptors of pain, organized in four groups and 20 subgroups (sensory-discriminative, affective-motivational, and evaluative pain components), and represents an important index to assess pain; and Post-Sleep Inventory (PSI),[21] which

assesses the quality of sleep and comprises 30 items divided into three categories: pre-sleep (bedtime), during sleep, and post-sleep (awakening time). To assess quality of life, the Medical Outcomes Study 12-item Short-Form Health Survey (SF-12)[22] was used. SF-12 comprises 12 questions about the physical health component (physical functioning and role limitations due to physical health) and the mental health component (bodily pain, vitality, social functioning, role limitations due to emotional problems, and mental health).

All individuals of both groups underwent one single assessment, and the discriminating power of the instruments was verified through their application in the groups.

Descriptive analysis was performed on MS Excel. Qualitative data were analyzed by use of odds ratio, and ordinal data by use of non-parametric tests. The significance level adopted for all statistical analysis was 0.05.

In addition, receiver operating characteristic (ROC) curves were used and identified the discriminating power in the five instruments used (95% confidence interval). The greater the area under the ROC curve (AUC), the greater the discriminating power of the instrument (STATA software, version 7.0).

RESULTS

This study aimed at identifying good indicators of self-assessment for individuals with fibromyalgia, to obtain a more complete profile of such individuals, and, thus, to provide more effective intervention measures.

Female gender predominated in both groups. Mean age of the individuals was 42.3 ± 4.3 years, 45% were married, and their average schooling was 8 ± 3.5 years. Mean duration of pain was 3.2 years, and mean time required for the clinical diagnosis of fibromyalgia in group T was two years. Table 1 shows the characteristics of the sample in groups T and C.

Regarding the impact of fibromyalgia assessed by use of the FIQ, global health status was evaluated and included measures of functional capacity, well-being, absence from work, pain, fatigue, morning stiffness, morning fatigue, anxiety and depression. In nine of the ten items, the highest score was attributed to maximum impairment, and the exception being the item "well being". Seven of the nine items (fourth to tenth) were scored according to VAS, that is, from 0 to 10 (Table 2).

Regarding VAS values, group T had the highest scores. In the McGill questionnaire, which qualitatively expresses a pain descriptor, the highest number attributed to pain intensity was 20. This pain index is obtained by adding the values of the intensity of the descriptors chosen for the total and for each of the four components of the questionnaire: sensory, affective, evaluative, and miscellaneous (Figure 1).

Table 1
Characteristics of the sample studied

Variables	Group	n	Mean ± SD	%
Age	Test Control	63 75	42.3 ± 4.3 years 39 ± 3.5 years	
Gender	Test Control	63 75		Female 88% Female 58%
Marital status	Test	63		Bachelor 11% Married 54% Divorced 32% Widowed 3%
	Control	75		Bachelor 20% Married 42% Divorced 31% Widowed 7%
Pain duration	Test Control	63 75	3.2 ± 2 years 2.5 ± 1.2 year	
Schooling	Test Control	63 75	8 ± 3.5 years 8 ± 4.6 years	
Social disadvantages	Test	63		Unemployment 53% Retirement 18% Benefit 29%
	Control	75		Unemployment 11% Retirement 17% Benefit 35%
Time of diagnosis	Test Control	63 75	2 ± 1.1 year 1.3 ± 1 year	

Table 2
Data obtained by use of FIQ in the groups studied (T and C)

Variables	Group T Mean	Group C Mean	P
Functional capacity	52.3	48	0.082
Well-being	3.05	18.2	0.016*
Absence from work	1.18	0.00	0.215
Work capacity	22.47	5.6	0.011*
Pain	56.4	32.2	0.043*
Fatigue	48.3	30.2	0.042*
Sleep	53.4	36	0.003*
Morning stiffness	58.9	38.3	0.009*
Anxiety	49.5	30.2	0.022*
Depression	50.3	38.2	0.012*

FIQ = Fibromyalgia Impact Questionnaire.
(*) descriptive level of significance of 0.05 of the non-parametric Mann-Whitney test.

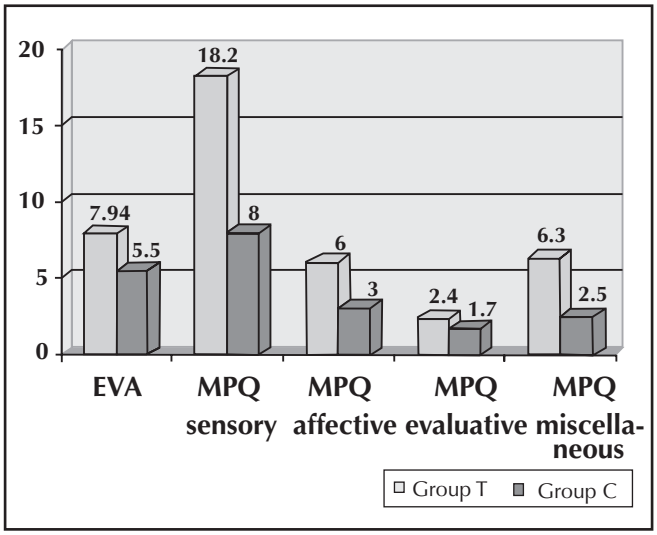

Figure 1
Treatment and control groups compared regarding the McGill pain questionnaire (MPQ) used to assess sensory, affective and evaluative aspects of pain.

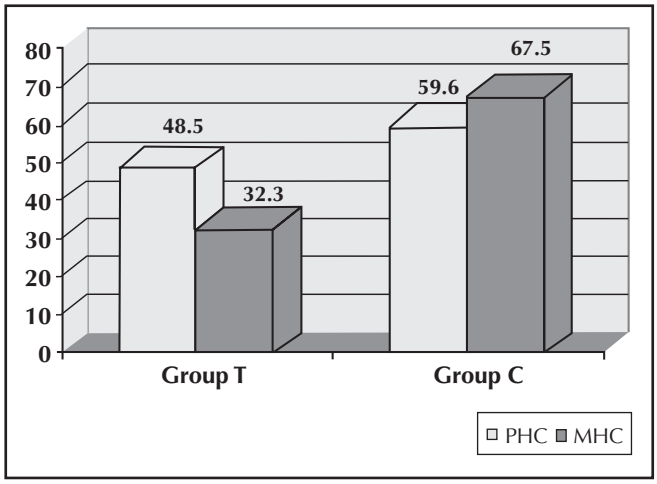

Figure 2
Total score of the physical and mental health components (PHC and MHC, respectively) of the generic questionnaire of quality of life SF-12 in the treatment (T) and control (C) groups.

Table 3
Data of the PSI in the different groups

Sleep (PSI)	Group T (n = 63) Mean (SD)	Group C (n = 75) Mean (SD)	P
At bedtime	38.0 (13.6)	51.5 (15.3)	0.048*
During the night	72.2 (21.3)	91.2 (23.3)	0.016*
Total	170.0 (51.4)	210.4 (59.7)	0.035*

PSI = Post-Sleep Inventory.
(*) descriptive level of significance of 0.05 of the non-parametric Friedman test.

Regarding sleep quality, PSI assessed three categories: pre-sleep (eight items), during sleep (13 items), and post-sleep (nine items). All questions have extreme opposite statements of bad and good sleep, on a 1 to 13 scale. To reduce response bias, the good and bad sleep statements are alternated between right and left sides. Values of the items may add from 30 to 390, and higher scores refer to better quality of sleep. Results are shown in Table 3. Group C had a better quality of sleep than group T, with statistically significant difference.

Regarding quality of life, SF-12, which is a generic measure not aimed at a specific age or disease group, was used.[22] It was developed to provide a shorter alternative to Medical Outcomes Study 36-item Short-Form Health Survey. SF-12 questions are weighted and summarized to provide easy interpretation for physical and mental health components. The results are calculated by using the rate of 12 questions and scores from 0 to 100, where zero indicates low levels of health and 100 indicates high levels of health. Figure 2 shows the results of this study. It is worth noting that both physical and mental health components are impaired in group T.

Values in physical and mental health components have discriminating power in group T as compared with those in group C ($P < 0.05$).

Regarding the discriminating power of each instrument, ROC curves were built and the analyses were as follows: FIQ: AUC = 0.82, P = 0.001, sensitivity = 78.2%, specificity = 81.2%; VAS: AUC = 0.77, P = 0.03, sensitivity = 68.4%, specificity = 79.5%; McGill questionnaire: AUC = 0.63, P = 0.05, sensitivity = 58.7%, specificity = 68.7%; PSI: AUC = 0.66, P = 0.01, sensitivity = 83.3%, specificity = 56.2%; and SF-12: AUC = 0.62, P = 0.04, sensitivity = 53.4%, specificity = 79.8%.

DISCUSSION

The subjectivity of symptoms and poor findings of the physical examination of patients with FMS determine the search for new follow-up parameters.[23] Considering that, this study aimed at identifying several dimensions involved in that syndrome to better direct treatment proposals.

Regarding the population studied, women predominated in both groups. Wolfe[1] has reported a fibromyalgia prevalence of 3.5% among women and of 0.5% among men. Regarding

several aspects of pain experience, men and women differ, because essentially all types of clinical pain are more common among women. Thus, when diagnosing, the number of tender points is higher among women than among men.[6] In experimental studies, pain sensitivity, especially among women, seems to involve sensations of deep tonic pain induced by pressure, vascular spasm, and muscular ischemia, such as those experienced in migraines, cramps, and muscle contractions.[10] In the studies reviewed, there is consensus that fibromyalgia is a significant clinical condition in the general population, with high prevalence in inactive women aged from 30 to 60 years.[10,15,16]

Martinez[24] has reported that the quality of life of individuals with fibromyalgia is significantly reduced, with an important functional limitation in daily life activities, physical limitation related to work, impact on psychological aspects (depression, anxiety) and well-being, and increased intensity of pain. Comparing with other diseases, such as prostate cancer and chronic pulmonary obstructive disease, individuals with fibromyalgia had lower vitality index and higher pain level.[5,25]

McGill questionnaire showed that the four categories (sensory, affective, evaluative and miscellaneous) were more intensely described in group T than in group C, with predominance of the sensory category. Contrary to our results, Marques[3] has reported a greater impairment in the affective category as compared with individuals with osteoarthrosis and low back pain. The impaired sleep quality of patients with fibromyalgia has also been confirmed in several studies,[10,11,20] which have reported that non-restoring sleep is a strong discriminant in FMS.

Regarding the discriminating power of the instruments, Assumpção et al.[26] have reported that, in their study, FIQ was more discriminative than SF-36 to assess the quality of life of fibromyalgia individuals. Those authors have suggested that both should be used, because they assess relevant and complementary aspects.

This study is also in accordance, because all instruments had discriminating power and their concomitant use provides a more comprehensive construction of the individual assessed.

Thus, because of the multifactorial nature of the FMS, questionnaires are required for a more objective assessment of the subjective symptoms, aiding with the diagnosis and treatment of that syndrome. Recent studies have recommended that the treatment should comprise pharmacological therapy,[6] psychotherapy,[12] educational programs,[14,26] pain and fatigue control,[6] sleep pattern improvement, mood control, functional improvement and psychosocial reintegration,[6,8,25] with interdisciplinary care interaction.[6,26]

CONCLUSION

In the present study, quality of life of fibromyalgia patients was significantly low, because of functional and physical limitations and greater psychological impact. Group T showed higher levels of pain, anxiety and depression, worse quality of sleep, less flexibility and worse quality of life, although some of those symptoms were also present in group C individuals.

The suffering inflicted to fibromyalgia individuals, due to diagnosis delay, missed work, and social life impairment, increases the severity of the disease.

All instruments used in this study confirm the multidimensional character of the FMS, because they assess different factors that are complementary. Such instruments have good discriminating power ($P < 0.05$), especially FIQ, VAS and PSI, which had the greatest AUC, and, thus, greater discriminating power.

The scarcity of studies on the impact of fibromyalgia on the quality of life has hindered the use of methodological questionnaires inherent to that type of study. Assessing individuals with FMS by use of several instruments can provide the actual dimension of symptoms to the health care team, both qualitatively and quantitatively, contributing to more effective approaches.

REFERENCES

REFERÊNCIAS

1. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL *et al*. The American College of Rheumatology 1990 Criteria for the classification of fibromyalgia. Report of the Multicenter Criteria Committee. Arthritis Rheum 1990; 33(2):160–72.
2. West SG. Segredos em reumatologia: respostas necessárias ao dia-dia em rounds, na clínica, em exames orais e escritos. Porto Alegre: Artmed; 2000.

3. Marques AP, Mendonça LLF, Cossermelli W. Alongamento muscular em pacientes com fibromialgia a partir de um trabalho de reeducação postural global (RPG). Rev Bras Reumatol 1994; 34:232–4.
4. Yunus M, Masi AT, Calabro JJ, Miller KA, Feigenbaum SL. Primary fibromialgia (fibrositis): clinical study of 50 patients with matched normal controls. Semin Arthritis Rheum 1981; 11(1):151–71.
5. Wolfe F, Ross K, Anderson J, Russell IJ, Hebert L .The prevalence and characteristics of fibromyalgia in the general population. Arthritis Rheum 1995; 38(1):19–28.
6. Van Abbema R, Van Wilgen CP, Van Der Schans CP, Van Ittersum MW. Patients with more severe symptoms benefit the most from an intensive multimodal programme in patients with fibromyalgia. Disabil Rehabil 2011; 33(9):743–50.
7. Boggio C, Capristan M, Candela M, Ara P, Cabrera N, Vidal L *et al*. Prevalencia del síndrome de fibromialgia en artritis reumatoide. VIII Congreso Internacional de Medicina Intemay XVI Curso Internacional de Medicina Interna. Octubre, 1994. Resumen No. 74.
8. Siegel DM, Janeway D, Baum J. Fibromyalgia syndrome in children and adolescents: clinical features at presentation and status at follow up. Pediatrics 1998; 101(3 Pt 1):377–82.
9. Kishi A, Natelson BH, Togo F, Struzik ZR, Papoport DM, Yamamoto Y. Sleep stage transitions in chronic fatigue syndrome patients with or without fibromyalgia. Conf Proc IEEE Eng Med Biol Soc 2010; 2010:5391–4.
10. Okifuji A, Donaldson GW, Barck L, Fine PG. Relationship between fibromyalgia and obesity in pain, function, mood, and sleep. J Pain 2010; 11(12):1329–37.
11. O'Brien EM, Waxenberg LB, Atchison JW, Gremilion HA, Staud RM, MacCrae CS *et al*. Negative mood mediates the effect of poor sleep on pain among chronic pain patients. Clin J Pain 2010; 26(4):310–9.
12. Sobrinho DGR, Roizenblatt S, Lopes AC, Teixeira RCA, Tufik S. Estudo da capacidade de manter o alerta em pacientes com fibromialgia por meio do teste da manutenção da vigília. Rev Bras Reumatol 2008; 48(1):12–6.
13. Chaitow L. Síndrome da fibromialgia: um guia para o tratamento. Barueri: Manole; 2002.
14. Heymann RE, Paiva ES, Junior MH, Pollak DF, Martinez JE, Provenza JR *et al*. Consenso brasileiro do tratamento da fibromialgia. Rev Bras Reumatol 2010; 50(1):56–66.
15. Daley J. Validity of risk-adjustment methods. In: Iezzoni LI (ed). *Risk adjustment for measuring healthcare outcomes*. Chicago: Health Administration Press, 1994.
16. Hoeger Bement MK, Weyer A, Hartley S, Drewek B, Harkins AL, Hunter SK. Pain perception after isometric exercise in women with fibromyalgia. Arch Phys Med Rehabil 2011; 92(1):89–95.
17. Schweinhardt P, Sauro KM, Bushnell MC. Fibromyalgia: a disorder of the brain? Neuroscientist 2008; 14(5):415–21.
18. Assumpção A, Cavalcante AB, Capela CE, Sauer JF, Chalot SD, Pereira CA *et al*. Prevalence of fibromyalgia in a low socioeconomic status population. BMC Musculoskelet Disord 2009;10:64.
19. Marques AP, Santos AMB, Assumpção A, Matsutani LA, Lage LV, Pereira CAB. Validação da versão brasileira do Fibromyalgia Impact Questionnaire (FIQ). Rev Bras Reumatol 2006; 46(1):24–31.
20. Pimenta CAM. Escalas de avaliação de dor. In: Teixeira MD (ed). *Dor conceitos gerais*. São Paulo: Limay; 1994, pp. 46–56.
21. Webb WB, Bonnet M, Blume G. A post-sleep inventory. Percept Motor Skills 1976; 43:987–93.
22. Camelier A. Avaliação da qualidade de vida relacionada à saúde em pacientes com DPOC: estudo de base populacional com o SF-12 na cidade de São Paulo-SP. [thesis]. São Paulo: Universidade Federal de São Paulo; 2004.
23. Verbunt JA, Pernot DH, Smeets RJ. Disability and quality of life in patients with fibromyalgia. Health Qual Life Outcomes 2008; 6:8.
24. Martinez JE, Baraúna Filho IS, Kubokawa K, Pedreira IS, Machado LA, Cevasco G. Análise crítica de parâmetros de qualidade de vida de pacientes com fibromialgia. Acta Fisiatr 1998; 5(2):116–20.
25. Broderick JE, Junghaenel DU, Schwartz JE. Written emotional expression produces health benefits in fibromyalgia patients. Psychosom Med 2005; 67(2):326–34.
26. Assumpção A, Pagano T, Matsutani LA, Ferreira EAG, Pereira CAB, Marques AP. Quality of life and discriminating power of two questionnaires in fibromyalgia patients: fibromyalgia Impact Questionnaire and Medical Outcomes Study 36-Item Short-Form Health. Rev Bras Fisioter 2010; 14(4):284–9.