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ORIGINAL ARTICLE

Effects of a multidisciplinary rehabilitation program for men with fibromyalgia: controlled randomized study

Efeito de um programa de reabilitação multidisciplinar para homens portadores de fibromialgia: estudo aleatorizado controlado

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ABSTRACT

Introduction: Fibromyalgia (FM) is a chronic widespread syndrome associated to sleep disturbances, fatigue and a myriad of other symptoms. Ten percent of patients are males. Gender differences related to pain perception may be explained by influences of genetics, metabolism, cognition, behavior, and emotions. Men with FM have less objective complaints, except for sleep disturbances and widespread pain. There is little evidence on the presentation, outcomes, treatment approach and prognosis of fibromyalgia in men. Objectives: To assess the effectiveness of a multidisciplinary rehabilitation program for male adults of working age with FM and study FM characteristics in men. Methods: Twenty-five men with FM were enrolled. Ten men with diagnosed FM were randomly assigned to one of two groups. The Treatment group consisted of a 2-month multidisciplinary rehabilitation program that included classes and therapy, administered by a multidisciplinary team consisting of a physiatrist, a social worker, a psychologist, a physical therapist, an occupational therapist, a nurse, a nutritionist and a physical educator. The Control group received standard treatment focused on outpatient management and advice to practice physical exercises inside the community. Both groups received standard medical care and medication prescriptions. Outcome measures included the Visual Analog Scale, SF36, and FIQ; additionally, a standard protocol inquiring about sleep/ depression/ memory disturbances and work status was filled out by a blinded examiner. Outcomes were measured at the beginning and at the end of the intervention, as well as at 4-month follow-up. Statistical analysis included non-parametric and descriptive tests. Results: There was a statistically significant improvement in the Treatment group observed at the Pain domain of FIQ and Pain/ Vitality/ Mental Health domains of SF 36. No improvement was sustained during the follow-up (6 months after treatment). Age averages were 50.6 (controls) and 44.2 (treatment), and a high prevalence of sick leaves, depression and sleep disturbances were observed, with no changes in absolute numbers during the 3 measurements, as well as in the number of FM tender points. Conclusions: Men with FM are likely to benefit from a multidisciplinary rehabilitation only for a short span of time. The measurements' decrease to baseline values suggests the loss of improvement 6 months after the intervention, which is in agreement with previous researches. Studies with larger samples and longer follow-up periods are necessary to verify the effectiveness of the program. FM and its specific characteristics in men are not well understood and should be analyzed in further studies, particularly aiming at clinical specificities, evolution and social aspects, as such elements are the cornerstone to design and implement the ideal rehabilitation program for men with FM. Comparative studies aiming at men and women with fibromyalgia are recommended.

KEYWORDS

fibromyalgia, pain, rehabilitation, men, quality of life, patient care team

RESUMO

Introdução: A fibromialgia (FM) é uma condição caracterizada por dor crônica generalizada, acompanhada de distúrbios do sono, fadiga e uma miríade de outros sintomas, com prevalência de 10% de homens. As diferenças de percepção de dor entre sexos e de apresentação da fibromialgia têm sido estudadas, suspeitando-se de influências genéticas, diferenças hormonais, metabólicas, cognitivo-comportamentais,

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emocionais. Fibromiálgicos possuem queixas menos objetivas, menos de distúrbio de sono, fadiga e dor generalizada. Há poucas evidências sobre características, prognóstico, método terapêutico e evolução da doença entre homens. Objetivos: Avaliar a eficácia de um programa multidisciplinar de reabilitação para pacientes do sexo masculino, em idade produtiva, portadores de fibromialgia e estudar as características desta doença em homens. Método: Vinte e cinco homens com diagnóstico de fibromialgia foram convidados. Dez foram utilizados e alocados aleatoriamente em um dos dois grupos definidos para o presente estudo. O grupo tratamento consistiu em orientação ambulatorial e um programa de reabilitação com duração de 2 meses, realizado por meio de aulas e terapias por: médico fisiatra, assistente social, psicóloga, fisioterapeuta, terapeuta ocupacional, enfermeira, nutricionista e educador físico. O grupo controle realizou tratamento padrão focado na orientação ambulatorial e para realização de atividades físicas na comunidade. A ambos os grupos foi realizado prescrição de medicamentos preconizados para fibromialgia. As medidas de avaliação foram: Escala Visual Analógica de Dor, SF 36, FIQ. Além disso, um protocolo padronizado foi preenchido por autor cegado, verificando presença de distúrbios depressivos de memória e de sono e situação profissional. As coletas de dados foram realizadas em 3 momentos: antes da intervenção, após e 4 meses depois da anterior. Foi realizada a análise estatística com testes não paramétricos e descritivos. Resultados: O grupo Tratamento apresentou melhora da EVA após a intervenção, mas que não se manteve no seguimento posterior. Houve diferença estatisticamente significante no domínio Dor da FIQ, domínios Dor, Saúde Mental e Vitalidade da SF 36, com melhora no grupo Tratamento à avaliação após. Não houve manutenção do benefício à avaliação final, 6 meses após a intervenção. As médias de idade foram 50,6 (Controle) e 44,2 (Tratamento), apresentaram alta taxa de afastamento no trabalho, depressão e distúrbio de sono, com valores constantes nas 3 avaliações. O número de pontos dolorosos não variou nos 3 momentos de avaliação. Conclusões: O programa de reabilitação tende a beneficiar homens portadores de fibromialgia a curto prazo, sendo que os efeitos sejam perdidos 6 meses após a intervenção. Tais achados são compatíveis com a literatura. São necessários novos estudos para verificar a efetividade do programa, avaliada por um seguimento mais prolongado e com amostragem adequada. A fibromialgia masculina e suas características específicas devem ser exploradas de modo aprofundado em outras pesquisas, especialmente verificando particularidades de apresentação clínica, comportamento evolutivo e aspectos sociais do paciente portador, já que tais elementos são fundamentais para a definição do programa ideal para homens. Recomendam-se estudos comparativos sobre reabilitação de homens e mulheres.

PALAVRAS-CHAVE

fibromialgia, dor, reabilitação, homens, qualidade de vida, equipe de assistência ao paciente

INTRODUCTION

Fibromyalgia is a condition characterized by widespread chronic pain, accompanied by joint stiffness, sleep disorders, fatigue and several other symptoms, which, although frequent, do not determine its diagnosis. To date, the diagnosis is carried out according to the 1990 directives of the American College of Rheumatology,[1] according to which the individual must present chronic widespread pain (associated or not to other diseases or traumas) and pain in 11 of 18 standardized tender points.

Fibromyalgia is a frustrating condition with no defined and consensual cause, as it is considered a functional syndrome, of which signs and symptoms are subjective or caused by minimal or underdiagnosed organic alterations. As this condition is frequently poor in lesion substrates, the very definition of the disease is subject to the oscillation of the current medical thinking. It is a highly incapacitating situation, in which the patient presents a picture of widespread allodynia (pain resulting from a stimulus, as a light touch to the skin, which would not normally provoke pain) in response to peripheral mechanical stimuli,[2] worsened by a state of hyperawareness of pain and disorders in the endogenous pain-suppression or analgesic mechanisms.

The prevalence of fibromyalgia in the general population is 3 to 5%; of these, 10% are men. However, it is worth mentioning that 10% of the general population presents or will present widespread musculoskeletal chronic pain.3 The most likely is that the low pain threshold, which is a characteristic of the individual, due to a widespread state of peripheral/central pain sensitivity, will lead to chronic musculoskeletal pain syndromes and among them, fibromyalgia.

Studies have tried to elucidate the difference in pain perception between the sexes, but the results are divergent: one study observed that female newborns grimace more frequently than male newborns at painful stimuli, demonstrating that the difference does not depend on sociocultural factors and favoring genetic or congenital factors. Other studies carried out with children or adolescents showed no nociception difference between genders.4 However, it is suspected that the genetic influence on the possibility of developing widespread chronic pain syndromes is a modest one, according to a study carried out with 44,897 twin individuals.[5]

Some of the factors pointed out as being responsible for the variation in the expression of pain between genders are: difference in the exposition to risks at work, difference in muscular strength between genders, labor laws that favor men, hormonal influences, variation in the presentation of disease symptoms, and differences in the nociceptive/metabolic processing according to gender – for instance, it is known that the concentration of substance P is higher in the intra-joint space of female individuals with arthrosis; there is a low concentration of CGRP in the dorsal root ganglion in women. Finally, apparently women have higher sensitivity to pain when compared to men, due to the fact that they experience painful conditions more often throughout life and because they have a lower nociceptive perception threshold.[4,6,7]

Additionally, women seem to present a higher risk of pain when facing monotonous work and psychological overload; men demonstrate higher risk when facing physical overload activities. Women tend to be more susceptible to mechanical pressure and ischemia (among other experimental nociceptive modalities such as thermal), but the same is not true for men.[6]

Regarding hormones, it is known that their physiological role goes beyond reproductive functions, acting as modulators of cognitive processes, glial, immune and limbic functions, as well as the processing of painful stimuli. Their effects on the central nervous system can be either permanent or transient,8 occurring in the fine motor control, affective states, neuronal excitability and cognitive

functions.

For instance, it is known that estrogen induces GABA release in the hippocampus, modifies NGF receptors in the dorsal root ganglion and modulates the concentration of neurotransmitters such as serotonin, acetylcholine and dopamine in several described neural circuits.

Thus, the decrease in serotonin levels (due to the low concentrations of estrogen during menopause or in the pre-menstrual period) results in the onset of some types of pain, explaining the headache in these situations. Similarly, the significant presence of androgenic receptors in the anterior and posterior cornua of the spinal column is well known. When they act at different levels of the nervous system, they generate differences in responsiveness to pain between the genders, when they mediate variations in behavior and cognitive processes.

Differences between genders in the use of mechanisms of catastrophizing (and, as a consequence, responsiveness to pain, explained by the individual's tendency to describe him or herself as vulnerable) are also observed.[9] Thus, women seem to present more experimental pain than men, a fact explained by psychosocial variables, higher tendency to pain catastrophizing and role differences between the genders, which can be explained by a higher degree of stoicism associated to the male sex and a higher degree of emotional vulnerability among women. Regarding the effect of pain on the functional level, it is observed that the physical disability is more directly related to pain among men, whereas, among women, the effect of disability operates through the presence of pictures of depression.[10]

In view of the fact that affective factors are known to have an important role in the experience, development and maintenance of pain, descriptors are shared by anxiety and pain, concomitant physiological factors and somatic manifestations. Among patients with fibromyalgia, this fact is not relevant, due to the high prevalence of mood disorders and anxiety states and a higher susceptibility to them, expressed in the worsening of the painful symptoms and vice-versa.[11,12]

Anxiety is related to a low threshold in the presence of the nociceptive stimulus and higher reports of pain, by directing the attention to the nociceptive experience. Among men, anxiety seems to contribute to a higher efficacy of the analgesic treatment, in part perhaps due to a placebo effect and by the attention focus on the pain process. Among women, on the other hand, the lesser the anxiety, the more pain relief was experienced post-treatment, as the anxiety in this case is closely associated to cognitive distortions such as catastrophizing and lower tolerance to psychological stress. A study, however, has suggested that there is no difference between men and women regarding the psychological status.[13]

In addition to the perception of pain, the genders differ regarding the management of the pain condition, creating psychological compensatory mechanisms and a variety of responses to analgesic drugs. In this context, it is suspected that the neurochemical mediation of analgesia can be influenced by sexual hormones. For instance, kappa-opioid drugs are more effective analgesics in women; non-steroidal anti-inflammatory drugs such as ibuprofen tend to be more effective in men and less effective in women during the luteal phase of the menstrual cycle.[14] The difference in pharmacokinetics can be explained by the difference in the distribution of adipose tissue in the body, weight, tissue variations, genetic products, predisposition to certain diseases and, consequently, the response to the treatment of these diseases.[15]

The fibromyalgia expressed in women is accompanied by a large variety of symptoms and a higher number of tender points, which are not always observed in men: headaches, migraine, irritable bowel syndrome, chronic fatigue syndrome, temporomandibular dysfunction. Men tend to present complaints related to self-esteem, self-perception and impact on social roles.[16] More specifically, the male patient with fibromyalgia tends to hyperactivity of the sympathetic neurovegetative nervous system and low parasympathetic tonus; after postural changes, they show an abnormal sympathovagal response, explaining the orthostatic hypotension, common among men.[17] In addition to fewer symptom reports, men present less worsening in quality of life and higher preservation of the functionality level.[18] men complain less of sleep disorders, which increases the risk of false-negative diagnosis, as they present mainly a picture of pauciarticular pain with less subjective characteristics.[19]

Regardless of the gender associated to fibromyalgia, the treatment of fibromyalgia is not definitive and carried out solely with medication.

The literature suggests that pharmacotherapy with tricyclic antidepressant drugs (ADT) are effective in relieving symptoms in only 30 to 50% of the cases and does not recommend the customary use of opioids or anti-inflammatory drugs. The selective serotonin reuptake inhibitors (SSRIs), although less effective in controlling the pain, are also used in the treatment, either isolated or in association with ADTs. Despite several studies regarding new medications, it is a consensus that the treatment of fibromyalgia must be multimodal. Thus, there is evidence that educational interdisciplinary programs that combine physical activities and psychological/behavioral ones are beneficial, although to date, there is no consensual opinion on the best regimen for such programs.

Most of the studies on fibromyalgia focus on the population of female patients, with little evidence on the characteristics, prognosis, therapeutic methods and disease evolution among men. As an aggravating factor, the issues discussed in rehabilitation dynamics should be different and adapted to the male gender in relation to the current ones (regarding social roles, expectations, specific aspects of each gender and sexuality); such facts constitute the main factor of the non-inclusion of men in fibromyalgia programs. Additionally, during physical conditioning activities, there could be feelings of embarrassment related to body exposure and contact.

As most of the few existing studies on the influence of gender on fibromyalgia seeks the understanding of the causes of differences observed in the clinical presentation and response to treatment, the present study aims at offering a new focus to this discussion, through the verification of the multidisciplinary treatment results offered to male patients.

OBJECTIVE

To study the effect of a multidisciplinary treatment of male patients with fibromyalgia and to determine the characteristics of fibromyalgia observed in male individuals.

PATIENTS AND METHODS

Male patients with a diagnosis of fibromyalgia, treated at the Umarizal Rehabilitation Center of the Division of Rehabilitation Medicine of Hospital das Clinicas of the University of Sao Paulo School of Medicine during the period of 2004 to 2005, were invited for the study. These patients had undergone psychological, cardiologic and social work assessment and had had a physiatrist's indication to undergo rehabilitation. Patient selection was carried out randomly, as all patients with fibromyalgia that originated from the Service of Triage of the institution were collected. Inclusion factors were: having a diagnosis of fibromyalgia and being clinically stable. Therefore, the exclusion criteria of the rehabilitation group were:

• Patient's ineligibility demonstrated by the psychological and social work assessment, i.e., evidence regarding the patient's incapacity to follow the group under circumstances such as: attendance capacity, psychic profile that was unfavorable to group therapy or passive attitude;

• Psychiatric disease with no current control.

• Lack of clinical follow-up in a Basic Health Unit;

• Low level of understanding and schooling that would prevent in-class learning;

• Presence of non-controlled or non-treated comorbidities.

The patients were divided in two groups:

1) Treatment group, submitted to multidisciplinary rehabilitation during two months, twice a week. The program consisted of theoretical classes that lasted 1 hour and three hours of practical classes of the several services: physiatrics, social work, psychology, physical therapy, occupational therapy, nursing, nutrition, physical conditioning. The program content was the following: learning the self-management of pain and coping strategies, energy-saving techniques, health education, physical exercises on the ground, massage, relaxation techniques.

2) Control group, submitted to medical assessment and advised to walk. The group consisted of individuals paired for age and educational level in relation to the treatment group.

All patients were followed by a physiatrist at the Fibromyalgia Outpatient Clinic, which guaranteed that all received basic information on the painful condition and ergonomy strategies. Both groups kept the regular dug treatment recommended for fibromyalgia, which included anti-depressants (ADT or SSRIs), common analgesics and medication for the underlying diseases. The patients had the protocol filled out by a blinded examiner, which contained data such as: personal information, current work status, medication use, presence of sleep disorder, number of tender points, in addition to the Fibromyalgia Impact Questionnaire (FIQ), SF 36 e Visual Analogue Scale of pain. This scale (VAS) was constructed with a variation of 0 to 10, in which 0 means absence of pain and 10 means the worst possible pain for the individual.

The FIQ (Fibromyalgia Impact Questionnaire) is a tool developed to assess the global health status in women with fibromyalgia and includes measurements of physical functioning, work, depression, anxiety, sleep, stiffness, fatigue and well-being. It is one of the most often used tools in research in several countries.[20] This tool had been previously used empirically in Brazil[21,22] and later was translated into Portuguese from Portugal.[23] It has been recently validated.[24]

The SF36 (Short Form 36) constitutes the generic questionnaire on quality of life that is currently most often employed in the literature and it has been validated in Portuguese.[25,26]

The intervention was performed by the rehabilitation team and patient selection and randomization was carried out by one of the authors. Another author, who was blinded, was in charge of applying the questionnaire – despite the self-applicable characteristic of the questionnaires, they were filled out by one of the authors, due to patients' low level of schooling. The questionnaires were filled out at three different moments: before treatment, immediately after and 4 months after the last time it was filled out (i.e., six months after the treatment). All patients signed an informed consent form and the project was approved by the Ethics Committee of the institution. The data were analyzed through the Braile and Prisma programs. The descriptive analysis was carried out through the Excel software program. Qualitative data were analyzed by Odds Ratio and ordinals by non-parametric tests.

RESULTS

Twenty-five male patients were referred from the triage service of Umarizal rehabilitation Center to the Fibromyalgia team, as they presented widespread pain that was refractory to community treatments (in general, anti-inflammatory therapy or the use of physical means). Of the 25 patients, 12 were elected by the medical, psychological and social service sections as eligible to participate in the program. The remainder did not meet the inclusion criteria and were referred to other rehabilitation teams. Two patients withdrew fro m the study. Program adherence represented a maximum of two absences in total.

The 10 remaining patients were randomly allocated at the Control and Treatment Groups. The two groups did not differ regarding age (mean age: 50.60 and 44.20 respectively) and time of pain (6.6 yrs and 10.40 yrs, respectively), according to a non-parametric test (Table 1). None of the patients had finished Elementary School and all were being treated with analgesics, low-dose antidepressants and other drugs for comorbidities. It was observed that a large number of individuals were on sick leave, had retired due to disability or were unemployed: 80% in the control group and 100% in the treatment group.

The groups did not differ so much between them as they did throughout follow-up at the three studied moments, regarding the presence of depression state, memory disorder and sleep disorder,

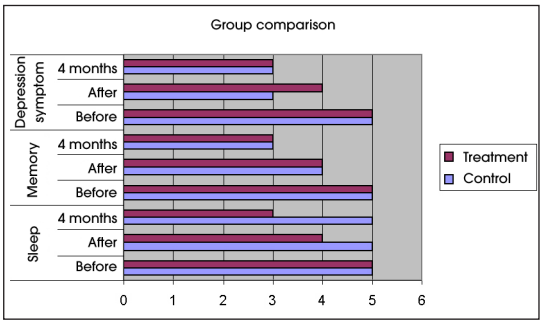

Figure 1
Treatment and control groups when compared to nominal data. Absolute numbers originated from the protocol sheet, mentioned per each patient.

observed according to absolute numbers, by recording the presence or absence of the disorder mentioned in the assessment protocol sheet. The patients were asked about the presence or absence of symptoms (Figure 1).

Table 1
Mean, standard deviation (SD), minimum, maximum, and median values of age and time of pain, according to the study group.

Variable	Group	n	Mean	SD	p*
Age	Control	5	50.60	11.26	0.310
	Treatment	5	44.20	7.76	
Time of pain	Control	5	6.60	4.39	0.151
	Treatment	5	10.40	4.16	

(*) descriptive level of probability of the non-parametric Mann-Whitney test.

Table 2
Analysis of VAS – mean, SD, minimum, maximum and median values of the VAS at the three assessed moments, according to the study group.

Group	Moment	n	Mean	SD	p*
Control	Before	5	7.70	1.79	0.097
	After	5	7.00	2.24	
	4 months	5	7.60	1.82	
Treatment	Before	5	6.70	1.48	0.039
	After	5	3.90	2.70	
	4 months	5	4.70	1.79	

(*) nível descritivo de probabilidade do teste não-paramétrico de Friedman.

Regarding the visual analogue scale (VAS) values, the treatment group presented improvement after the intervention, but it did not persist during the subsequent follow-up (Table 2).

The patients from both groups presented a high prevalence of depression, sleep disorders and memory disorder (data obtained from the protocol questionnaire). There was no statistically significant alteration of the values throughout follow-up and there was no improvement with the intervention (Table 3).

Regarding the FIQ (Figures 2 and 3), the Anxiety, Stiffness, Well-being, Missed days at work, Physical capacity, Depression, Fatigue, Work capacity and Tiredness (need for rest) domains did

Table 3
General characteristics of the groups for $p \leq 0.05$, regarding the data shown in Figure 1

General characteristics of the groups		
Sleep disorder	Control	Treatment
Before	5	5
After	5	4
4 months	5	3
Fisher Exact Test		0.44
Memory disorder	Control	Treatment
Before	5	5
After	4	4
4 months	3	3
Fisher Exact Test		1
Depression	Control	Treatment
Before	5	5
After	3	4
4 months	3	3
Fisher Exact Test		1

not show any statistical difference between the two groups at the three studied moments, as well as within each group in relation to each assessed moment.

As for the Pain domain, a progressive improvement was observed in the Control group as well as in the Treatment group (p=0.021 and p = 0.034, Friedman, respectively), with significant post-treatment improvement, although it did not show long-term duration, at the four-month assessment. It is important to mention that the authors chose to present the disassembled FIQ domains, without summarizing them in two indices (one related to the functional capacity and another related to the remainder). Although this report form does not have support in the literature, the separate description is due to the fact that this is a pilot study with a small sample and that the objective is to study the behavior of each aspect, even without statistical difference.

Regarding the SF 36 (Figures 4 and 5), the Physical activity, General Health Status and Social Aspects domains did not differ in the two groups, or showed alterations at the three assessed moments.

The Pain domain showed significant improvement (p= 0.07, Friedman) when assessed at the post-treatment moment in the Treatment group; however, the values for the Pre-treatment moment reappeared at the 4-month assessment. The same occurred with the Mental Health (p = 0.022) and Vitality domains (p = 0.036), corroborating once more the absence of long-term effects of the results obtained after the intervention. On the other hand, the Emotional Aspects domain showed improvement only at the 4-month assessment (p = 0.023). The Capacity domain showed contradictory results, by demonstrating a statistically significant global improvement of the Control group in relation to the Treatment group, which showed worse results.

The number of tender points did not show any variation throughout the intervention at the three assessed moments (Table 4).

Table 4
Mean, standard deviation (SD), minimum, maximum, and median values of the number of tender points at the three assessed moments, according to the study group.

Group	Moment	n	Mean	SD	p*
Control	Before	5	13.00	2.83	0.607
	After	5	12.80	2.95	
	4 months	5	12.80	2.95	
Treatment	Before	5	8.00	5.52	0.135
	After	5	7.60	5.03	
	4 months	5	7.60	5.03	

(*) descriptive level of probability of the non-parametric Friedman's test

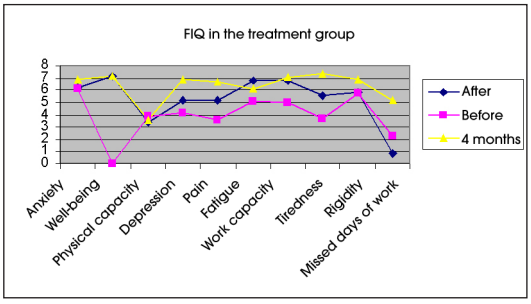

Figure 2
FIQ values in the treatment group at the 3 moments: before, after and 4 months.

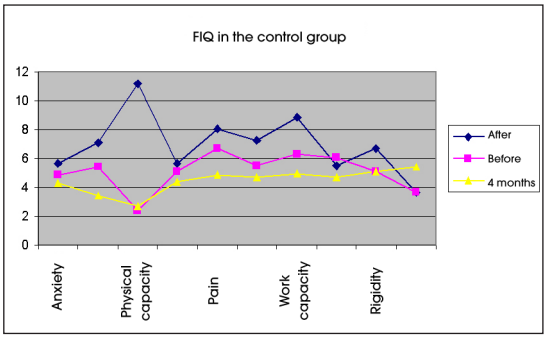

Figure 3
FIQ values in the control group at the 3 moments: before, after and 4 months.

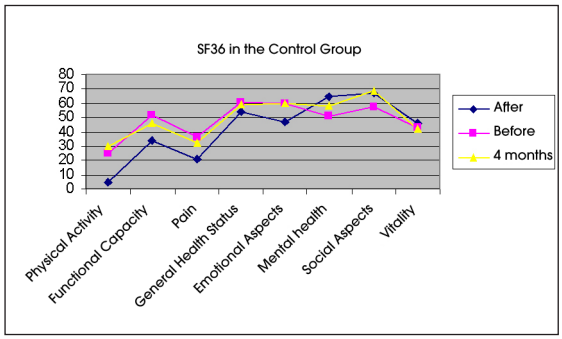

Figure 4
SF 36 values in the control group at the three moments: before, after and 4 months.

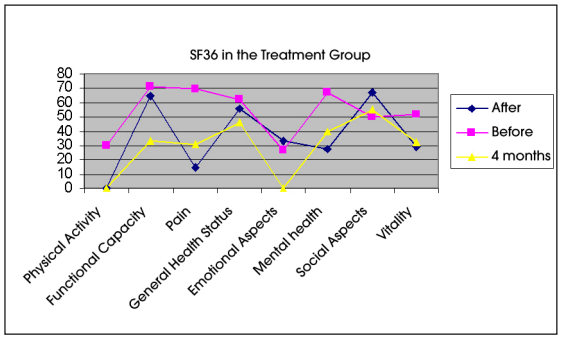

Figure 5
SF 36 values in the treatment group at the three moments: before, after and 4 months.

DISCUSSION

The present study consisted in a series of cases studied as an almost-blind and random clinical trial. Despite the statistically significant evidence, the data must be interpreted with caution. Future studies must be carried out with larger sample sizes to confirm the tendencies observed here.

It is a consensus in the recent literature that an effective treatment of fibromyalgia must be based on a multidisciplinary rehabilitation program. There is no unanimity about the ideal program model regarding its duration and frequency. There are several group formats, with variable costs and reasonable long-term efficacy, according to studies with 1 month to 2 years of follow-up after treatment. In general, the programs suggest good results in community-based models with classes, debating among the participants, demonstrations of physical activities adapted to the painful condition and energy-saving measures. Follow-up measurements seek to evaluate functioning, quality of life, self-perception of pain, visual analogue scale and mood disorder assessments.[27,28] They include aerobic activities, strengthening and relaxation exercises and ergonomic information. They aim at improving the global health status, gain of positive attitudes and self-management of pain. Therefore, they recommend group sessions based on the principles of cognitive-behavioral therapy, a content adjusted to the patients' needs and offer of information based on the patients' questions about definitions, relief strategies and pain consequences.

A Swedish study tested four fibromyalgia program regimes, with a duration of 5 days to 6 months, costs of 1 to 10 times the basic value and variable human resources,[29] with a mean of 45 patients per group.

Based on a follow-up of up to one year, using functional scales of depression, quality of life, coping strategies and pain, in addition diaries and socioeconomic questionnaires, the authors concluded that there is no difference in efficacy of one program in relation to the other. There is a suggestion that the treatment must be individualized and designed according to the specific psychophysical characteristics of each patient with fibromyalgia, as there is a considerable heterogeneity among the patients. Regardless of the format and duration of the program, the patients feel satisfied, as long as they are given information focused on the pain and the

attitudes to be taken. The authors also recommend shorter programs (as they are less expensive and equally beneficial), so they can be repeated intermittently. Some studies recommend extremely short programs30 of 1.5 days of directions and very often, contradictions occur regarding which program would be the ideal one. Most of the published studies on educational programs in fibromyalgia concern a population that is culturally different from the one studied in the present study. Generally, the studies refer to women with high-school education and with higher purchasing power, data that prevent an adequate comparison with this series. On the other hand, we believe that such rehabilitation programs with 1.5-day duration (well-accepted by some authors) are not adequate either for the present population, considering the profound social differences between the DMR clients and those from private clinics in the USA.[30]

An immediate improvement after the rehabilitation program aiming at changes in the life style could not be expected in fact, as it is necessary to allow the participants time to put into practice the new knowledge and use them to increase their coping capacity. In order to do that, it would be necessary to have a patient follow-up interval longer than the one used in this study, such as the one by Henriksson et al,[29] in which the patients showed improvement in these measures after one year of program.

Although it is impossible to carry out the data extrapolation and reproducibility due to the sample size, the present study was in agreement with some previous studies by suggesting that, indeed, some assessment measures show objective improvements, but which do not persist in the long term. Thus, the phenomenon observed in the 4-month follow up after the treatment was similar to a one-year follow-up observed in a Spanish study.[31] It is interesting, however, that no study that verified the rehabilitation efficacy in men with fibromyalgia was found.

The evolution of the physical capacity during the educational program was not evaluated specifically, although other programs with women verified that the improvement in the physical capacity was not related to symptom relief.[31] Educational programs for fibromyalgia seem to present variable results regarding assessment measures, as some studies show improvement in FIQ values,[28] whereas others show no evolution regarding FIQ or SF36.[32] Among all FIQ domains in this study, only the Pain domain was relevant, by showing improvement after the program without maintenance in the follow-up – the same happened with the Pain, Vitality and Mental Health domains in the SF36. These data suggest a higher need to consider other types of intervention, such as longer or shorter programs with periodical repetitions for this population, through the patients' sociocultural profile, symptom severity or chronicity.

It is important to remember that the usual tools used in studies on widespread chronic pain, such as the FIQ and those of quality of life, despite assessing functional variations, a not capable of evaluating changes in attitude, daily habits and the feeling of self-control.[29] Thus, it is concluded that certain improvements pointed out by the patients may not have been picked up by chosen measurement tools classically used in research.

Although the interventions for fibromyalgia did not generate outstanding results, measured by the pain intensity or increased function (pain in FIQ, pain/vitality and mental health in SF36, VAS after the treatment), other gains might have been obtained, such as the individual's subjective satisfaction and routine adaptation effort. Additionally, although it mentions the presence or absence of depressive states, the present study did not look deeply into diagnosis and thus might not have really identified the mood disorders accurately: this problem could have been solved with the use of more specific scales such as Beck's scale, as well as scales to verify subjective satisfaction such as Likert's and coping scales.

A decrease in the number of tender points in some people might be an indication of lesser degree of anxiety and a higher feeling of self-control, also demonstrated in other variables, such as more positive attitudes. That is in agreement with findings of a study that demonstrated a correlation between tender points and the degree of psychological stress.[33] Due to the small sample size and the low frequency of depressive states (3 in the control and 1 in the treatment groups), it was not possible to explore such evidence, as the number of tender points and the presence of depression were not compared. The measurement of these points was not carried out in this study, as it was not shown to be superior to the conventional method of manual pressure.[34]

There was a tendency toward a lower number of tender points, especially in the control group, which corroborates the literature regarding the observation that men tend to have a lower number of tender points when compared to women, many times exhibiting numbers that are below the diagnostic line for fibromyalgia of 11 in 18.

Regarding the study population profile, it is known that women tend to use health services more often than men, which can generate a bias regarding the prevalence of chronic pain syndromes in the rehabilitation center.

As a consequence, the populations of patients with fibromyalgia treated at our Service may not reflect the real distribution of the disease, which is more evident among men. Male individuals, therefore, tend to reach the rehabilitation center at a more advanced stage of the painful condition, a result of the reluctant attitude to seek help at the initial phases or on the diagnostic undernotification carried out at the primary units.

A qualitative study based on narrative interviews detected a long waiting period before the specialized treatment among men with fibromyalgia. Additionally, these patients do not keep the treatment continuity.[35] Although this was not the objective of the present study, the current work status could have been explored, as there is a high prevalence of sick leave in this population; as the social profiles of the two genders differ, differences regarding social welfare aspects would be similarly expected.

The results of the present study suggest that men with fibromyalgia are in the economically active age range and present a high frequency of depression and sleep disorders, corroborating a recent study that points out the importance that the work status and social welfare benefits have on the maintenance of symptoms and disability and work disadvantage.[36]

Considering the transient treatment results and the variability

of the effects observed even in other studies, it is concluded that the final objective of the educational programs comprising physical and cognitive-behavioral therapies is to obtain new information and strategies for the self-management of pain and change previous beliefs, much more than the pain reduction, itself.

CONCLUSIONS

The multidisciplinary rehabilitation treatment for men with fibromyalgia seems to be beneficial, albeit short-term, as demonstrated by the FIQ, SF36 and VAS.

New clinical blind randomized trials with large sample sizes are necessary to prove the statistical evidence observed in this pilot study. These studies could compare samples of male x female patients, to obtain further information on the analysis of the differences between the genders in relation to psychosocial characteristics and response to rehabilitation.

Supplementary assessment measures must be taken into account when considering studies of the fibromyalgia syndrome (subjective ones and specific scales such as those of depression, anxiety and others), in order to obtain more sensitivity when analyzing changes that can occur with the interventions on the clinical presentation, functional impact, etc.

Additionally, other modalities of rehabilitation programs for fibromyalgia must be studied in relation to type, therapeutic techniques and time of follow-up after the intervention.

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