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Original article

Impacts of social support on symptoms in Brazilian women with fibromyalgia

Rodrigo Pegado de Abreu Freitas[a,*], *Sandra Cristina de Andrade*[b],
Maria Helena Constantino Spyrides[c],
Maria Thereza Albuquerque Barbosa Cabral Micussi[b],
Maria Bernardete Cordeiro de Sousa[d]

[a] *Universidade Federal do Rio Grande do Norte (UFRN), Faculdade de Ciências da Saúde de Trairí, Santa Cruz, RN, Brazil*
[b] *Universidade Federal do Rio Grande do Norte (UFRN), Departamento de Fisioterapia, Natal, RN, Brazil*
[c] *Universidade Federal do Rio Grande do Norte (UFRN), Departamento de Estatística, Natal, RN, Brazil*
[d] *Universidade Federal do Rio Grande do Norte (UFRN), Instituto do Cérebro, Natal, RN, Brazil*

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ABSTRACT

We aimed to assess the impact of social support on symptoms in Brazilian women with FM. An observational, descriptive study enrolling 66 women who met the 1990 American College of Rheumatology (ACR) criteria. Social support was measured by the Social Support Survey (MOS-SSS), functionality was evaluated using the Fibromyalgia Impact Questionnaire (FIQ), depression was assessed using the Beck Depression Inventory (BDI), anxiety was measured using the Hamilton Anxiety Scale (HAS), affectivity was measured by Positive and Negative Affect Schedule (PANAS), and algometry was carried out to record pressure pain threshold (PPth) and tolerance (PPTo) at 18 points recommended by the ACR. Patients were divided into normal (NSS) or poor social support (PSS) groups with PSS defined as having a MOS-SSS score below the 25th percentile of the entire sample. Mann–Whitney or Unpaired t-test were used to compare intergroup variables and Fisher's for categorical variables. Analysis of covariance and Pearson correlation test were used. No differences in sociodemographic variables between PSS and NSS were found. Differences between NSS and PSS groups were observed for all four subcategories of social support and MOS-SSS total score. Significant differences between NSS and PSS on depression ($p = 0.007$), negative affect ($p = 0.025$) and PPTh ($p = 0.016$) were found. Affectionate subcategory showed positive correlation between pain and positive affect in PSS. Positive social interaction subcategory showed a negative correlation between FIQ and depression state. Therefore social support appears to contribute to ameliorate mental and physical health in FM.

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* *Corresponding author.*
E-mail: rodrigopegado@gmail.com (R.P. Freitas).

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Impacto do apoio social sobre os sintomas de mulheres brasileiras com fibromialgia

RESUMO

Palavras-chave:
Fibromialgia
Apoio social
Dor
Funcionalidade
Depressão

Objetivou-se avaliar o impacto do apoio social sobre os sintomas de mulheres brasileiras com fibromialgia (FM). Trata-se de um estudo observacional descritivo que selecionou 66 mulheres que atendiam aos critérios do Colégio Americano de Reumatologia (ACR) de 1990. O apoio social foi medido com o *Social Support Survey* (MOS-SSS), a funcionalidade com o Questionário do Impacto da Fibromialgia (FIQ), a depressão com o Inventário de Depressão de Beck (BDI), a ansiedade com a Escala de Ansiedade de Hamilton (HAS), a afetividade com o *Positive and Negative Affect Schedule* (Panas) e foi feita algometria para registrar o limiar da dor à pressão (LDP) e a tolerância álgica à pressão (TAP) nos 18 pontos recomendados pelo ACR. Os pacientes foram divididos nos grupos apoio social normal (ASN) ou ruim (ASR); o ASR foi definido como uma pontuação nos MOS-SSS abaixo do percentil 25 da amostra total. Usou-se o teste de Mann-Whitney ou o teste *t* não pareado para comparar variáveis intergrupos e o de Fisher para as variáveis categóricas. Usaram-se a análise de covariância e o teste de correlação de Pearson. Não houve diferença nas variáveis sociodemográficas entre os grupos ASN e ASR. Observaram-se diferenças entre os grupos ASN e ASR para todas as quatro subcategorias de apoio social e pontuação total do MOS-SSS. Encontraram-se diferenças significativas entre o ASN e o ASR na depressão ($p = 0,007$), afeto negativo ($p = 0,025$) e LDP ($p = 0,016$). A subcategoria apoio afetivo mostrou correlação positiva entre a dor e o afeto positivo no grupo ASR. A subcategoria interação social positiva mostrou uma correlação negativa entre o FIQ e o estado de depressão. Portanto, o apoio social parece contribuir para a melhoria na saúde mental e física na FM.

Introduction

Fibromyalgia (FM) is a no progressive rheumatic condition, without definitive pathophysiology or measurable indicators of disease activity. This condition is marked by chronic widespread pain and frequently associated symptoms including fatigue, sleep disturbances, cognitive dysfunction, and depressive episodes.[1,2] FM prevalence varies between 0.66% and 4.4% in the Brazilian population and is more common among women than men, particularly in the 35- to 60-year age group.[3] Activity limitations in FM have an impact on work ability and impose a heavy burden on patients in terms of disability, loss of quality of life and costs, as well as an economic burden on society.[4,5]

Episodes of chronic pain, depression and low functionality seem to affect interpersonal (including marital) relationships and work activity.[6,7] Women with FM face skepticism and inadequate treatment from medical professionals, family and friends, particularly if their disability is not visible, further compounding physical and emotional distress.[8] Thus, patients with FM may show changes in prosocial behavior or perception of social support.[9] Satisfaction with social support, social participation, and living with someone had protective effects on depression and other symptoms in women with FM.[9,10]

Little is known about the influence of psychosocial factors on the processing of pain, anxiety and depression among FM patients and no studies regarding social support and FM symptoms have been conducted in Brazil. Social support, which includes emotional and instrumental support, is a coping resource in chronic diseases such as FM and has been reported to be a more important factor in health promotion.[11] Social support represents an external resource that is accessed from others and operationalized as a social resource. The literature indicates that social support is a vital aspect of life in general and mental health and can be defined as subconcepts of social networks.[12,13] In other words, social support is a social network function provided by members within a social network, generally related to the number and/or frequency of contacts with family members, relatives, friends, and colleagues.[13]

Social support has been defined in numerous ways, generally referring to resources supplied to individuals in need by their social network, and can be measured through the individual's perception of the degree to which interpersonal relationships can fulfill certain social support functions.[14] Traditionally, four types of social support are suggested: emotional, instrumental, appraisal which involves information relevant to self-evaluation, and information.

Social support varies among countries, cultures and individual perception. FM patients may have changes in perception of social support according to symptoms severity. The purpose of the present study was to assess the impact of social support on peripheral pain sensibility, functionality, and positive and negative mood states, such as depression, affectivity and anxiety in Brazilian women with FM.

Methodology

Type and study subjects

An observational, descriptive study was conducted. Subjects were recruited from the Medical Clinic of the Onofre Lopes University Hospital (HUOL) and from the Physiotherapy Clinic of Universidade Potiguar, Natal, Brazil. The Research Ethics Committee of the Federal University of Rio Grande do Norte approved all the procedures described in this report (274/2010). Informed consent was obtained from all subjects, and study protocols complied with ethical guidelines.

Sixty-six women, aged 20–76 years, who met the 1990 American College of Rheumatology (ACR) criteria for FM, were recruited.[15] The following inclusion criteria were adopted: (a) medical diagnosis of FM, (b) ability to understand study objectives and answer the questions, (c) not undergoing physical therapy or rehabilitation programs during the three previous months, (d) do not use corticosteroids, analgesics and/or anti-inflammatory drugs during the week of evaluation. Exclusion criteria were: (a) physical and/or organic difficulties, when these compromised questionnaire application and analgesic tests; (b) rheumatic and/or autoimmune diseases including chronic fatigue syndrome, rheumatoid arthritis, gout and lupus.

Assessment

The experiment was performed in a quiet setting without any interruptions and with subjects shielded from other patients.

Social support was measured by means of the Medical Outcomes Study Social Support Survey (MOS-SSS), a 19-item questionnaire covering multiple dimensions of social support, and designed to be easily applied.[16] The items in this instrument do not specify the source of support (e.g., family, friends, community or others), and they measure perceived availability of functional support. Originally designed in English, the MOS-SSS has been translated and adapted to Portuguese version that showed good psychometric properties.[17] Test–retest reliability was consistently high for the subscales (with intraclass correlation coefficients ranging from 0.78 to 0.87), and internal consistency, as assessed by Cronbach's alpha, ranged from 0.75 to 0.91. Although there are five theoretical dimensions in the MOS-SSS, previous validity investigations have suggested that questions related to emotional and information support should be grouped in the same dimension. Accordingly, the present study used four dimensions: tangible support, affective support, emotional/information support and positive social interaction.

The subjects were divided into two groups according to their level of social support. Poor social support (PSS) was defined as having a MOS-SSS score below the 25th percentile of the entire sample.[11] Normal social support (NSS) was defined as having a MOS-SSS score above the 25th percentile of the entire sample according to Shin et al. (2008).[11,16]

Functionality was evaluated using the Brazilian version of the Fibromyalgia Impact Questionnaire (FIQ), a self-administered questionnaire that measures functional aspects of the patient over the previous few weeks.[18] It contains three *Likert scale* type questions (levels of response) and seven visual analog questions. All the scales vary from 1 to 10 and a high score indicates negative impact and more severe symptoms. The total FIQ score is graded from 1 to 100 points. Higher scores were related to greater impact of the disease on patient functionality and a corresponding reduction in their quality of life.

Depression levels were assessed using the Beck Depression Inventory (BDI), a self-reporting tool composed of 21 questions related to cognitive symptoms and attitudes.[19] For each question, patients must choose one or more phrases that best describe how they felt in the previous week. The maximum score is 63 points and high scores indicate severe depression. Beck et al. suggest the following quantification scores for depression: a score of less than 10 indicates minimal or no depression; 10–18 signifies mild to moderate depression, 19–29 moderate to severe depression and from 30 to 63 severe depression.[19]

The severity of anxiety symptoms was measured using the Hamilton Anxiety Scale (HAS). The HAS was administered by an interviewer who asked a series of semi-structured questions related to symptoms of anxiety. The interviewer then rated the individuals on a five-point scale for each of the 14 items. Seven of the items specifically address psychic anxiety and the remaining seven somatic anxieties. The values on the scale range from zero to four: zero means that there is no anxiety, one indicates mild anxiety, two indicates moderate anxiety, three indicates severe anxiety, and four indicates very severe or grossly disabling anxiety. The total anxiety score ranges from 0 to 56. High levels are indicative of high anxiety.[20]

Positive affect (PA) and negative affect (NA) were measured using the Portuguese version of 20-item Positive and Negative Affect Schedule.[21] Participants were asked to indicate on a 5-point scale from 1 (very slightly or not at all) to 5(extremely) the extent to which they had experienced each affect during the past week. The PA scale included items such as "interested," "excited," and "proud," and the NA scale included items such as "distressed," "nervous, "and irritable". The scores range is 10–50 for both positive affect and negative affect. For positive affect score: add the scores on items 1, 3, 5, 9, 10, 12, 14, 16, 17, and 19. And for negative affect score: add the scores on items 2, 4, 6, 7, 8, 11, 13, 15, 18, and 20.

Algometry was carried out to record pressure pain threshold (PPTh) and pressure pain tolerance (PPTo). Eighteen tender points were marked with a demographic pencil and assessed while patients were in an upright position, with their feet slightly apart. Pain sensitivity tests were performed on the 18 points identified by ACR in accordance with Okifuji et al.[22] This was done perpendicular to the skin at 5–10 s intervals by the same qualified examiner. A pressure algometer was used (Pain Diagnostics®, NY, EUA), through a 1-cm diameter rubber tip. Pain threshold and tolerance to pressure were quantified in kg/cm^2. The examiner positioned the rubber tip above the area to be examined and gradually increased the pressure by $1 kg/cm^2/s$. The PPTh was measured when the patient said "I'm starting to feel pain". To measure PPTo, the patient was asked to bear the maximum amount of pressure from the algometer and use the phrase "Stop, I cannot take anymore" when they were no longer able to do so. Patients were asked

Table 1 – Sociodemographic variables.

Sociodemographic factors	Poor social support ($n = 17$)	Normal social support ($n = 49$)	p value
Age[a]	53.41 ± 7.79	52.60 ± 12.50	0.804
Marital status			
Never married[b]	35.29%	16.32%	0.165
Married[b]	41.17%	48.97%	0.779
Widowed[b]	5.88%	14.28%	0.669
Divorced[b]	11.76%	18.36%	0.715
Did not respond[b]	5.88%	2.04%	0.452
Income[c]			
1 minimum wage[b]	35.29%	32.65%	1.000
2–3 minimum wage[b]	35.29%	40.81%	0.778
4 minimum wage or more[b]	29.41%	22.44%	0.743
Unreported[b]	0%	4.08%	1.000
Education			
Elementary (incomplete)[b]	5.88%	22.44%	0.163
Elementary[b]	35.29%	24.48%	0.528
Secondary[b]	23.52%	30.61%	0.759
University[b]	35.29%	22.44%	0.342

Age described with mean and standard deviation.

[a] Calculated with unpaired *t*-test.

[b] Calculated with Fisher's exact test.

[c] Brazilian national minimum wage, US$ 252.14 per month.

to use these exact sentences for total standardization of the test.

Statistical treatment

Statistical analyses were developed using SPSS 19.0 and GraphPad Prism 5 (GraphPad Software Inc., 2009). The first step of statistical analysis was to test the normal patterns using the Shapiro–Wilk test. The characteristics of the subjects in the PSS and NSS groups were compared using Mann–Whitney or unpaired *t*-test and the Fisher's exact test for categorical variables. Analysis of covariance (ANCOVA) was used to compare the clinical characteristics of the subjects in the PSS and NSS groups. It was used Pearson test for correlation between MOS-SSS and FM clinical variables in PSS group. The *p*-value considered was ≤ 0.05 for statistically significant results.

Results

Table 1 shows the demographic characteristics for both participants groups. No significant difference in age and others sociodemographic factors was found between two groups. Table 2 describes the comparison of MOS-SSS and subcategories status between the NSS group and the PSS group.

Using ANCOVA adjusted for age to show the influence of PSS on clinical characteristics of FM patients, a significant influence in depressive state ($p = 0.007$), negative affectivity ($p = 0.025$) and PPTh ($p = 0.016$) was found. A tendency to differences between PSS group and NSS group in FIQ ($p = 0.094$) with higher scores in the PSS group than in the NSS group (Figs. 1 and 2) was observed. For PSS (MOS-SSS score <25 percentile), the affectionate support subcategory showed a significant positive correlation with PA ($p = 0.010$; $r = 0.61$), PPTh ($p = 0.040$; $r = 0.5$) and PPTo ($p = 0.020$; $r = 0.54$) (Fig. 3).

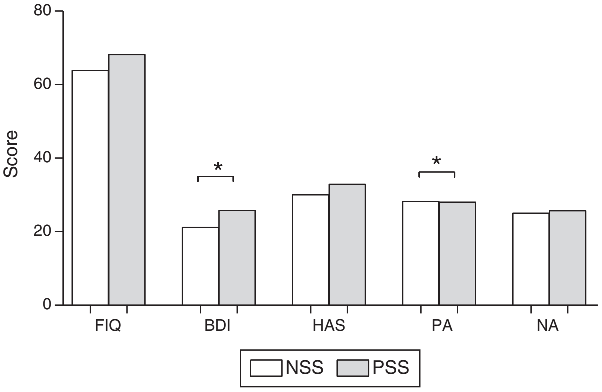

Fig. 1 – Influence of poor social support (PSS) on the clinical characteristics of patients with FM. $^{*}p < 0.05$, by ANCOVA adjusting age. NSS, normal social support; MOS-SSS, Medical Outcomes Study Social Support Survey score <25 percentile for PSS; FIQ, Fibromyalgia Impact Questionnaire; BDI, Beck Depression Inventory; HAS, Hamilton Anxiety Scale; PA, positive affect; NA, negative affect.

Furthermore, positive social interaction subcategory showed a significant negative correlation with FIQ ($p = 0.002$; $r = 0.69$) and depression ($p = 0.004$; $r = 0.65$) (Fig. 4).

Discussion

The purpose of this study was to assess the influence of social support on peripheral pain, functionality and positive and negative mood states, such as depression, anxiety and affectivity in Brazilian women with FM. The emotional/information support subcategory mainly covers empathy, emotional

Table 2 – Comparison of social support status between the normal social support (NSS) group and the poor social support (PSS) group.[a]

Clinical Variables	Poor social support ($n = 17$)			Normal social support ($n = 49$)			*p* value
	Median	75%	25%	Median	75%	25%	
MOS-SSS							
Overall	51.5	54.95	45.83	85.83	93.75	71	<0.0001
Tangible	45	65	35	90	100	75	<0.0001
Affectionate	66	73	46.6	100	100	86	<0.0001
Positive social interaction	45	50	37.5	80	92.5	60	<0.0001
Emotional/Information	42	51	36	85	95	62.5	<0.0001

Calculated with Mann–Whitney nonparametric test. Significant at 5%.

[a] Medical Outcome Study Social Support Survey (MOS-SSS) score <25 percentile.

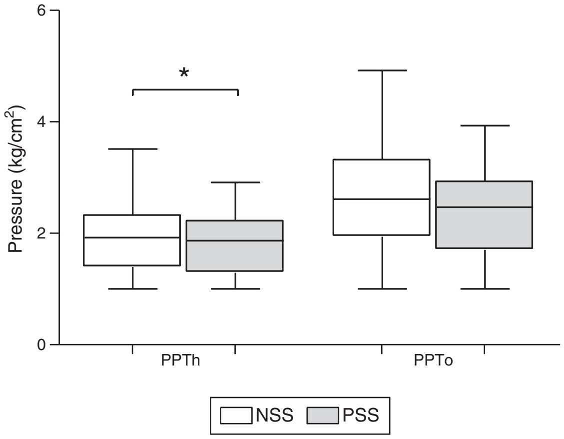

Fig. 2 – Influence of poor social support (PSS) on pressure pain threshold (PPTh) and pressure pain tolerance (PPTo). $^{*}p < 0.05$ by ANCOVA adjusting age. NSS, normal social support; PSS, poor social support with MOS-SSS score <25 percentile for PSS. Pressure pain in kg/cm^2.

expression, advice and guidance.[23] Positive social interaction subcategory involves sharing pleasurable activities, the affectionate support category involves the expression of love and tangible support includes material aid and behavioral assistance.[23]

The study showed no differences in sociodemographic variables between PSS and NSS. Nevertheless, differences between the NSS group and the PSS group were found in the patient scores in all 4 subcategories of social support and in the MOS-SSS total score. Apparently, with the same marital status, income and education level it is possible to find two categories of social support in FM women. The symptoms of FM could be more important factor? Or the perceived social support was altered in FM?

The results demonstrate differences between NSS and PSS on depression, negative affect and pain sensitivity. Affectionate subcategory showed positive correlation between pain and positive affect in PSS. Furthermore, positive social interaction subcategory showed a negative correlation between FIQ and depression state.

These findings are consistent with previous research in South Korea and USA, demonstrating that social support is associated with lower levels of functionality and mood states.[11,18] In addition, there was also evidenced that FM patients with low positive social interaction may have greater depressive symptoms and lower functionality.[24] This could be due to not receiving adequate social support and being stigmatized and invalidated, which might be quite common in FM.[25]

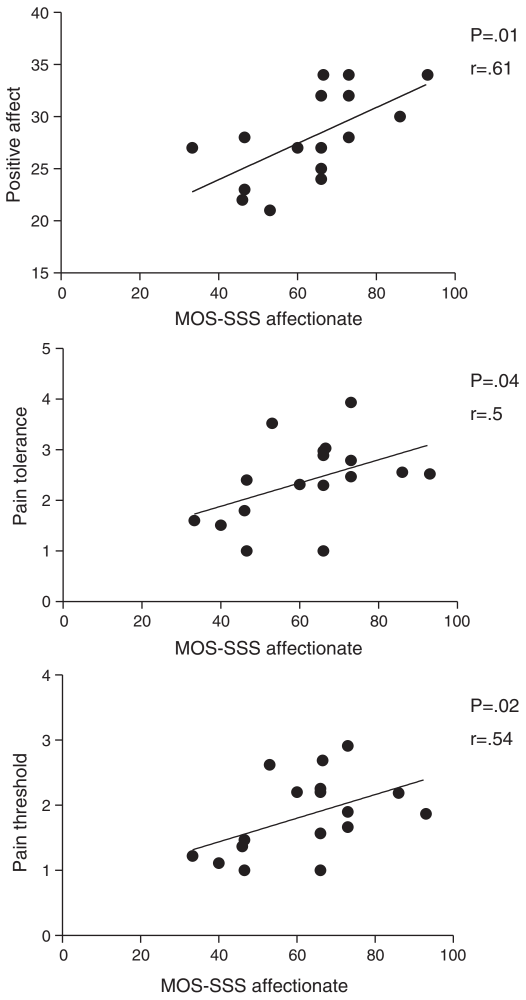

Fig. 3 – Pearson correlation between affectionate and clinical variables. Medical Outcome Study Social Support Survey (MOS-SSS) score <25 percentile.

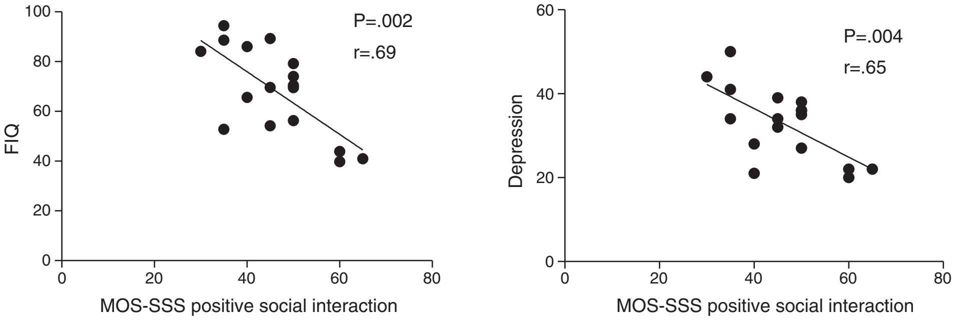

Fig. 4 – Pearson correlation between positive social interaction and clinical variables. Medical Outcome Study Social Support Survey (MOS-SSS) score <25 percentile.

A number of studies have described the impact of FM on patient functionality, disability and quality of life.[5,6] Studying the psychosocial profile of women with FM in Toronto (Canada), Shuster et al. showed that these women reported less perceived family support and lower mood than controls.[26] They also found correlations among these variables when they were examined within the FM group, and a significant association was found, with higher ratings of anxiety and depressed mood. These results suggest that perceived family support by women with FM may have an important impact on their health outcomes, and that complementary treatments such as physical therapy may considerably improve the quality of life of patients with FM.[26]

In a study of patients with FM, rheumatoid arthritis, ankylosing spondylitis and osteoarthritis, social support was positively associated with patients' mental but not physical health.[26,27] The present study showed an association between physical and mood states with social aspects. This suggests that for improving health of patients with rheumatic diseases such as FM social support to enhance emotional status and functionality seems to be required.[27]

Higher ratings of depression and anxiety in women with FM are related to factors other than maladaptive cognitive schemas, such as reduced ability to participate in enjoyable activities and lack of sleep due to pain.[28] Supporting this idea, Cannella et al. found that interference with important daily activities mediated the association between pain severity and depressed mood.[28] These influences could be an important factor to describe the interaction between symptoms and perception of social support.

According to the social support theory, receiving support from others is generally beneficial to mental and physical health and may blunt the harmful impact of external stressors.[29] Empirical confirmation of this buffering hypothesis of social support has been obtained.[30] However, invalidation caused by reduced physical performance may be harmful for reasons other than lack of social support. Invalidation includes an active component of social rejection, which has been suggested to amplify pain, e.g., through activation of neural structures such as the anterior cingulate cortex.[31,32]

It has been hypothesized that the presence of social support may diminish one's appraisal of threat, which in turn might influence one's experience of pain by reducing positive and negative emotions such as depression, affectivity or anxiety.[26,30,33] Another plausible explanation for the beneficial effect of the presence of significant social support is that the presence of a supportive person helps distract patients from their experience of physical and mood dysfunction.[26] In this study it was found a correlation between affectionate and positive social interaction with pain and mood states. Thus, social support is likely a predictor of pain in the population of this study.

The study provided support for the relationship between social support with mood and physical symptoms in FM women. The current findings play an important role in developing comprehensive treatment that addresses the variety of psychological symptoms associated with FM. The present research supports the comprehensive biopsychosocial model, where the physiology of emotion provides a key link between mental states and physical disease. The relationship between emotions and physical symptoms likely accounts for the many factors that contributed to disease progression.[34] The findings suggest important interrelations among biological, psychological, and social systems that influence health and disease processes in FM. Therefore, interventions and efforts to improve social support for FM patients seems to be a crucial component to be included in the practice to improve health quality for this population.

Conclusion

FM women showed two different profiles according the perceived social support, independently of marital status, income and education level. PSS group showed more depressive, negative affectivity state and pain than NSS. Social Support appears to contribute to mental and physical health in FM patients and the perception of PSS might be influence by symptoms severity.

Conflicts of interest

The authors declare no conflicts of interest.

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