

# Comparison of emotional status and physical activity between women with chronic widespread pain and fibromyalgia

## *Kronik yaygın ağrılı ve fibromiyaljili kadınlarda emosyonel durum ve fiziksel aktivenin karşılaştırılması*

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### Summary

**Objectives:** This study was conducted to compare the emotional status and physical activity level in women with chronic widespread pain (CWP) and fibromyalgia (FM).

**Methods:** Thirty-three women with CWP above the waist, including the upper extremities, and 68 women with FM were evaluated. To determine physical and emotional status, the Fibromyalgia Impact Questionnaire (FIQ), the Experience of Physical Activity Instrument, the Leisure Time Physical Activity Instrument, the Physical Activity at Home and Work Instrument, and the Hospital Anxiety and Depression Scale (HADS) were used.

**Results:** The CWP group had higher physical impairment scores than the FM group ( $p < 0.05$ ); however, the women with FM reported that they felt worse during the previous week than the other group before the interview. They also had higher scores for pain, morning tiredness and depression (FIQ 5, 7 and 10). Emotional symptoms were significantly elevated in FM patients versus the CWP patients. Conversely, no significant differences were found between the groups concerning the health status (FIQ-total) and physical activity ( $p > 0.05$ ). The results indicate that increased pain intensity and spread of pain have negative effects on both physical functioning and emotional status.

**Conclusion:** The women with FM reported much more severe clinical symptoms than those with CWP. Therefore, in addition to physical functioning, the emotional status of women with chronic pain should also be evaluated.

Key words: Anxiety; chronic widespread pain; depression; fibromyalgia; physical activity.

### Özet

**Amaç:** Bu çalışma, kronik yaygın ağrısı (KYA) ve fibromiyalji (FM) olan kadınlarda emosyonel durum ve fiziksel aktivite seviyesini karşılaştırmak için yapıldı.

**Gereç ve Yöntem:** Üst ekstremitelerin dahil olduğu, belin üstünde ağrısı olan 33 KYA'lı kadın ve 68 FM'li kadın değerlendirildi. Fiziksel ve emosyonel durumu belirlemek için fibromiyalji etki anketi (FEA), fiziksel aktivite deneyimi enstrümanı, boş zaman fiziksel aktivite enstrümanı, evde ve işte fiziksel aktivite enstrümanı ve hastane anksiyete ve depresyon skalası (HADS) kullanıldı.

**Bulgular:** KYA grubunun FM grubuna göre, daha yüksek fiziksel özür puanı vardı ( $p < 0.05$ ). Buna rağmen, görüşme öncesindeki bir hafta boyunca FM'li kadınlar kendilerini diğer gruba göre, daha kötü hissettiklerini bildirdiler. Bunların ağrı, sabah yorgunluğu ve depresyon puanları da daha yüksekti (FEA-5, 7 ve 10). KYA hastalarına karşın FM hastalarında, emosyonel semptomlar anlamlı oranda yüksekti. Bunun aksine, gruplar arasında sağlık (FEA toplam) ve fiziksel aktiviteyle ilişkili durumlar açısından anlamlı farklılıklar bulunmadı ( $p > 0.05$ ). Bu sonuçlar, artmış ağrı şiddeti ve yaygın ağrının hem fiziksel fonksiyon hem de emosyonel durum üzerine negatif etkilerinin olduğunu göstermektedir.

**Sonuç:** FM'li kadınlar KYA'lılara göre daha fazla şiddette klinik semptomlar bildirmiştir. Bu nedenle kronik ağrılı kadınlarda fiziksel fonksiyon değil aynı zamanda emosyonel durum da değerlendirilmelidir.

Anahtar sözcükler: Anksiyete; kronik yaygın ağrı; depresyon; fibromiyalji; fiziksel aktivite.

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## Introduction

Interest in chronic pain has grown considerably over the last decade.<sup>[1]</sup> Chronic Widespread Pain (CWP) is a common musculoskeletal disorder characterized by generalized muscular pain combined with tenderness at multiple tender points in the general population.<sup>[2-5]</sup> Fibromyalgia (FM) is also a long lasting widespread pain and requires the presence of at least 11 tender points (TPs) of 18 possible TPs.<sup>[6,7]</sup>

According to the American College of Rheumatology 1990 criteria (ACR-90), patients with CWP and FM have pain that has persisted for at least 3 months in the last 12 months.<sup>[8]</sup> They are more frequent among women than men and their prevalence increases with age.<sup>[4,5,9]</sup> Since FM and CWP are female predominant syndromes,<sup>[8,10]</sup> only female patients were recruited for this study.

Chronic pain resulting from FM and CWP is often associated with disability and is a major factor affecting the sufferer's whole life.<sup>[11]</sup> Moreover, it has been shown in many studies that CWP and FM have a negative impact on health status.<sup>[1,12]</sup> At the same time, subjects with chronic pain complain of poor subjective health, fatigue, sleep disruption, and physical impairments.<sup>[13,14]</sup> They also have great difficulties in adequately appraising physical activity level.<sup>[15]</sup>

CWP and FM are regarded as stress-related functional disorders.<sup>[4]</sup> There are mounting data supporting an overlap between these illnesses and psychiatric conditions. Anxiety disorders and depressive symptoms are being increasingly identified as co-morbid psychiatric concerns in both CWP and FM patients.<sup>[16]</sup> To date, no one is really sure what causes the depression and the anxiety disorders in patients with CWP and FM, but there are a number of theories such as, low levels of neurotransmitters, specifically serotonin; having chronic pain and familial predisposition. Persons with FM and CWP who seek health care may be more psychiatrically distressed than those who do not. Moreover, psychological variables such as anxiety and depression may adversely affect perception of disease severity, functional ability, and pain threshold and tolerance.<sup>[17]</sup>

Cöster et al.<sup>[18]</sup> determined that FM was associated with more severe symptoms-higher pain intensity,

higher pain severity, fewer pain-free periods, and more pronounced pain-related interference in everyday life-and consequences for daily life compared with CWP.

The main hypothesis of this study was that spread of pain affects the severity of symptoms in patients with FM and CWP.

As far as we know, no data comparing emotional status and physical activity level of women with CWP and FM are available in the literature. This prompted us to design the current work to show how CWP and FM affect outcome measures, including emotional status and physical activity level, in women.

## Materials and Methods

The sample was derived from a population of 147 CWP and FM patients from Pamukkale University in Denizli and Hacettepe University in Ankara. The study was conducted between January 2006 and September 2007. A total of 101 participants responded to five self-report questionnaires for the study. This work was supported and approved by the Committee on Research of Pamukkale University, School of Physical Therapy. All participants gave verbal consent to participate in the study.

Patients were eligible for the study if they met the following inclusion criteria: (1) being female; (2) being between 25 and 65 years old; (3) having a diagnosis of CWP (pain above the waist, including the upper extremities); (4) having never been treated for CWP or FM, and (5) volunteering to participate in the study.

The exclusion criteria were as follows: (1) having pain below the waist as a CWP patient; (2) having a diagnosis of other rheumatic diseases, infection disorders, neurological or musculoskeletal problems, and cardiovascular diseases, severe somatic or psychiatric disorders and so on.

All patients underwent an assessment for a diagnosis by a rheumatologist according to the physical examination findings and the ACR-90. Since 46 patients did not meet the inclusion criteria they were

**Table 1.** Physical data of the study groups

Parameters	CWP group (n=33)	FM group (n=68)	p*
	Mean±SD	Mean±SD	
Age (year)	36.72±10.08	41.83±10.90	0.018
Height (m)	1.64±0.05	1.59±0.06	0.001
Weight (kg)	64.90±12.45	67.25±10.78	NS
BMI (kg/m <sup>2</sup> )	24.13±4.50	26.49±4.54	0.018
Work hours/week**	45.15±18.10	43.78±16.15	NS
Education years	12.57±5.27	9.91±5.80	0.043

\* Mann-Whitney U test was used;

\*\* Twenty three patients in CWP group and 20 patients in FM group gave the information about their work hours.

CWP: Chronic widespread pain; FM: Fibromyalgia; BMI: Body mass index; NS: Not significant.

dropped from the study. Thirty-three women with CWP above the waist, including the upper extremities (CWP group), and 68 women with FM (FM group) were evaluated. The demographics of the sample are given in Table 1.

**Outcome measures:** The subjects were evaluated in terms of health status, experience of physical activity, level of physical activity at home and at work, amount of physical activity during leisure time, depression, and anxiety. All agreed to answer the five questionnaires carefully. Measurements were performed for each subject only once. Each subject was interviewed individually in a test room by physiotherapists with at least five years of experience.

**Body diagram for pain:** At the beginning of the appointment, all subjects were asked to describe their pain on the front and back body diagram, which was divided into 18 areas, including the 18 standardized TPs according to the ACR-90.<sup>[12]</sup> Widespread pain must include spinal pain. However, pain in the anterior thorax, lumbar region, and abdomen was not considered spinal pain.<sup>[18]</sup>

**The Fibromyalgia Impact Questionnaire (FIQ):** The Turkish validated version of the FIQ was used for assessing the health status of the patients included in this study.<sup>[19]</sup> The FIQ is a brief 10-item self-administered instrument. In the revised version of the FIQ,<sup>[20]</sup> item 1 is composed of 11 sub-items that make up a physical functioning scale. On items 2 and 3, patients indicate the number of days that they felt well or missed work (including housework) because of the symptoms. Items 4 through 10 are

10 cm visual analogue scales marked in 1 cm increments on which the patient rates work difficulty (again, including housework), pain, fatigue, morning tiredness, stiffness, anxiety, and depression; raw scores for items 4 through 10 can range from 0 to 10.<sup>[21]</sup> The FIQ score ranges from 0 to 100 and a higher value indicate a higher impact of the disorder.

**The Experience of Physical Activity Instrument (EPAI):** All kinds of physical activity, such as walks (also to work or a shop), gymnastics, home exercise, pool exercise, and ball games, were examined by the EPAI, which was developed by Mannerkorpi. The EPAI describes the following five factors: physical relaxation, well-being, activity beliefs, activity-related symptoms, and activity habits. The EPAI also shows the patient's experience of physical activity during the previous four weeks.<sup>[22]</sup>

**The Physical Activity at Home - at Work Instrument (PAHWI):** The PAHWI comprises three categories for work at home: light, moderate and heavy activity, and four categories for employment: sedentary, light, moderate, and heavy activity. A short description of each category was presented and each respondent was asked to report the amount of time spent working in the given activity categories. The hours were added together to produce the total score for the PAHWI.<sup>[23]</sup>

**The Leisure Time Physical Activity Instrument (LTPAI):** The LTPAI comprises three activity level categories: light, moderate, and vigorous, and a short description of each category was presented.

**Table 2.** The scores of fibromyalgia impact questionnaire

Items	CWP group (n=33)	FM group (n=68)	p*
	Mean±SD	Mean±SD	
FIQ-1 Physical impairment	3.49±2.23	2.55±2.08	0.036
FIQ-2 Feel good	4.80±2.92	6.07±3.15	0.045
FIQ-3 Work Missed	3.38±3.48	3.21±3.31	NS
FIQ-4 Do work	4.45±3.24	5.40±3.16	NS
FIQ-5 Pain	5.56±2.13	6.78±2.04	0.007
FIQ-6 Fatigue	6.50±2.42	7.48±1.84	NS
FIQ-7 Morning tiredness	5.71±3.43	7.48±2.70	0.012
FIQ-8 Stiffness	6.10±3.31	7.05±2.89	NS
FIQ-9 Anxiety	5.39±3.04	6.35±3.11	NS
FIQ-10 Depression	4.59±3.16	5.95±2.99	0.041
FIQ-Total	49.79±19.62	57.78±16.18	NS

\* Mann Whitney U test was used; NS: Not Significant;  
CWP: Chronic widespread pain; FM: Fibromyalgia; FIQ: Fibromyalgia impact questionnaire.

The subject was asked to recall the average number of hours spent during a week in activity at the given activity level during the previous four weeks. The scale was simplified into the following steps: a) 0.5-1.5 hours a week, b) 2-4 hours a week and c) more than 4 hours a week, which the respondent was asked to specify in hours. The mean value of the first two steps, being 1 and 3 hours, was used in the calculation of the total score. If no step was selected, the number of hours for the category was 0. The hours of the intensity categories were added together to produce the leisure time physical activity during a week.<sup>[22,23]</sup>

**The Hospital Anxiety and Depression Scale (HADS):** The HADS is a self-report scale that screens for the presence of depression and anxiety in patients with organic disorders.<sup>[24]</sup> It comprises 14 items that are rated on a 4-point Likert-type scale, and it is appropriate for use in community and hospital settings. Two subscales (HADS-Dep. and HADS-Anx.) independently assess depression and anxiety. The HADS was validated in a Turkish population.<sup>[25]</sup> It was selected for use in the present study since it is considered one of the best questionnaires for assessing depression and anxiety in patients.<sup>[26]</sup>

**Statistical analysis:** Statistical analysis were done by using the Statistical Package for the Social Sciences (SPSS) version 11.5, including descriptive statistics.

Data are presented as means and Standard Deviation (SD) in the text. The Mann-Whitney U test was used to detect significant differences between the groups. Significance was defined as  $p < 0.05$ .

## Results

According to the scores of the FIQ-1, the physical functioning of CWP patients was more affected than that of the subjects in the FM group ( $p=0.036$ ). However, the women with FM reported that they felt worse during the previous week before the interview compared to those in the CWP group ( $p=0.045$ ) according to the FIQ-2 scores. They also had higher scores for pain ( $p=0.007$ ), morning tiredness ( $p=0.012$ ), and depression ( $p=0.041$ ) than the women with CWP according to FIQ-5, 7, and 10 scores (Table 2). Moreover, the scores of the HADS, including anxiety ( $p=0.009$ ) and depression ( $p=0.042$ ), were found to be increased in the FM group (Table 3). On the other hand, no significant differences were found in terms of the total scores of FIQ, experience of physical activity, level of physical activity at home and at work, or amount of physical activity during leisure time between the two groups ( $p > 0.05$ ).

## Discussion

This study demonstrates that the severity of symptoms was lower in CWP patients compared to FM

**Table 3.** The scores of hospital anxiety and depression scale

Items	CWP group (n=33)	FM group (n=68)	p*
	Mean±SD	Mean±SD	
HADS-Anx.	8.51±4.11	10.89±3.82	0.009
HADS-Dep.	6.36±3.53	8.38±4.52	0.042

\* Mann Whitney U test was used;

CWP: Chronic widespread pain; FM: Fibromyalgia; HADS: Hospital anxiety and depression scale.

patients. Increased chronic pain intensity and spread of pain have negative effects on both physical functioning and emotional status.

The strength of this study is that it is the first to compare emotional status and physical activity level of women with CWP and FM using the most suitable, validated, and reliable instruments, including FIQ, EPAL, PAHWI, and LTPAI.<sup>[21-23]</sup> FIQ is regarded as the most efficient instrument for discriminating and assessing the influence of FM.<sup>[19,20]</sup>

The results obtained from this study show that the FM patients felt much more morning tiredness, anxiety, and depression than the patients with CWP. However, according to the scores of FIQ-1, the subjects in the CWP group were more physically impaired than the subjects in the FM group in terms of activities of daily living in which the upper extremities were used intensively. Our results confirm the study by White et al., who found that FM patients reported more severe pain and more symptoms compared with CWP patients.<sup>[27]</sup> Cöster et al.<sup>[18]</sup> also concluded that FM appeared to have distinctive features compared with the symptoms expressed by CWP patients.

Physical activity is important in health promotion.<sup>[22]</sup> Mannerkorpi and Iversen,<sup>[28]</sup> emphasized that patients with CWP may improve their aerobic capacity and physical function, and diminish their tenderness, if they exercise at a moderate intensity at least twice a week. Moreover, in chronic pain a crucial role is ascribed to inadequate physical activity levels.<sup>[15]</sup> Physical activity can be affected by many symptoms of CWP and FM. The present study indicates that increased spread of pain had no negative effect on physical activity. This unexpected result can be explained by the physical activity level

of these patients. In both groups, the patients in this study were physically inactive. This may explain why no significant differences were found between the groups in terms of experience of physical activity, level of physical activity at home and at work, or amount of physical activity during leisure time ( $p>0.05$ ).

Thieme et al. found that overall 32.3% of these patients revealed an anxiety disorder and 34.8% a mood disorder. These results are more than three times higher than the prevalence of these psychiatric disorders in the general population in which 9% were found to have an anxiety and 10% a mood disorder.<sup>[29]</sup> What could be responsible for the high prevalence of psychiatric disorders among patients with FM or CWP? Psychiatric disorders could be a reaction to having a debilitating chronic illness.<sup>[17]</sup> Chronic pain is a cardinal symptom in CWP and FM. It may cause common and important psychological problems, such as anxiety and depression.<sup>[16]</sup> Depression and anxiety influence the ability to manage daily life. In women, both depression and anxiety were important factors distinguishing FM from the other chronic pain syndromes. The two factors can be regarded as major reasons for greater disability in FM. White et al.<sup>[30]</sup> also found in FM more psychological distress and physical symptoms compared to chronic widespread musculoskeletal pain without FM. Emotional disorders are commonly encountered in women with chronic pain. Our study results also support this idea. Patients with depression and anxiety also report several physical impairments. At the same time, many patients with musculoskeletal disorders complain of pain and it makes them depressed.<sup>[31]</sup> Coexistent anxiety and depression are significant predictors of functional impairment in these patients.<sup>[3]</sup> FM and CWP are not homogeneous diagnosis, but show

varying proportions of comorbid anxiety and depression dependent on psychosocial characteristics of the patients. These situations demonstrate the importance of not treating patients with FM and CWP as homogeneous groups. Assessment should examine the presence of widespread pain, the number of tender points, and also the presence of affective distress. Treatment should focus both on physical and emotional dysfunction.<sup>[17,29]</sup>

It is stated that patients who fulfilled the ACR criteria for FM are more likely to have more psychological distress in comparison to CWP patients. In a recent study, all symptoms and distress parameters in CWP patients with more painful areas were found to be higher than in CWP patients with less painful areas.<sup>[30]</sup> Both CWP and FM patients in this study had similar symptoms; however, the severity of the symptoms and the level of distress were much higher in the FM group than in the CWP group. We think that the spread of pain might be correlated with pain severity, morning tiredness, anxiety, and depression scores.

An increased number of painful areas is widely suggested as a classification criterion and used for diagnostic purposes for CWP and FM.<sup>[32]</sup> Earlier studies also reported that the number of tender points correlates with pain and other symptoms and disability.<sup>[33,34]</sup> In this cross-sectional study, CWP patients were compared with FM patients. As a result, we found that spread of pain was the most important factor affecting pain intensity, disability, and emotional symptoms in patients with CWP and FM.

## Conclusion

We observed that the women with FM reported much more severe clinical symptoms than did those with CWP. Although the anxiety and depression scores were high in both groups, the FM group was more negatively affected than the CWP group in terms of emotional status. We think that if the pain intensity can be decreased in these patients, the predictors of anxiety and depression can also be decreased. Our results also show that describing the spread of pain on a body diagram can be considered a predictor for severity of pain and distress rather than physical activity status for patients with

CWP or FM. The investigators suggest that additional studies are needed to detect the relationship between emotional symptoms and the amount of physical activity as they relate to chronic pain.

## References

1. Buskila D, Neumann L, Odes LR, Schleifer E, Depsames R, Abu-Shakra M. The prevalence of musculoskeletal pain and fibromyalgia in patients hospitalized on internal medicine wards. *Semin Arthritis Rheum* 2001;30(6):411-7.
2. Wolfe F. The relation between tender points and fibromyalgia symptom variables: evidence that fibromyalgia is not a discrete disorder in the clinic. *Ann Rheum Dis* 1997;56(4):268-71.
3. Neumann L, Buskila D. Epidemiology of fibromyalgia. *Curr Pain Headache Rep* 2003;7(5):362-8.
4. Skouen JS, Grasdahl A, Haldorsen EM. Return to work after comparing outpatient multidisciplinary treatment programs versus treatment in general practice for patients with chronic widespread pain. *Eur J Pain* 2006;10(2):145-52.
5. Arguelles LM, Afari N, Buchwald DS, Clauw DJ, Furner S, Goldberg J. A twin study of posttraumatic stress disorder symptoms and chronic widespread pain. *Pain* 2006;124(1-2):150-7.
6. Clauw DJ, Crofford LJ. Chronic widespread pain and fibromyalgia: what we know, and what we need to know. *Best Pract Res Clin Rheumatol* 2003;17(4):685-701.
7. Pamuk ON, Yeşil Y, Cakir N. Factors that affect the number of tender points in fibromyalgia and chronic widespread pain patients who did not meet the ACR 1990 criteria for fibromyalgia: are tender points a reflection of neuropathic pain? *Semin Arthritis Rheum* 2006;36(2):130-4.
8. 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.
9. Bergman S, Herrström P, Jacobsson LT, Petersson IF. Chronic widespread pain: a three year followup of pain distribution and risk factors. *J Rheumatol* 2002;29(4):818-25.
10. Ekici G, Akbayrak T. Investigation of the effects of pain on depression and health related quality of life patients in with primary fibromyalgia syndrome. *Physiother Rehab* 2007;18:59-64.
11. Meeus M, Nijs J, Meirleir KD. Chronic musculoskeletal pain in patients with the chronic fatigue syndrome: a systematic review. *Eur J Pain* 2007;11(4):377-86.
12. Bergman S. Psychosocial aspects of chronic widespread pain and fibromyalgia. *Disabil Rehabil* 2005;27(12):675-83.
13. Aaron LA, Arguelles LM, Ashton S, Belcourt M, Herrell R, Goldberg J, et al. Health and functional status of twins with chronic regional and widespread pain. *J Rheumatol* 2002;29(11):2426-34.
14. Citak-Karakaya I, Akbayrak T, Demirtürk F, Ekici G, Bakar Y. Short and long-term results of connective tissue manipulation and combined ultrasound therapy in patients with fibromyalgia. *J Manipulative Physiol Ther* 2006;29(7):524-8.
15. Schreurs KMG., Mes CAJ, Vollenbroek-Hutten MMR. Measuring daily physical activity in fibromyalgia: is an accelerometer more useful than self-report questionnaires or daily logs? *European Journal of Pain* 2006;10: 225.
16. Williams DA. Psychological and behavioural therapies in fi-

- bromyalgia and related syndromes. *Best Pract Res Clin Rheumatol* 2003;17(4):649-65.
17. Epstein SA, Kay G, Clauw D, Heaton R, Klein D, Krupp L, et al. Psychiatric disorders in patients with fibromyalgia. A multicenter investigation. *Psychosomatics* 1999;40(1):57-63.
  18. Cöster L, Kendall S, Gerdle B, Henriksson C, Henriksson KG, Bengtsson A. Chronic widespread musculoskeletal pain - a comparison of those who meet criteria for fibromyalgia and those who do not. *Eur J Pain* 2008;12(5):600-10.
  19. Sarmer S, Ergin S, Yavuzer G. The validity and reliability of the Turkish version of the Fibromyalgia Impact Questionnaire. *Rheumatol Int* 2000;20(1):9-12.
  20. Bennett R. The Fibromyalgia Impact Questionnaire (FIQ): a review of its development, current version, operating characteristics and uses. *Clin Exp Rheumatol* 2005;23(5 Suppl 39):154-62.
  21. Burckhardt CS, Clark SR, Bennett RM. The fibromyalgia impact questionnaire: development and validation. *J Rheumatol* 1991;18(5):728-33.
  22. Mannerkorpi K, Rivano-Fischer M, Ericsson A, Nordeman L, Gard G. Experience of physical activity in patients with fibromyalgia and chronic widespread pain. *Disabil Rehabil* 2008;30(3):213-21.
  23. Mannerkorpi K, Hernelid C. Leisure Time Physical Activity Instrument and Physical Activity at Home and Work Instrument. Development, face validity, construct validity and test-retest reliability for subjects with fibromyalgia. *Disabil Rehabil* 2005;27(12):695-701.
  24. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand* 1983;67(6):361-70.
  25. Aydemir Ö, Güvenir T, Küey L, Kültür S. Hastane anksiyete ve depresyon ölçeği Türkçe formunun geçerlilik ve güvenilirliği. *Türk Psikiyatri Dergisi* 1977;8:280-287.
  26. Garcia-Campayo J, Pascual A, Alda M, Gonzalez Ramirez MT. Coping with fibromyalgia: usefulness of the Chronic Pain Coping Inventory-42. *Pain* 2007;132 Suppl 1:68-76.
  27. White KP, Speechley M, Harth M, Ostbye T. The London Fibromyalgia Epidemiology Study: comparing the demographic and clinical characteristics in 100 random community cases of fibromyalgia versus controls. *J Rheumatol* 1999;26(7):1577-85.
  28. Mannerkorpi K, Iversen MD. Physical exercise in fibromyalgia and related syndromes. *Best Pract Res Clin Rheumatol* 2003;17(4):629-47.
  29. Thieme K, Turk DC, Flor H. Comorbid depression and anxiety in fibromyalgia syndrome: relationship to somatic and psychosocial variables. *Psychosom Med* 2004;66(6):837-44.
  30. White KP, Nielson WR, Harth M, Ostbye T, Speechley M. Chronic widespread musculoskeletal pain with or without fibromyalgia: psychological distress in a representative community adult sample. *J Rheumatol* 2002;29(3):588-94.
  31. Henderson M, Bass C. Chronic pain: the role of psychosocial factors in common musculoskeletal disorders. *Psychiatry* 2006;5:52-6.
  32. Van Houdenhove B. Fibromyalgia: a challenge for modern medicine. *Clin Rheumatol* 2003;22(1):1-5.
  33. Granges G, Littlejohn G. Pressure pain threshold in pain-free subjects, in patients with chronic regional pain syndromes, and in patients with fibromyalgia syndrome. *Arthritis Rheum* 1993;36(5):642-6.
  34. Lundberg G, Gerdle B. Tender point scores and their relations to signs of mobility, symptoms, and disability in female home care personnel and the prevalence of fibromyalgia syndrome. *J Rheumatol* 2002;29(3):603-13.