



# Prevalence of Fibromyalgia: A Survey in Five European Countries

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**Objective:** A survey was performed in 5 European countries (France, Germany, Italy, Portugal, and Spain) to estimate the prevalence of fibromyalgia (FM) in the general population.

**Methods:** In each country, the London Fibromyalgia Epidemiological Study Screening Questionnaire (LFESSQ) was administered by telephone to a representative sample of the community over 15 years of age. A positive screen was defined as the following: (1) meeting the 4-pain criteria alone (LFESSQ-4), or (2) meeting both the 4-pain and the 2-fatigue criteria (LFESSQ-6). The questionnaire was also submitted to all outpatients referred to the 8 participating rheumatology clinics for 1 month. These patients were examined by a rheumatologist to confirm or exclude the FM diagnosis according to the 1990 American College of Rheumatology classification criteria. The prevalence of FM in the general population was estimated by applying the positive-predictive values to eligible community subjects (ie, positive screens).

**Results:** Among rheumatology outpatients, 46% screened positive for chronic widespread pain (LFESSQ-4), 32% for pain and fatigue (LFESSQ-6), and 14% were confirmed FM cases. In the whole general population, 13 and 6.7% screened positive for LFESSQ-4 and LFESSQ-6, respectively. The estimated overall prevalence of FM was 4.7% (95% CI: 4.0 to 5.3) and 2.9% (95% CI: 2.4 to 3.4), respectively, in the general population. The prevalence of FM was age- and sex-related and varied among countries.

**Conclusion:** FM appears to be a common condition in these 5 European countries, even if data derived from the most specific criteria set (LFESSQ-6) are considered.

© 2009 Published by Elsevier Inc. Semin Arthritis Rheum xx:xxx

**Keywords:** *fibromyalgia, prevalence, pain, fatigue, screening questionnaire*

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This work was supported by the Public Health Department of Pierre Fabre.

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Fibromyalgia (FM) is currently defined by clinical criteria established by the American College of Rheumatology (ACR) as widespread pain for at least 3 months and the presence of at least 11 of 18 specified tender points on examination (1). Although the combination of these 2 criteria provided a sensitivity of nearly 88% and specificity of 81% in distinguishing FM from other causes of chronic musculoskeletal pain, it is noteworthy that additional complaints, especially fatigue, sleep disturbance, and/or unrefreshing sleep, morning stiffness, paresthesia, and psychological distress, are frequent in FM (1). In this respect, fatigue constitutes 1 of the most troublesome and common problems in these patients (2).

FM is recognized as a common condition in the clinic and a major cause of morbidity worldwide. Based on clinical studies undertaken in various countries, the prevalence of FM in the general population was estimated at between 0.5 and 5% (3). The overall prevalence of FM in the adult United States population was estimated at 2.0% (95% confidence interval [CI]: 1.4 to 2.7) (4). Prevalence was lower in men (0.5%) than in women (3.4%) and increased with age (4). According to a Canadian community survey, FM affects 3.3% (95% CI: 3.2 to 3.4) of adults in London, Ontario, with a female-to-male ratio of roughly 3 to 1 (5). Similar prevalence rates have been reported in Western European countries, including Germany (3.0%, 95% CI: 1.6 to 4.4), Spain (2.4%, 95% CI: 1.5 to 3.2), Italy (2.2%; 95% CI: 1.4 to 3.2), and Sweden (2.5%; 95% CI not provided) (6-9). Conversely, the prevalence of FM was found to be as low as 0.8% (95% CI not provided) in Finland (10) and 0.7% (95% CI: 0.3 to 1.3) in Denmark (11). To our knowledge, no studies have examined the prevalence of FM in France and Portugal.

Possible explanations for the international differences in FM prevalence include differences in diagnostic or classification criteria used by investigators as well as differences in study methodologies (4,5). Furthermore, several studies were done in selected cities or regions (4-6,9), raising the question of whether their results really reflect the prevalence of FM in the country as a whole (4). Finally, the wide range of estimates may partly be related to actual differences in FM prevalence among countries.

The main objective of the present study was to assess the point prevalence of FM in 5 European countries (France, Germany, Italy, Portugal, and Spain) using national probabilistic samples and 1 single screening tool, the London Fibromyalgia Epidemiology Study Screening Questionnaire (LFESSQ). The latter was shown to be a useful instrument in screening for FM in general population surveys of noninstitutionalized adults (12). Our study also aimed at describing the sociodemographic characteristics of patients with FM.

Table 1 The London Fibromyalgia Epidemiology Study Screening Questionnaire

<p><b>Pain criteria</b></p> <p>In the past 3 months:</p> <ol style="list-style-type: none"> <li>1. Have you had pain in muscles, bones, or joints, lasting at least 1 week?</li> <li>2. Have you had pain in your shoulders, arms, or hands? On which side? Right, left, or both?</li> <li>3. Have you had pain in your legs or feet? On which side? Right, left, or both?</li> <li>4. Have you had pain in your neck, chest or back?</li> </ol> <p>Meeting the pain criteria requires "yes" responses to all 4 pain items, and either (1) both a right- and left-side positive response, or (2) a both sides positive response.</p> <p><b>Fatigue criteria</b></p> <ol style="list-style-type: none"> <li>5. Over the past 3 months, do you often felt tired or fatigued?</li> <li>6. Does tiredness or fatigue significantly limit your activities?</li> </ol> <p>Screening positive for chronic, debilitating fatigue requires a "yes" response to both fatigue items.</p>
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## METHODS

### Screening Questionnaire

The screening questionnaire used was the LFESSQ developed by the Department of Epidemiology and Biostatistics, Rheumatology Division of the University of London in Western Ontario (12). This 6-item questionnaire was designed with 4 items relating to widespread pain plus 2 items relating to fatigue (Table 1). According to White and coworkers (12), a positive screen was defined in 1 of the 2 following ways: (a) meeting the pain criteria alone (LFESSQ-4), or (b) meeting both the pain and the fatigue criteria (LFESSQ-6). The original LFESSQ was translated into the corresponding idioms of the 5 European countries, with the permission of its authors. All translated versions of the LFESSQ were validated in accordance with the international recommendations on the methodology of quality-of-life questionnaires (13,14).

### Rheumatology Outpatients

During a period of 1 month, the LFESSQ was administered to all outpatients over 15 years of age consulting 1 of 8 trained rheumatologists practicing in rheumatology clinics in France ( $n = 178$ ), Italy ( $n = 246$ ), Spain ( $n = 239$ ), Portugal ( $n = 268$ ), and Germany ( $n = 194$ ), regardless of the reason for their visit. In addition, the following sociodemographic characteristics of the patients were recorded: sex, age, marital status, level of education, occupation, and domicile (geographical area and size of the city). Patients who screened positive for either LFESSQ-4 or LFESSQ-6 were then examined to confirm or exclude FM. To be classified as a FM case, patients had to fulfill the ACR criteria for FM, ie, (a) at least 3 months' duration of widespread pain, the distribution of which

Table 2 Demographic Characteristics of Rheumatology Outpatients and Community Subjects

	All Countries		France		Italy		Germany		Spain		Portugal	
	RC	GP	RC	GP	RC	GP	RC	GP	RC	GP	RC	GP
Sample (n)	1125	4517	178	1014	246	1000	194	1002	239	1001	268	500
Females (%)	75	52	85	52	64	52	82	52	65	52	81	51
Mean age (yr)	56	45	54	45	49	47	55	45	64	43	57	41
Males	56	44	59	44	47	46	58	44	61	42	56	41
Females	56	46	53	46	51	49	55	47	64	44	60	40

RC, rheumatology clinics outpatients; GP, general population.

includes both the right and the left side of the body, both above and below the waist, and both the axial and the peripheral skeleton, and (b) pain in at least 11 of 18 tender point sites on digital palpation (1). In accordance with the ACR criteria (1), primary and secondary or concomitant FM were not distinguished. Finally, the positive-predictive values (PPV) of LFESSQ-4 and LFESSQ-6 were calculated as the number of confirmed FM cases divided by the number of patients who screened positive for either LFESSQ-4 or LFESSQ-6, respectively.

### General Population

The LFESSQ was also administered via telephone to a probabilistic sample representative of the general population more than 15 years old in each country. Subjects were selected using the quota method (sex, age, occupation of the head of family) with stratification according to the geographical area/city. Interviews were conducted between October 2003 and September 2006, depending on the country. A total of 4517 subjects were interviewed in France ( $n = 1014$ ), Italy ( $n = 1000$ ), Spain ( $n = 1001$ ), Portugal ( $n = 500$ ), and Germany ( $n = 1002$ ) by IPSOS® professional interviewers using the Computer-Assisted Telephone Interview system. The above-mentioned sociodemographic characteristics were also recorded.

### Estimates of Point Prevalence of FM in the Community

Data from each participating country were collected separately, and the respective PPV of LFESSQ-4 and LFESSQ-6 were derived from the corresponding rheumatology outpatient samples. The estimates of the prevalence of FM in the general population of a given country were based on the assumption that the PPV of LFESSQ-4 and LFESSQ-6 in this population would be similar to those calculated in the rheumatology outpatient sample. As such, the point prevalence of FM was the percentage of community subjects who screened positive for LFESSQ-4 or LFESSQ-6 multiplied by the corresponding PPV.

### Statistical Analysis

Two-sided statistical analysis was performed at the 5% significance level using SAS Software® version 8.2. The  $\chi^2$

test was used for qualitative data and the analysis of variance for quantitative data. Odds ratios were calculated for all sociodemographic data collected (sex, age group, family life, and level of education). Logistic regression was used to evaluate the likelihood of having FM using the stepwise method.

## RESULTS

### Demographic Characteristics

The demographic characteristics of rheumatology outpatients ( $n = 1125$ ) and representative community subjects ( $n = 4517$ ) are presented in Table 2.

Regarding outpatients, their mean (SD) age was 56 (15) years, and 75% (95% CI: 72 to 77) were women. The proportion of women was significantly higher in France, Germany, and Portugal (81-85%) than in Italy and Spain (64-65%) and Spanish patients were the oldest. Compared with rheumatology outpatients, community subjects were significantly younger ( $45 \pm 17$  years) with significantly fewer women (52%, 95% CI: 51 to 53). Sex ratios were very similar among national community samples. Of these, the Portuguese population was the youngest (mean: 41 years).

### Positive Screens and FM Cases Among Rheumatology Outpatients

In rheumatology clinics, 46% of the patients screened positive for LFESSQ-4 (widespread pain), and 32% for LFESSQ-6 (widespread pain and fatigue) (Table 3). The lowest figures were found in Italy (31% and 21%, respectively) and the highest in Portugal (57% and 38%, respectively). Furthermore, 14% of rheumatology outpatients were confirmed FM cases according to the ACR criteria. The majority of patients with FM were women (94%) and their mean age (SD) was 54 (12.5). The proportions of diagnosed FM cases varied markedly from country to country, ranging from 6% in Spain to 25% in Germany (Table 3). Thus the PPV for LFESSQ-4 and LFESSQ-6 ranged from 18 and 24%, respectively, in Spain to 65 and 71%, respectively, in Italy, and the overall PPV averaged 35 and 43%, respectively (Table 3).

Table 3 Positive Screens for LFESSQ-4 and LFESSQ-6 and FM Cases Among Rheumatology Outpatients

Country	LFESSQ-4 (%)	LFESSQ-6 (%)	FM (CI 95%)	PPV	
				LFESSQ-4 (%)	LFESSQ-6 (%)
France	47	35	10 (5.3-13.9)	23	27
Portugal	57	38	14 (9.7-17.9)	29	36
Spain	45	25	6 (3.2-9.4)	18	25
Germany	50	43	25 (19.6-30.8)	53	58
Italy	31	21	15 (10.2-19.07)	65	71
All countries	46	32	14 (11.6-15.6)	35	43

LFESSQ, London Fibromyalgia Epidemiological Study Screening Questionnaire; LFESSQ-4 and LFESSQ-6, positive screens for LFESSQ-4 items (widespread pain) and LFESSQ-6 items (widespread pain and fatigue), respectively; FM, confirmed fibromyalgia cases according to the American College of Rheumatology classification criteria; PPV, positive-predictive value of LFESSQ-4 and LFESSQ-6.

### Positive Screens for LFESSQ and Point Prevalence of FM in the General Population

In total, 13% of community subjects screened positive for LFESSQ-4 (Table 4). There were significant international differences in the rates of positive screens, which ranged from 10% in France to 23% in Spain. Applying the aforementioned PPV for LFESSQ-4 to the general population led to an overall estimate of point prevalence of FM at 4.7% (95% CI: 4.0 to 5.3). There were no statistically significant differences in prevalence estimates among countries, except for France (2.2%; 95% CI: 1.3 to 3.1) in comparison with Germany (5.8%; 95% CI: 4.3 to 7.2) and Italy (6.6%; 95% CI: 5.1 to 8.1) (Table 4).

The overall rate of positive screens for LFESSQ-6 was 6.7%, and again, we observed marked differences among countries, with the lowest rate recorded in France (5%) and the highest in Portugal (9.8%) (Table 5). Using the PPV of LFESSQ-6, the overall point prevalence of FM was estimated at 2.9% (95% CI: 2.4 to 3.4). The prevalence of FM was significantly lower in France (1.4%; 95% CI: 0.7 to 2.1) than in Italy (3.7%; 95% CI: 2.6 to 4.8). No other statistical significant differences between countries were found.

### Influence of Demographic Variables

Among rheumatology outpatients, we identified only female sex as a risk factor for FM (odds ratio: 5.2; 95% CI: 2.6 to 10.3). Similarly, FM appeared to be sex-related in the general population. Regardless of the screening crite-

ria chosen (LFESSQ-4 or LFESSQ-6) and the country considered, the estimated prevalences of FM were significantly higher in females than in males (Tables 4 and 5), the overall female-to-male ratio being below 2. Moreover, the prevalence of FM in the community was age-related in both sexes, irrespective of the screening criteria used. Figure 1 depicts the prevalence of FM per age group as estimated among positive screens for LFESSQ-6. The prevalence was low in young adults and then appeared to rise from age 35 to 44 through age 74 to 85. Subsequently, the prevalence of FM declined dramatically. Finally, the likelihood of having FM did not appear to be affected by any of the remaining variables recorded (marital status, level of education, occupation).

### DISCUSSION

To our knowledge, this is the first study that provides estimates of FM prevalence in the general population of 5 European countries using identical methodology. For this purpose, a screening questionnaire, the LFESSQ, was administered via telephone to national probabilistic samples of community subjects of more than 15 years old.

The sensitivity of LFESSQ-4 (widespread pain) and LFESSQ-6 (widespread pain and fatigue) criteria sets for FM (according to ACR criteria) were reported to be 100% (95% CI: 90 to 100) and 93% (95% CI: 84 to 100), respectively (12). Furthermore, this questionnaire was capable of distinguishing FM from rheumatoid arthritis, with a specificity of 53% (95% CI: 35 to 71) and

Table 4 Estimates of the Prevalence of Fibromyalgia in the General Population Based on Positive Screens for LFESSQ-4

Country	LFESSQ-4 (%)	Point Prevalence of Fibromyalgia		
		Total (95 CI) (%)	Men (95 CI) (%)	Women (95 CI) (%)
France	10	2.2 (1.3-3.1)	1.8 (1.7-1.9)	2.6 (2.5-2.7)
Portugal	13	3.7 (2.0-5.4)	2.3 (2.1-2.5)	5.1 (4.8-5.4)
Spain	23	4.0 (2.8-5.2)	2.7 (2.5-2.8)	5.2 (5.0-5.4)
Germany	11	5.8 (4.3-7.2)	3.8 (3.6-4.0)	7.5 (7.3-7.7)
Italy	10	6.6 (5.1-8.1)	3.0 (2.8-3.1)	9.8 (9.5-10.5)
All countries	13	4.7 (4.0-5.3)	3.5 (3.4-3.6)	5.8 (5.7-5.9)

LFESSQ-4, community subjects meeting the pain criteria of the London Fibromyalgia Epidemiological Study Screening Questionnaire.

Table 5 Estimates of the Prevalence of Fibromyalgia in the General Population Based on Positive Screens for LFESSQ-6

	LFESSQ-6 (%)	Point Prevalence of Fibromyalgia		
		Total (95 CI) (%)	Men (95 CI) (%)	Women (95 CI) (%)
France	5.0	1.4 (0.7-2.1)	0.7 (0.7-0.7)	2.0 (1.7-2.3)
Portugal	9.8	3.6 (2.0-5.2)	1.8 (1.6-2.0)	5.2 (4.9-5.5)
Spain	9.5	2.3 (1.4-3.2)	1.3 (1.2-1.4)	3.3 (3.2-3.4)
Germany	5.6	3.2 (2.1-4.3)	2.5 (2.4-2.6)	3.9 (3.7-4.1)
Italy	5.2	3.7 (2.6-4.8)	1.6 (1.5-1.7)	5.5 (5.3-5.7)
All countries	6.7	2.9 (2.4-3.4)	2.1 (2.0-2.2)	3.6 (3.5-3.7)

LFESSQ-6, community subjects meeting both the pain and the fatigue criteria of the London Fibromyalgia Epidemiological Study Screening Questionnaire.

80% (95% CI: 66 to 94) for LFESSQ-4 and LFESSQ-6, respectively, while no controls screened positive for either LFESSQ-4 or LFESSQ-6 (specificity: 100%; 95% CI: 90 to 100) (12). Finally, nearly 57% (95% CI: 53 to 61) and 71% (95% CI: 55 to 86) of Canadian noninstitutionalized adults meeting the LFESSQ-4 and LFESSQ-6 criteria sets, respectively, fulfilled the ACR criteria for FM (12). Since fatigue is a prominent feature of FM, it is not surprising that LFESSQ-6 demonstrated higher PPV for FM than LFESSQ-4. Considering its high PPV and specificity for FM, LFESSQ-6 is very likely the most appropriate way of approaching the prevalence of FM in the general population. Therefore, we will focus on data relating to the LFESSQ-6 subgroup.

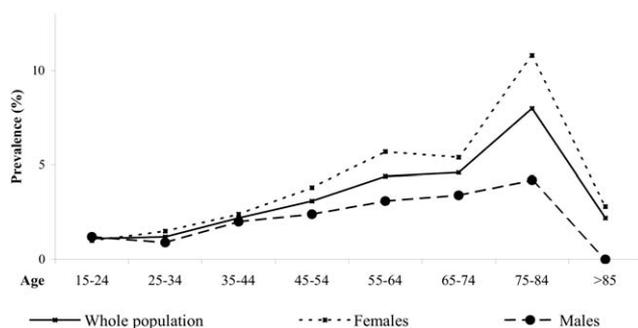
The major weakness of our survey is that we determined the PPV for LFESSQ using rheumatology outpatients samples. Ideally, community subjects who screened positive should have been examined by a trained physician to confirm or exclude FM. However, this would have led to a selection bias due to some people having difficulty and/or declining to consult a rheumatologist (15). While acknowledging that it is difficult to apply the same PPV for 2 different populations, it should be stressed that the PPV for LFESSQ-6 observed in the present study is lower than or, at most, equal to (Italy) that reported by White and coworkers (12). Moreover, our prevalence estimates derived from positive screens for LFESSQ-6 are consistent with those of earlier studies. In this respect, we found overall prevalences of FM in the Spanish (2.3%), German

(3.2%), and to a lesser extent, Italian (3.7%) general populations comparable to those already published (2.4, 3, and 2.2%, respectively) (6-8). Of note, our study provides the first estimates of FM prevalence in France (1.4%) and Portugal (3.6%).

Our data suggest that FM prevalence varies among countries, the difference between Italy and France being statistically significant. Apart from random variation in samples, these differences may be due to a number of factors, including socioeconomic, ethnic, environmental, and cultural factors. However, this could not be ascertained from our data. Geographical variations have also been observed among patients with chronic pain, especially widespread musculoskeletal pain (9,16,17). Although there were numerous issues that made it difficult to draw comparisons among studies, ethnicity and race were individualized as possible risk factors (17). Whether the prevalence of FM may be influenced by similar factors requires further research.

We found that in the general population FM is roughly twice as prevalent in females as in males. A Finnish cross-sectional study reported a similar sex ratio (10). However, our finding conflicts with what is seen in clinical practice. Furthermore, it disagrees with data from other surveys. The prevalence of FM in the adult US population was nearly 7-fold lower in men (0.5%) than in women (3.4%) (4). Much higher sex ratios were observed in the adult Spanish and Brazilian populations where the prevalence of FM was estimated at 4.2 and 3.9%, respectively, in women versus 0.2 and 0.1%, respectively, in men (7,18). Our estimates of FM prevalence among women are within the bounds of previous studies. On the other hand, we found higher prevalence rates in men. Since the PPV of the screening tool used (LFESSQ) was shown to be higher for women than men (12), it is feasible that our method produced exaggerated estimates in men. This could account for the low female-to-male ratios that we observed.

In the present study, the estimated prevalence of FM in the general population was age-related. There is a general agreement that FM is uncommon in young subjects (<25-30 years) (4,5,7,10,18). In most surveys, the prevalence peaked in middle-aged individuals and then ap-



**Figure 1** Overall prevalence of FM per age group in the general population. (Data derived from the subgroup of community subjects who screened positive for LFESSQ-6.)

peared to decline (5,7,10,18). Conversely, the prevalence of FM in the US adult population was reported to increase with age up to 70 to 79 years for both sexes (4). These data are in better agreement with those of the present survey, which showed a peak prevalence at 75 to 84 years. However, aging is associated with frequent comorbidities (eg, osteoarthritis, hypothyroidism, cardiovascular diseases) that may result in widespread pain and/or fatigue and, hence, it is very likely that the prevalence of FM was overestimated in the elderly.

Besides gender and age, the likelihood of having FM did not appear to be affected by other sociodemographic variables. In contrast, some studies found lower levels of education, lower socioeconomic status, divorce, and/or psychological distress to be significant risk factors for FM (4,5,10,18). Furthermore, it is recognized that past or current depression and anxiety are common in patients with FM (1,4). Unfortunately, our study was not designed to address this issue.

In summary, FM appears to be a common syndrome in these 5 Western European countries since a point prevalence of 2.9% (ie, an estimate derived from the most specific screening criteria set) would translate to approximately 6 million people with FM. While acknowledging there exists both milder and more serious variants of the syndrome (19), FM is likely an important source of chronic widespread pain in these countries and, hence, a health and economic burden to the community.

## ACKNOWLEDGMENTS

Ten rheumatologists authored the present article. All participated in data collection in 8 rheumatology outpatient clinics for which they received financial support from Pierre Fabre. The Public Health, Quality of Life, Health Economics teams of Pierre Fabre provided technical assistance, material, and financial support for the survey performed in representative community samples.

## REFERENCES

1. Wolfe F, Smythe HA, Yunus MB, Bennet 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;33:160-72.
2. Wolfe F, Hawley DJ, Wilson K. The prevalence and meaning of fatigue in rheumatic disease. *J Rheumatol* 1996;23:1407-17.
3. White KP, Harth M. Classification, epidemiology, and natural history of fibromyalgia. *Curr Pain Headache Rep* 2001;5:320-9.
4. Lawrence RC, Helmick CG, Arnett FC, Deyo RA, Felson DT, Giannini EH, et al. Estimates of the prevalence of arthritis and selected musculoskeletal disorders in the United States. *Arthritis Rheum* 1998;41:778-99.
5. White KP, Speechley M, Harth M, Ostbye T. The London Fibromyalgia Epidemiology Study: the prevalence of fibromyalgia syndrome in London, Ontario. *J Rheumatol* 1999;26:1570-6.
6. Raspe H. Rheumatism epidemiology in Europe [article in German]. *Soz Präventivmed* 1992;37:168-78.
7. Carmona L, Ballina J, Gabriel R, Laffon A. on behalf of the EPISER Study Group. The burden of musculoskeletal diseases in the general population of Spain: results from a national survey. *Ann Rheum Dis* 2001;60:1040-5.
8. Salaffi F, De Angelis R, Grassi W. MARCHE Pain Prevalence INvestigation Group (MAPPING) study. Prevalence of musculoskeletal conditions in an Italian population sample: results of a regional community-based study. I. The MAPPING study. *Clin Exp Rheumatol* 2005;23:819-28.
9. 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;12:600-10.
10. Mäkelä MO, Heliövaara M. Prevalence of primary fibromyalgia in the Finnish population. *BMJ* 1991;303:216-9.
11. Prescott E, Kjoller M, Jacobsen S, Bülow PM, Danneskiold-Samsøe B, Kamper-Jørgensen F. Fibromyalgia in the adult Danish population: I. A prevalence study. *Scand J Rheumatol* 1993;22:233-7.
12. White KP, Speechley M, Harth M, Ostbye T. Testing an instrument to screen for fibromyalgia syndrome in general population studies: the London Fibromyalgia Epidemiology Study Screening Questionnaire. *J Rheumatol* 1999;26:880-4.
13. Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: literature review and proposed guidelines. *J Clin Epidemiol* 1993;46:1417-32.
14. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine* 2000;25:3186-91.
15. Toda K. The prevalence of fibromyalgia in Japanese workers. *Scand J Rheumatol* 2007;36:140-4.
16. Breivik H, Collett B, Ventafridda V, Cohen R, Gallacher D. Survey of chronic pain in Europe: prevalence, impact on daily life and treatment. *Eur J Pain* 2006;10:287-333.
17. McBeth J, Jones K. Epidemiology of chronic widespread pain. *Best Pract Res Clin Rheumatol* 2007;21:403-25.
18. Senna ER, De Barros ALP, Silva EO, Costa IF, Pereira LVB, Ciconelli RM, et al. Prevalence of rheumatic diseases in Brazil: a study using the COPCORD approach. *J Rheumatol* 2004;31:594-7.
19. Forseth KO, Gran JT. Management of fibromyalgia. What are the best treatment choices? *Drugs* 2002;62:577-92.