Prevalence of Psychopathology in patients with Fibromyalgia and their healthy relatives. Its relation with Vitamin D levels.

.....

Marta Filipa Mesquita de Oliveira Peixoto[1], Dr. João Pedro Vitória Vieira de Matos[2], Prof. Dr. José António Pereira da Silva[3].

[1]Faculdade de Medicina da Universidade de Coimbra

[2]Mestre Psicólogo Clínico

[3] Prof. de Reumatologia da Faculdade de Medicina da Universidade de Coimbra e Director de Serviço de Reumatologia dos Hospitais da Universidade de Coimbra (SRHUC)

Endereço: Marta Mesquita Peixoto – Rua Padre José P. Monteiro, nº53 – 4620-200 Figueiras, Lousada

E-mail: martamesquitapeixoto@gmail.com

.....

Summary

Resumo

Introdução: A Fibromialgia (FM) é caracterizada pela presença de dor crónica generalizada e maior sensibilidade à pressão em locais osteomusculares definidos, designados por "tender points". A dor crónica vivenciada por pacientes com FM é frequentemente associada e um perfil heterogéneo de sintomas autonómicos e neuro-psiquiátricos, como depressão e distúrbios de ansiedade..

A deficiência de vitamina D também tem sido associada à presença de ansiedade e depressão.

Não encontrámos estudos que abordem a relação entre essas condições nos pacientes com Fibromialgia e as conclusões de trabalhos relacionados têm sido inconsistentes.

Objectivos: O presente estudo visou avaliar a relação entre ansiedade, depressão e dor crónica em pacientes com o diagnóstico de Fibromialgia, assim como, em controlos não afectados por esta doença. Os níveis séricos de 25 OHD foram avaliados e associados com a presença ou a ausência de sintomas depressivos e ansiosos.

Métodos: No nosso estudo 21 pacientes com o diagnóstico de Fibromialgia e 21 irmãs saudáveis preencheram a versão portuguesa do Hospital Anxiety and Depression Scale (HADS) e a versão portuguesa do Fibromyalgia Impact Questionnaire (FIQ). Todos os doentes e controlos foram submetidos a um exame físico, que incluiu a avaliação do limiar doloroso na face anterior da tíbia, no manúbrio esternal e no leito ungueal do dedo indicador, duas vezes em cada local. O nível sérico de 25OHD foi medido em 21 pacientes com o diagnóstico de Fibromialgia e em 21 controlos. A avaliação laboratorial foi realizada no mesmo dia para o doente e para o respectivo controlo.

Resultados: No nosso estudo, utilizando Hospital Anxiety and Depression Scale, foi encontrada uma maior prevalência de ansiedade e depressão em pacientes com o diagnóstico de Fibromialgia. Existe uma correlação positiva entre os scores FIQ e ansiedade nos pacientes com Fibromialgia. Assim como, entre os scores do FIQ e depressão nos pacientes com Fibromialgia e nos controlos.

O limiar de dor foi menor em pacientes com Fibromialgia. Foi encontrada uma correlação positiva entre o limiar à dor na tíbia direita e no leito ungueal do dedo indicador direito e o score de ansiedade no grupo controlo. Não foi encontrada nenhuma correlação entre o limiar à dor e os scores de ansiedade/depressão nos pacientes com Fibromialgia. Tendo em consideração a vitamina D, não encontrámos correlação entre 25OHD e a presença de transtornos de humor, como depressão ou ansiedade, na população em estudo.

Conclusões: Pacientes com Fibromialgia, tendo em atenção as respostas ao questionário HADS, revelaram níveis mais elevados de ansiedade e depressão, comparando com as irmãs saudáveis. O limiar à dor também é menor no grupo de pacientes com o diagnóstico de Fibromialgia. No nosso estudo, não é possível estabelecer uma associação entre o limiar à dor e depressão/ansiedade nos pacientes com Fibromialgia. Mas, parece existir uma associação entre o limiar à dor na tíbia direita e leito ungueal do dedo indicador direito nas irmãs saudáveis.

Não foi encontrada nenhuma correlação entre os níveis de vitamina D e a presença de transtornos de humor, como ansiedade e depressão.

Palavras-chave: depressão, ansiedade, fibromialgia, limiar à dor, vitamina D

ABSTRACT

Background: Fibromyalgia (FM) syndrome is characterized mainly by the presence of both chronic widespread pain and increase sensitivity to pressure at specific musculoskeletal sites known as "tender points". The chronic pain experienced by FM patients is often associated with a heterogeneous profile of autonomic and neuropsychiatric symptoms, such as depressive and anxiety disorders.

Vitamin D deficiency has also been associated with depression and anxiety.

We have been unable to find studies addressing the relationship between these conditions in patients with fibromyalgia and the findings of related investigations have been inconsistent.

Objectives: The present study assessed the relationship between depression, chronic pain and anxiety in patients with Fibromyalgia, and healthy controls. Serum 25OHD levels were measured and their correlations with depression/anxiety scores were evaluated.

Methods: In our study, 21 female patients with a diagnosis of Fibromyalgia and 21 unaffected sisters answered Hospital Anxiety and Depression scale and Fibromyalgia Impact Questionnaire. All patients and controls underwent physical examination, which included the measure of pain threshold twice in tibial shins, sternal and nail bed of index fingers. Serum 25OHD was measured in 21 patients with a diagnosis of fibromyalgia and 21 controls. The blood test was performed in the same day for patient and matched-control.

Results: In our study, using Hospital Anxiety and Depression Scale, we found a higher prevalence of anxiety/depression in FM patients than in controls.

We found a positive correlation between FIQ and anxiety scores in FM patients. We also found a correlation between FIQ and depression scores in FM patients and in controls.

Pain threshold was lower in FM patients than in controls. It was found a positive correlation between pain threshold in right tibia and in right index nail bed and anxiety score in controls. We didn´t found a correlation between pain threshold and anxiety/depression scores in FM patients.

Concerning Vitamin D, we found no significant correlation between 25OHD levels and the presence of mood disturbance, as depression or anxiety in FM patients and in controls.

Conclusions: Patients with Fibromyalgia, taking into account HADS questionnaire, had higher levels of anxiety and depression, compared with healthy sisters. The pain threshold is also lower in the group of patients diagnosed with Fibromyalgia. In our study a possible association between pain thresholds and depression/anxiety scores was not observed in FM patients. However, we found a correlation between pain threshold in right tibia and right in index nail bed and anxiety score in healthy sisters.

We found no correlation between Vitamin D levels and the presence of anxiety or depressive disorders.

Keywords: anxiety, depression, fibromyalgia, pain threshold, vitamin D

Introduction

Fibromyalgia (FM) is a chronic pain disorder that afflicts predominantly middle-aged women with cardinal symptoms of diffuse musculoskeletal pain, defined tender points, deprived sleep, and fatigue. The American College of Rheumatology has established criteria for the definition of FM which require diffuse pain bilaterally in the axial and upper and lower quadrants in combination with tenderness on digital pressure of at least 11 of 18 defined symmetrical tender points. These criteria showed a sensitivity of 88% and specificity of 81%. [01]

The high prevalence of depression in Fibromyalgia and some shared pathophysiological characteristics has led some authors to suggest that Fibromyalgia may be a depressive spectrum disorder. [02,03]

The physical and mental distress experienced by Fibromyalgia patients strongly affects quality of life, social and work performances, to the point that FM has been called the "invisible disability". [04] Subjects suffering from fibromyalgia show more functional disability, less ability to adapt to limitations imposed by the disease and more tendency to emphasize the pain, compared with patients with rheumatoid arthritis. [05]

Furthermore, patients with fibromyalgia are frequently diagnosed with depressive and anxiety disorders. [06,07] A recent review has reported that depressive disorders are the most frequent psychiatric comorbidity in patients with fibromyalgia, with prevalence rates ranging from 20% to 80%. [08]

Chronic pain is often associated with anxiety and depression, [09] resulting in low health-related quality of life [10]. The mechanisms underlying the association between mental

symptoms and chronic pain are not clear, [11] but abnormalities in pain and mood modulation systems in the brain and spinal cord have been suggested as common mechanisms. [12] Importantly, antidepressants such as Tricyclic antidepressants (TCAs) and Serotonin-Norepinephrine Reuptake Inhibitors (SNRIs) used to treat both depression [13] and anxiety disorders [14] have a modulating effect on neuropathic pain [15] and Fibromyalgia. [16-18]

Chronic pain, observed in patients with fibromyalgia, is also a common complaint in patients suffering from depressive disorder [19,20]. In turn, chronic pain disease triggers a state of depressive mood, which might finally meet the diagnostic criteria of depressive disorder. [21] Pain and depression are supposed to share common neuroanatomical pathways and neurobiological substrates, which might explain the increased vulnerability to pain complaints in depression and vice-versa. [22,19]

There is some evidence that comorbid depression and anxiety may increase the level of emotional distress, reduce coping abilities and possibly be related to severity of pain symptoms in Fibromyalgia. [23,24] But, there is no evidence of what appears first, if it is depression or Fibromyalgia.

A role for Vitamin D in cognitive function and mental health has been reported [25,26]. Vitamin D concentrations have been shown to be low in patients suffering from mood disorders. Depressive symptoms are known to be more frequent in autumn and winter [27], when vitamin D concentrations are low due to the decreased production of vitamin D in the skin on sunlight exposure [28].Several mechanisms of action have been proposed to explain the association between vitamin D and depression. The vitamin D receptor and the vitamin D-activating enzyme 1-α-hydroxylase are widely distributed in the human brain [29]. Despite

such suggestive evidence for a role of vitamin D in depression, few population-based studies have explored depressive symptoms in relation to vitamin D status [30,31].

Finally, this paper intends to analyze 1- if there are differences in the prevalence of depression and anxiety in FM patients and healthy controls. 2- if psychiatric disorders have some relation with pain threshold and 3- if there is a relationship between psychopathology and vitamin D levels in FM patients and control group.

Materials and methods

Study population

In order to address the hypothesis described above we decided to study female patients with fibromyalgia paired with an unaffected sister and their mother.

Participants were drawn from a list of 712 patients with an established diagnosis of FM from a single site (all diagnosed and followed by Prof. J.A.P. da Silva). The following screening criteria were used for selection: Female gender, age between 18 and 55 years of age, absence of any other chronic pain condition, residence within an radius of 100 Km from the study centre. Selected patients were contacted by phone and invited to participate if 1. They had at least one unaffected sister, 2 the mother of both was the same person, still alive and capable of participating and providing reliable information, and 3. All the family members were willing to travel to the research site and participate in the study, which involved signing an informed consent, responding to questionnaires, providing a blood sample and undergoing physical examination. Participants were reimbursed for transportation costs but no other compensations were offered.

The study was approved by Ethical Committee of the Faculty of Medicine of the Universidade de Coimbra.

All research proceedings were performed in the morning. After receiving an explanation of the study procedures and having an opportunity to present any questions and discuss all issues, participants signed an informed consent form. This was followed by a fasting blood sample collection. Breakfast was offered to participants before the other procedures were started.

Serum Vitamin D measurement and interpretation

Serum was extracted by centrifugation at 5000 rpm for 10 minutes and stored frozen at -20ºC until analysis, which was performed less than a month after sample collection. Serum 25-OH-D was measured by a chemiluminescence immunoassay - DiaSorin LIAISON® in the Hormonology Laboratory of Hospitais da Universidade de Coimbra. Serum 25-OH-D levels are expressed in ng per milliliter.

Interview and Fibromyalgia Impact Questionnaire

Besides a custom demographic questionnaire, this paper made use of the validated portuguese transations of the Fibromyalgia Impact Questionnaire (FIQ). The FIQ is a well-validated toll for the evaluation of status, progress and outcome in FM [32]. It has been designed to measure the components of health status that are believed to be most affected by FM. This questionnaire is composed of 10 questions and has been largely used in research, with good sensitivity, validity and reliability [33]. Each of the 10 items has a maximum possible score of 10, thus scores range from 0 to 100 [32]. The average FM patients scores about 50; severely afflicted patients are usually 70 plus [34].

HADS questionnaire

Anxiety and depression symptoms were measured using Hospital Anxiety and Depression Scale (HADS), a self-administered screening tool designed for use in community and hospital settings [35]. HADS is a brief questionnaire that consists of two subscales, one measuring anxiety, with seven items, and one measuring depression, with seven items, which are scored separately. Each item was answered by the patient on a 4-point (0-3) response category so the

possible scores ranged from 0 to 21 for anxiety and 0 to 21 for depression. It takes 2-5 minutes to complete. The HADS manual indicates that a score between 0 and 7 is "normal", between 8 and 10 "mild", between 11 and 14 "moderate" and between 15 and 21 "severe" [36].

Physical Examination

All the patients and controls were submitted to an evaluation of pressure pain threshold (PPT). For this purpose, PPTs were assessed using an automated pressure algometer. Mechanical pressure, determined as kilogram (Kg) per 1 cm^2 of skin was applied by a pressure threshold meter (PTM). Subjects were instructed to say "stop" when the sensation of pressure changed to one of pain and the pressure exerted at that point was registered as the PPT. Pain threshold was measured twice in tibial shins, sternal manubrio and nail bed of index fingers.

Statistical analysis

All univariate statistics were calculated using the SPSS statistical package, version 18.0.

Initially, it is required to use a normality test, since only in this way one can know whether to apply a parametric or non-parametric test. The normality of distribution was tested using Kolmogorov-Smirnov test.

Non-parametric tests, including the Chi-square test for categorical variables, and the Mann-Whitney test for continuous variables, were sued when the normality assumptions could not be satisfied. Student-t test was used in continuous variables which satisfied the required normality assumptions.

In order to verify the association between variables, we used bivariate correlation of Pearson or Spearman (depending on the existence of normality of the variables).

In our study, for continuous variables, the descriptive statistics included mean and standard deviation, a measure of central tendency.

Results

Socio-demographic characteristics

The screening criteria described above, reduced the potential population to 317 individuals, which were contacted by phone. Of these, 278 were excluded for the following reasons: 121 did not have an unaffected sister, 27 their sister lived too far away to attend, 73 were already orphans or their mother was not capable or participating, 57 were not reachable through the phone. Of the remaining 38 families, satisfying inclusion criteria, 11 refused to participate and 6 never made themselves available to attend the research centre.

A total of 22 patients and 22 controls were included in the study, however one pair was excluded of the analysis because our evaluation demonstrated that both patient and sister had fibromyalgia criteria.

Their demographic characteristics are presented in table I.

Table I – Socio-demographic characteristics

			FM Group	Control Group	p
Sex	**Female**	Count (%)	**21 (100,0%)**	**21 (100,0%)**	
Age (years)		Mean±SD	**40,95±10,40**	**40,14±10,32**	0,801
Birth Country	**Portugal** **Brazil**	Count (%)	**21 (100,0%)** **0 (0,0%)**	**20 (95,2%)** **1 (4,8%)**	0,311
Years of Education		Mean±SD	**12,62±4,18**	**12,05±5,36**	0,702
Number of Children		Mean±SD	**1,24±0,94**	**1,19±1,03**	0,877
Marital Status	**Single** **Married** **Divorced**	Count (%)	**4 (19,0%)** **17 (81,0%)** **0 (0,0%)**	**7 (33,3%)** **12 (57,1%)** **2 (9,5%)**	0,159
Body Mass Index (kg/m^2)		Mean±SD	**25,55±2,99**	**26,26±4,89**	0,574
	Normal **Pre-Obese** **Obese Class I** **Obese Class II**	Count (%)	**10 (47,6%)** **10 (47,6%)** **1 (4,8%)** **0 (0,0%)**	**9 (42,9%)** **8 (38,1%)** **2 (9,5%)** **2 (9,5%)**	0,456
Medication Antidepressants			**21 (23,8%)**	**21 (0%)**	

Anxiety and Depression in FM patients and controls

In our work, both depression and anxiety were significantly more frequent in FM patients than in controls. Thus, using T-Student we found that prevalence of psychopathology is higher in the group with diagnosis of FM than in Control group, represented by unaffected sisters.

In FM group, mean of anxiety HADS score was 12,24, while in the control group was 7,10. About depression, the mean of HADS score was 7,90 in FM patients and 4,10 to healthy sisters.

We verified that 52,4% and 95,2% of FM patients (n=21) had a HADS score >7, indicating a greater chance to have depression and anxiety disorders, respectively, using T-Student.

Table II- HADS score in FM patients and unaffected sisters.

	FM patients mean±SD	**Sisters** mean±SD	p
Anxiety	12,24±2,95	7,10±3,14	0,000
Depression	7,90±4,26	4,10±2,90	0,006

Anxiety/Depression and Pain threshold

The means of pain threshold was lower in FM patients than in controls, in all the areas tested.

Table III- Mean and SD of pain threshold (Kg/cm2) in FM patients and controls

	FM patients	**Sisters**
Right Tibia	3,08±1,94	4,82±1,86
Left Tibia	2,94±1,41	4,54±1,62
Sternal Manubrium	1,91±1,46	3,16±1,21
Right index nail bed	3,16±1,61	4,91±2,03
Left index nail bed	3,09±2,07	4,87±1,91

Table IV- Correlation between pain threshold and anxiety score in FM group and controls.

	FM Group		**Sisters**	
	r/rho	**p**	**r/rho**	**p**
Right Tibia	0,065	0,780	**0,469**	0,032
Left Tibia	-0,339	0,133	0,352	0,118
Sternal Manubrium	-0,154	0,504	0,249	0,277
Right index nail bed	-0,159	0,490	**0,539**	0,012
Left index nail bed	-0,243	0,289	0,206	0,370

Table V- Correlation between pain threshold and depression score in FM group and controls.

	FM Group		Sisters	
	r/rho	**p**	**r/rho**	**p**
Right Tibia	-0,004	0,985	0,070	0,762
Left Tibia	-0,249	0,276	-0,068	0,768
Sternal Manubrium	-0,177	0,442	-0,033	0,886
Right index nail bed	-0,161	0,484	0,304	0,180
Left index nail bed	-0,240	0,294	0,057	0,806

Using Pearson correlation (r) and Spearman´s rank correlation coefficient (rho), we found a correlation between anxiety and pain threshold in right tibia and right index nail bed in the Control group, but no significant correlation among FM patients. To test the correlation between left index nail bed and anxiety/depression scores we had to use Spearman´s rank correlation coefficient. In our study, we didn´t find significant correlations between pain threshold and depression either in FM group or in Control group.

Anxiety/Depression and FIQ

In our study, using Spearman correlation (rho) we found a statistically significant positive correlation between FIQ score and anxiety score in FM group (rho=0,539; p=0,047). We also found a positive correlation between depression score and FIQ score both in the FM and in the Control group.

Table VI- Correlation between FIQ and anxiety scores.

	rho	**P**
Anxiety/ FIQ FM Group (r)	**0,539**	0,047
Anxiety/ FIQ Control Group (r)	0,308	0,284

Table VII- Correlation between FIQ and depression scores.

	rho	**p**
Depression/ FIQ FM Group (r)	**0,545**	0,044
Depression/ FIQ Control Group (r)	**0,679**	0,008

Anxiety/Depression and Vitamin D

Mean serum of 25 OHD levels was 18,53±6,47 in FM group and 15,61±5,05 in the control group.

Using Spearman´s rank correlation coefficient (rho) we found that there is no correlation between anxiety or depression scores and serum 25 OHD (rho<0,30; p>0,05), either in FM group nor in Control group.

Table VIII- Correlation between anxiety score and Serum 25OHD levels.

	rho	**p**
Anxiety/ Vitamin D FM Group (r)	-0,161	0,485
Anxiety/ Vitamin D Control Group (r)	-0,026	0,910

Table IX- Correlation between depression score and 25 OHD levels

	rho	**p**
Depression/ Vitamin D FM Group (r)	-0,095	0,684
Depression/ Vitamin D Control Group (r)	-0,224	0,328

Discussion:

The high frequency of depressive disorders in patients with FM Syndrome has led some authors to consider this syndrome among the "affective spectrum disorder" [37]. In these patients, depressive disorders are the most frequent comorbid psychiatric conditions, with prevalences ranging between 20-80%. [38]

In our data, 52,4% of FM patients presented depressions, considering the cut-off threshold of a HADS score above 7. The prevalence of anxiety in this group, using the same cut-off, was 95,2%. Conversely, only 9,5% of healthy sisters would be classified as having depression although 52,4% satisfied criteria for anxiety. The mean HADS scores for anxiety and depression were significantly higher in FM than in control group. These results are compatible with other clinical studies that showed higher frequencies of depression or anxiety in patients diagnosed with fibromyalgia.

It is estimated that approximately 18-36% of patients with fibromyalgia present a current state of major depressive disorder (MDD); and 50-70% reports a lifetime history of MDD [39,40]. Recent investigations also showed that depressive symptoms without a formal diagnosis of depressive disorder frequently affect patients with FM: Kato *et al.* [41] have investigated the amount of comorbidity between depressive symptoms and FM on a community sample of 44,897 individuals, showing that 40% of patients with FM had current depressive symptoms. These results support our findings.

We also found a positive correlation between FIQ and anxiety/depression scores in FM patients. Thus, higher FIQ scores were associated to higher depression and anxiety scores in FM patients. It is also important to note that higher anxiety/depression scores were associated

to higher FIQ score. An interesting finding was the positive correlation between depression and FIQ scores in control group.

Clinical and experimental studies of pain perception have found that increased state anxiety was often associated with increased pain report [42,43]. Thus, pain has been linked to psychological factors related to pain (other than depression) and anxiety appeared as the most prevalent.

Using a correlation model, we found a positive association between anxiety score and pain threshold in right tibia and right index nail bed in control group. However, we did not find a correlation between anxiety/depression scores and pain threshold in FM patients. One possible explanation for this positive correlation between anxiety and pain threshold in the control group is that once FM patients had lower pain threshold compared with controls, possibly higher anxiety score were associated to higher pain threshold.

Several explanations have been offered for the comorbidity of pain and anxiety. The muscle tension hypothesis proposes that anxious people endure more tension which, in turn, causes muscle tightening. This muscle tightening eventually becomes a source of pain, leading to additional anxiety, and thus perpetuating the anxiety/pain relationship [44]. Alternatively, the increased arousal associated with anxiety may lead to decreased pain tolerance. Others suggest that although anxiety may not alter the perception of pain, individuals may be more likely to complain of pain when they are anxious [45].

Previous researches propose strong interaction between chronic pain and depression. Depressed patients have been shown to be more vulnerable to pain complaints and, vice versa, chronic pain is frequently accompanied by depressive symptoms [46,47]. Thus, the incidence of current major depression amongst chronic pain patients ranges from 30 to 54% [48,49].

To analyze this relationship, between depression and pain threshold, several experimental pain studies on patients suffering from a depressive disorder have already been performed, but with remarkable discrepancies. Mostly increased [50–54], but also decreased pain thresholds [55,56] have been observed in depressive patients, whereas others, have found no significant differences between patients with major depressive disorder and healthy controls [57-60].

As already discussed, pain and depression may coexist because they share overlapping pathophysiological process [61]: depression is independently associated with a reduction of pain threshold due to the altered functioning of structures modulating pain such as prefrontal and insular cortex [62,63], hippocampus [64], amygdala, and periacqueductal grey [65].

The higher perception of pain in FM patients with depressive symptoms could be explained by the tendency of depressed patients to adopt a cognitive style defined "catastrophizing", which means the tendency to perceive pain as awful, horrible and unbearable [66].

However, in our sample a formal diagnosis of depression was not made, which may be the cause of no correlation between pain threshold in all surveyed locations and depression in FM group and in control group.

Another interesting finding is that no correlation was found between the vitamin D mean levels and anxiety/depression scores in FM patients and unaffected sisters. Mean of vitamin D in FM patients was higher than in controls, contrary to the expected.

Although few epidemiological studies of vitamin D and depression have produced inconsistent results it was suggested that vitamin D improves depressive symptoms. Vitamin D deficiency has also been linked to depression and conditions such as Seasonal Affective Disorder (SAD). Reports from Europe [67,78] and United States [69,70] suggests that up to

50% of Caucasian FM patients may have low levels of 25OHD, and these lower levels were observed more frequently in patients with anxiety and depression. Low levels of 25OHD have also been shown more frequently in chronic pain/fibromyalgia patients than in other "general rheumatology outpatients" [71].

According to our study, FM patients had higher anxiety/depression scores than their unaffected sisters. In these patients, pain threshold was lower. These findings point to the possible pathophysiological relationship between anxiety, depression and pain threshold in FM patients. Thus, this may contribute to observations to the beneficial effects of anxiolytics and antidepressants in the treatment of FM patients.

In fact, several treatments have proved effective in randomised controlled trials, including tricyclic anti-depressants, milnacipran, duloxetine, pregabalin, and tramadol. [72-76] However, there are still many treatment failures and since anxiety is strongly linked to FM, new treatment to reduce anxiety should be tested.

Our study had some limitations that should be taken into account. One of them was that the sample size was relatively small. Another one is that physical examination was performed by all researches, although we tried to standardize the procedure. So, in order to reduce examiner variability, all PPTs should be measured by the same examiner.

Finally, results may also be biased by patients´ medication, as antidepressants, which could compromise the results of HADS questionnaire and therefore the association between anxiety, depression, pain threshold and vitamin D in FM patients and controls.

Therefore, further studies are needed for one to overcome some shortcomings and to provide a more reliable account of the true connection between the variables under study.

Aknowledgments

Agradeço ao Professor Doutor José António Pereira da Silva e ao Dr. João Pedro Vitória Vieira de Matos pela orientação e co-orientação deste trabalho, pela orientação e disponibilidade demonstrada neste projecto e pela possibilidade de este se ter realizado com sucesso.

Agradeço às Enfermeiras Andreia Marques, Andreia Gonçalves, Marisa Lourenço, Marta Martins e à Secretária, Dª Ana Abrantes pela colaboração nas colheitas sanguíneas e no apoio logístico prestado a este estudo.

Agradeço à Dra. Fátima Leitão e ao Laboratório de Hormonologia dos Hospitais da Universidade de Coimbra pela colaboração nos doseamentos sanguíneos necessários a este projecto.

Agradeço ao Laboratório de Bioestatística e Informática Médica e, particularmente ao Dr. Pedro Serranho pela ajuda no tratamento estatístico dos dados recolhidos.

Agradeço aos meus colegas de trabalho final do 6º ano médico, Diogo Monteiro, Hugo Antunes, Hugo Paiva, Joana Melim, João Matias, Miguel Pereira, Patrícia Rodrigues e Pedro Silva, pela colaboração no desenho deste estudo e na recolha dos dados necessários à realização deste estudo.

Agradeço à minha família por estar sempre presente nos momentos de maior necessidade e por, desta forma, contribuírem para a realização deste estudo.

References

1.Wolfe F. Smythe HA Yunus MB. et al: The American College of Rheumatology 1990 criteria for the classification of Fibromyalgia. Arthritis Rheum 13: 160- 172. 1990.

2. Ahles TA, Yunus MB, Masi AT. Is chronic pain a variant of depressive disease? The case of primary fibromyalgia syndrome. Pain 1987;29:105–11.

3.Meyer-Lindenberg A, Gallhofer B. Somatized depression as a subgroup of fibromyalgia syndrome. Z Rheumatol 1998;57(Suppl 2):92–3.

4.Sturge-Jacobs, M., 2002. The experience of living with fibromyalgia: confronting an invisible disability. Res. Theory Nurs. Pract. 16 (1), 19–31.

5.Walker, E.A., Keegan, D., Gardner, G., Sullivan, M., Bernstein, D., Katon, W.J., 1997. Psychosocial factors in fibromyalgia compared with rheumatoid arthritis: II. Sexual, physical, and emotional abuse and neglect. Psychosom. Med. 59 (6), 572–577.

6.Bradley, L.A., 2005. Psychiatric comorbidity in fibromyalgia. Curr. Pain Headache Rep. 9 (2), 79–86.

7.Wolfe, F., Smythe, H.A., Yunus, M.B., Bennett, R.M., Bombardier, C., Goldenberg, D.L., Tugwell, P., Campbell, S.M., Abeles, M., Clark, P., 1990. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. Report of the Multicenter Criteria Committee. Arthritis Rheum. 33, 160–172.

8. Fietta, P., Fietta, P., Manganelli, P., 2007. Fibromyalgia and psychiatric disorders. Acta Biomed. 78 (2), 88–95.

9. Bair MJ, Robinson RL, Katon W, Kroenke K. Depression and pain comorbidity: a literature review. Arch Intern Med 2003;163:2433–45.

10. Otto M, Bach FW, Jensen TS, Sindrup SH. Health-related quality of life and its predictive role for analgesic effect in patients with painful polyneuropathy. Eur J Pain 2007;11:572–8.

11. Dersh J, Polatin PB, Gatchel RJ. Chronic pain and psychopathology: research findings and theoretical considerations. Psychosom Med 2002;64:773–86.

12. Stahl S, Briley M. Understanding pain in depression. Hum Psychopharmacol 2004;19(1):9–13.

13. NCCMH (National Collaborating Centre for Mental Health). Depression: management of depression in primary and secondary care – national clinical practice. London: The British Psychological Society and Gaskell, vol. 23: 2004. p. 1–362.

14. Van Balkom AJ, Bakker A, Spinhoven P, Blaauw BM, Smeenk S, Ruesink B. A metaanalysis of the treatment of panic disorder with or without agoraphobia: a comparison of psychopharmacological, cognitive-behavioral, and combination treatments. J Nerv Ment Dis 1997;185:510–6.

15. Bymaster FP, Dreshfield-Ahmad LJ, Threlkeld PG, Shaw JL, Thompson L, Nelson DL, et al. Comparative affinity of duloxetine and venlafaxine for serotonin and norepinephrine transporters in vitro and in vivo, human serotonin receptor subtypes, and other neuronal receptors. Neuropsychopharmacology 2001;25:871–80.

16. Arnold LM. Biology and therapy of fibromyalgia. New therapies in fibromyalgia. Arthritis Res Ther 2006;8:212.

17. Arnold LM, Lu Y, Crofford LJ, Wohlreich M, Detke MJ, Iyengar S, et al. A double blind, multicenter trial comparing duloxetine with placebo in the treatment of fibromyalgia patients with or without major depressive disorder. Arthritis Rheum 2004;50:2974–84.

18. Arnold LM, Rosen A, Pritchett YL, D'Souza DN, Goldstein DJ, Iyengar S, et al. A randomized, double-blind, placebo-controlled trial of duloxetine in the treatment of women with fibromyalgia with or without major depressive disorder. Pain 2005;119:5–15.

19. Katona C, Peveler R, Dowrick C, Wessely S, Feinmann C, Gask L, et al. Pain symptoms in depression: definition and clinical significance. Clin Med 2005;5:390–5.

20. Munce SE, Stewart DE. Gender differences in depression and chronic pain conditions in a national epidemiologic survey. Psychosomatics 2007;48:394–9.

21. Dworkin RH, Gitlin MJ. Clinical aspects of depression in chronic pain patients. Clin J Pain 1991;7:79–94.

22. Adler G, Gattaz WF. Pain perception threshold in major depression. Biol Psychiatry 1993;34:687–9.

23. Thieme K, Turk DC, Flor H. Comorbid depression and anxiety in fibromyalgia syndrome: relationship to somatic and psychosocial variables. PsychosomMed 2004;66:837–44.

24. Turk DC, Okifuji A, Sinclair JD, Starz TW. Differential responses by psychosocial

subgroups of fibromyalgia syndrome patients to an interdisciplinary treatment. Arthritis Care Res 1998;11:397–404.

25. Oudshoorn C, Mattace-Raso FU, van der Velde N, Colin EM, van der Cammen TJ: Higher serum vitamin D3 levels are associated with better cognitive test performance in patients with Alzheimer´s disease. Dement Geriatr Cogn Disord 2008, 25:539-543.

26. Kalueff A, Minasyan A, Keisala T, Kuuslahti M, Miettinen S, Tuohimaa P: The vitamin D neuroendocrine system as a target for novel neurotropic drugs. CNS Neural Disord Drug Targets 2006, 5:363-371.

27. Harmatz MG, Well AD, Overtree CE, Kawamura KY, Rosal M, Ockene IS (2000). Seasonal variation of depression and other moods: a longitudinal approach. J Biol Rhythms 15, 344-350.

28. Burnand B, Sloutskis D, Gianoli F, Cornuz J, Rickenbach M, Paccaud F et al. (1992). Serum 25-hydroxyvitamin D: distribution and determinants in the Swiss population. Am J Clin Nutr 56, 537-542.

29. Berk M, Sanders KM, Pasco JA, Jacka FN, Williams LJ, Hayles AL et al. (2007). Vitamin D deficiency may play a role in depression. Med Hypotheses 69, 1316-1319.

30. Hoogendijk WJ, Lips P, Dik MG, Deeg DJ, Beekman AT, Penninx BW (2008). Depression is associated with decreased 25-hydroxyvitamin D and increased parathyroid hormone levels in older adults. Arch Gen Psychiatry 65, 508-512.

31. Pan A, Lu L, Franco OH, Yu Z, Li H, Lin X (2009). Association between depressive symptoms and 25-hydroxyvitamin D in middle-aged and elderly Chinese. J Affect Disord, doi:10.1016/j.jad.2009.02.002.

32. Rosado Mda, L., et al., [Cultural adaptation and validation of the "Fibromyalgia Impact Questionnaire"--Portuguese version]. Acta Reumatol Port, 2006. 31(2): p. 157-65.

33. BENNETT R: The Fibromyalgia Impact Questionnaire (FIQ): a review of its develepoment, current version, operating characteristics and uses. Clin Exp Rheumatol 2005; 23 (Suppl. 39): S154-62.

34. 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): p. S154-62.

35. Zigmond AS, Snaith RP. The hospital anxiety and depression

scale. Acta Psychiatr Scand 1983;67:361–70.

36. Pais-Ribeiro, J. , Silva, I. , Ferreira, T. , Martins, A. , Meneses, R. and Baltar, M.(2007) 'Validation study of a Portuguese version of the Hospital Anxiety and Depression Scale', Psychology, Health & Medicine, 12: 2, 225 — 237

37. Hudson, J.I., Arnold, L.M., Keck Jr., P.E., Auchenbach, M.B., Pope Jr., H.G., 2004. Family study of fibromyalgia and affective spectrum disorder. Biol. Psychiatry 56, 884–891.

38. Fietta, P., Fietta, P., Manganelli, P., 2007. Fibromyalgia and psychiatric disorders. Acta Biomed. 78 (2), 88–95.

39. Epstein SA, Kay G, Clauw D, Heaton R, Klein D, Krupp L, Kuck J, Leslie V, Masur D, Wagner M, Waid R, Zisook S. Psychiatric disorders in patients with fibromyalgia. A multicenter investigation. Psychosomatics 1999;40:57–63.

40. Vishne T, Fostick L, Silberman A, Kupchick M, Rubinow A, Amital H, Amital D. Fibromyalgia among major depression disorder females compared to males. Rheumatol Int 2008;28:831–6.

41. Kato, K., Sullivan, P.F., Evengard, B., Pedersen, N.L., 2006. Importance of genetic influences on chronic widespread pain. Arthritis Rheuma.54, 1682-1686.

42. Michelotti A, Farella M, Tedesco A, Cimino R, Martina R: Changes in pressure pain thresholds of the jaw muscles during a natural stressful condition in a group of symptom-free subjects. J Orofac Pain 14:279-285, 2000

43. Zachariae R, Melchiorsen H, Frobert O, Bjerring P, Bagger JP: Experimental pain and psychologic status of patients with chest pain with normal coronary arteries or ischemic heart disease. Am Heart J 142:63-71, 2001

44. Merskey, H., Psychological and psychiatric aspects of pain control. In: W.L Smith, H. Merskey, and S.C. Gross (Eds.), Pain: Meaning and Management, SP Medical and Scientific Books, New York, 1980, pp. 105-117.

45. Craig, K., Emotional aspects of pain. In: P.D. Wall and R. Melzack (Eds.), Textbook of Pain, 2nd edn., Churchill Livingstone, New York, 1989, pp. 220-230.

46. Lautenbacher S, Krieg JC. Pain perception in psychiatric disorders: a review of the literature. J Psychiatry Res 1994;28:109–22.

47. Lautenbacher S, Spernal J, Schreiber W, Krieg JC. Relationship between clinical pain complaints and pain sensitivity in patients with depression and panic disorder. Psychosom Med 1999;61(6):822–7.

48. Banks SM, Kerns RD. Explaining high rates of depression in chronic pain: a diathesis-stress framework. Psychol Bull 1996;119:95–110.

49. Sullivan MJL, Reesor K, Mikail SF, Fischer R. The treatment of depression in chronic low back pain: review and recommendation. Pain 1992;50: 5–13.

50. Bar KJ, Greiner W, Letsch A, Ko¨bele R, Sauer H. Influence of gender and hemispheric lateralization on heat pain perception in major depression. J Psychiatry Res 2003;37:345–53.

51. Bar KJ, Brehm S, Boettger MK, Boettger S, Wagner G, Sauer H. Pain perception in major depression depends on pain modality. Pain 2005;117:97–103.

52. Bar KJ, Brehm S, Boettger MK, Wagner G, Boettger S, Sauer H. Decreased sensitivity to experimental pain in adjustment disorder. Eur J Pain 2006;10:467–71.

53. Lautenbacher S, Krieg JC. Pain perception in psychiatric disorders: a review of the literature. J Psychiatr Res 1994;28:109–22.

54. Lautenbacher S, Roscher S, Strian D, Fassbender K, Krumrey K, Krieg JC. Pain perception in depression: relationships to symptomatology and naloxone-sensitive mechanisms. Psychosom Med 1994;56:345–52.

55. Merskey H. The effect of chronic pain upon the response to noxious stimuli by psychiatric patients. J Psychosom Res 1965;8:405–19.

56. Moroz BT, Nuller IuL, Ustimova IN, Andreev BV. Study of pain sensitivity based on the indicators of electro-odontometry in patients with depersonalization and depressive disorders. Zh Nevropatol Psikhiatr Im S S Korsakova 1990;90:81–2. [translated by E.K.K.].

57. Adler G, Gattaz WF. Pain perception threshold in major depression. Biol Psychiatry 1993;34:687–9.

58. Lautenbacher S, Spernal J, Schreiber W, Krieg JC. Relationship between clinical pain complaints and pain sensitivity in patients with depression and panic disorder. Psychosom Med 1999;61:822–7.

59. Otto MW, Dougher MJ, Yeo RA. Depression, pain, and hemispheric activation. J Nerv Ment Dis 1989;177:210–8.

60. Spernal J, Krieg JC, Lautenbacher S. Pain thresholds as a putative functional test for cerebral laterality in major depressive disorder and panic disorder. Neuropsychobiology 2003;48:146–51.

61. Maletic, V., Raison, C.L., 2009. Neurobiology of depression, fibromyalgia and neuropathic pain. Front. Biosci. 14, 5291–5338.

62. Giesecke, T., Gracely, R.H., Williams, D.A., Geisser, M., Petzke, F., Clauw, D.J., 2005. The relationship between depression, clinical pain, and experimental pain in a chronic pain cohort. Arthritis Rheum. 52, 1577–1584.

63. Fitzgerald, P.B., Laird, A.R., Maller, J., Daskalakis, Z.J., 2008. A meta-analytic study of changes in brain activation in depression. Hum. Brain Mapp. 29 (6), 683–695.

64. Vythilingam, M., Vermetten, E., Anderson, G.M., Luckenbaugh, D., Anderson, E.R., Snow, J., Staib, L.H., Charney, D.S., Bremner, J.D., 2004. Hippocampal volume, memory, and cortisol status in major depressive disorder: effects of treatment. Biol. Psychiatry 56 (2), 101–112.

65. Norman, G.J., Karelina, K., Zhang, N., Walton, J.C., Morris, J.S., Devries, A.C., 2010. Stress and IL-1β contribute to the development of depressive-like behavior following peripheral nerve injurj. Mol. Psychiatry 15 (4), 404–414.

66. Gracely, R.H., Geisser, M.E., Giesecke, T., Grant, M.A., Petzke, F., Williams, D.A., Clauw, D.J., 2004. Pain catastrophizing and neural responses to pain among persons with fibromyalgia. Brain 127, 835–843.

67. Nellen JF, Smulders YM, Jos Frissen PH, Slaats EH, Silberbusch J. Hypovitaminosis D in immigrant women. Slow to be diagnosed. BMJ 1996; 312(7030): 570-2.

68. Erkal MZ, Wilde J, Bilgin Y, et al. High prevalence of vitamin D deficiency, secondary hyperparathyroidism and generalized bone pain in Turkish immigrants in Germany: identification of risk factors. Osteoporos Int 2006; 17(8):1133-40.

69. Reed SD, Laya MB, Melville J, Ismail SY, Mitchell CM, Ackerman DR. Prevalence of vitamin D insufficiency and clinical associations among veiled East African women in Washington State. J Womens Health (Larchmt) 2007; 16(2):206-13.

70. Plotnikoff GA, Quigley JM. Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. Mayo Clin Proc 2003; 78(12): 1463-70.

71. Armstrong DJ, Meenagh GK, Bickle I, Lee AS, Curran ES, Finch MB. Vitamin D deficiency is associated with anxiety and depression in fibromyalgia. Clin Rheumatol 2007; 26(4): 551-4.

72. Häuser W, Bernardy K, Uçeyler N, Sommer C. Treatment of fibromyalgia syndrome with antidepressants: a meta-analysis. JAMA 2009;301:198–209.

73. Arnold LM, Gendreau RM, Palmer RH, Gendreau JF, Wang Y. Efficacy and safety of milnacipran 100 mg/day in patients with fibromyalgia: results of a randomized, double-blind, placebo-controlled trial. Arthritis Rheum 2010. doi:10.1002/ art.27559.

74. Chappell AS, Bradley LA, Wiltse C, Detke MJ, D'Souza DN, Spaeth M. A six-month double-blind, placebo-controlled, randomized clinical trial of duloxetine for the

treatment of fibromyalgia. Int J Gen Med 2009;1:91–102.

75. Straube S, Derry S, Moore RA, MsQuay HJ. Pregabalin in fibromyalgia: meta analysis of efficacy and safety from company clinical trial reports. Rheumatology 2010;49:706–15.

76. Bennett RM, Schein J, Kosinski MR, Hewitt DJ, Jordan DM, Rosenthal NR. Impact of fibromyalgia pain on health-related quality of life before and after treatment with tramadol/acetaminophen. Arthritis Rheum 2005;53:519–27.

Appendix

Appendix 1 – Socio-demographic Interview

INQUÉRITO DEMOGRÁFICO

Data: ____/____/_____

Nº: 00 A

Iniciais do nome (1,2 e última): _____

Data de nascimento: _____/___/___

Nacionalidade: _____

Residiu no estrangeiro até aos 18 anos? _____

Desde que idade: _____ anos. Regressou aos: _____ anos.

Número de irmãos: _____

Posição na fratria: _____ (do mais velho para o mais novo)

Sexo dos irmãos (F-feminino, M-masculino): ___; ___; ___; ___; ___; ___; ___; ___

(do mais velho para o mais novo)

Tem filhos? Sim ☐ Não ☐

Nº total de filhos vivos: ____ Abortos espontâneos: _____ Abortos Provocados: ____

Filhos falecidos: ____

1.: idade à data da morte: ____ Ano da morte: _____

2.: idade à data da morte: ____ Ano da morte: _____

3.: idade à data da morte: ____ Ano da morte: _____

Pai: vivo ☐ separado ☐ Ano: _____ Falecido ☐ Ano: _____

Estado civil: _____

Profissão:

Por conta própria ☐ Por conta de outrem ☐

Desempregada ☐ Reformada ☐ Com que idade? _____ anos

Anos de educação formal: _____ Concluídos em: ____ anos

Critérios de Fibromialgia: Sim ☐ Não ☐

Data de início dos sintomas (mês e ano): ____/_____

Data em que primeiro procurou cuidados médicos por esses sintomas (mês e ano): ____/_____

Data do diagnóstico (mês e ano): ____/_____

Que tratamentos faz actualmente para a Fibromialgia? (fármacos e outros)

_____
_____
_____
_____
_____
_____

Se tem outras doenças, indique quais:

_____
_____
_____
_____

Que tratamentos faz para estas doenças?

_____
_____
_____
_____

Se já fez cirurgias, indique quais, e o ano da cirurgia:

_____
_____
_____
_____

Quem foi, para si, a principal figura maternal durante a sua infância, até aos sete anos?

_____

Appendix 2 – Physical Examination

EXAME FÍSICO

Peso: _____ kg Altura: _____ m IMC: _____ kg/m^2

Nº de pontos dolorosos: ____

Limiar de dor:		**A**	**B**	**Média**
a. Ponto médio da tíbia:	Dta:	_____Kg	_____Kg	_____Kg
	Esq:	_____Kg	_____Kg	_____Kg
b. Ponto médio do manúbrio esternal:		_____Kg	_____Kg	_____Kg
c. Leito ungueal do indicador:	Dta:	_____Kg	_____Kg	_____Kg
	Esq:	_____Kg	_____Kg	_____Kg

Massa gorda:

a. Perímetro abdominal:
(na linha que passa nas cristas ilíacas, numa expiração normal)

A	**B**	**C**	**Média**
_____cm	_____cm	_____ cm	_____ cm

b. Perímetro do braço:

A	**B**	**C**	**Média**
_____cm	_____cm	_____ cm	_____ cm

c. Perímetro da coxa:

A	**B**	**C**	**Média**

_____cm _____cm _____ cm _____ cm

d. Prega bicipital:
(medida três vezes no braço não dominante)

A	**B**	**C**	**Média**
_____mm	_____mm	_____ mm	_____ mm

e. Prega tricipital:
(medida três vezes no braço não dominante)

A	**B**	**C**	**Média**
_____mm	_____mm	_____ mm	_____ mm

f. Prega subescapular:
(medida três vezes no braço não dominante)

A	**B**	**C**	**Média**
_____mm	_____mm	_____ mm	_____ mm

g. Prega da coxa:

A	**B**	**C**	**Média**
_____mm	_____mm	_____ mm	_____ mm

h. Bio-impedância

Appendix 3 – Hospital Anxiety and Depression Scale (Portuguese version)

Este questionário foi concebido para ajudar a saber como se sente. Pedimos-lhe que leia cada uma das perguntas e faça uma cruz (X) no espaço anterior à resposta que melhor descreve a forma como se tem sentido na última semana.

Não demore muito tempo a pensar nas respostas. A sua reacção imediata a cada questão será provavelmente mais correcta do que uma resposta muito ponderada.
Por favor, faça apenas uma cruz em cada pergunta.

1. Sinto-me tenso/a ou nervoso/a: ___ Quase sempre ___ Muitas vezes ___ Por vezes ___ Nunca	**8. Sinto-me mais lento/a, como se fizesse as coisas mais devagar:** ___ Quase sempre ___ Muitas vezes ___ Por vezes ___ Nunca
2. Ainda sinto prazer nas coisas de que costumava gostar: ___ Tanto como antes ___ Não tanto agora ___ Só um pouco ___ Quase nada	**9. Fico de tal forma apreensivo/a (com medo), que até sinto um aperto no estômago:** ___ Nunca ___ Por vezes ___ Muitas vezes ___ Quase sempre
3. Tenho uma sensação de medo, como se algo terrível estivesse para acontecer: ___ Sim e muito forte ___ Sim, mas não muito forte ___ Um pouco, mas não me aflige ___ De modo algum	**10. Perdi o interesse em cuidar do meu aspecto físico** ___ Completamente ___ Não tenho o cuidado que devia ___ Talvez cuide menos do que antes ___ Tenho o mesmo interesse de sempre
4. Sou capaz de rir e de ver o lado divertido das coisas: ___ Tanto como antes ___ Não tanto como antes ___ Muitos menos agora ___ Nunca	**11. Sinto-me de tal forma inquieto/a que não consigo estar parado/a** ___ Muito ___ Bastante ___ Não muito ___ Nada
5. Tenho a cabeça cheia de preocupações ___ A maior parte do tempo ___ Muitas vezes ___ Por vezes ___ Quase nunca	**12. Penso com prazer nas coisas que podem acontecer no futuro:** ___ Tanto como antes ___ Não tanto como antes ___ Bastante menos agora ___ Quase nunca
6. Sinto-me animado/a ___ Nunca ___ Poucas vezes ___ De vez em quando ___ Quase sempre	**13. De repente tenho sensações de pânico** ___ Muitas vezes ___ Bastantes vezes ___ Por vezes ___ Nunca
7. Sou capaz de estar descontraidamente sentado/a e sentir-me relaxado/a: ___ Quase sempre ___ Muitas vezes ___ Por vezes ___ Nunca	**14. Sou capaz de apreciar um bom livro ou um bom programa de rádio ou televisão:** ___ Muitas vezes ___ De vez em quando ___ Poucas vezes ___ Quase nunca

Appendix 4 – Fibromyalgia Impact Questionnaire (Versão Portuguesa) – FIQ-P

FIBROMYALGIA IMPACT QUESTIONNAIRE
(VERSÃO PORTUGUESA) – FIQ-P

INSTRUÇÕES: Nas perguntas 1 a 11 por favor faça um círculo no número que, em relação à **última semana**, melhor descreve a maneira como, **em geral**, foi capaz de executar as tarefas indicadas. Se habitualmente não faz uma dessas tarefas risque essa pergunta.

	Sempre	Quase Sempre	Quase nunca	Nunca
Foi capaz de:				
1. Ir às compras?	0	1	2	3
2. Tratar da roupa na máquina de lavar / secar?	0	1	2	3
3. Cozinhar?	0	1	2	3
4. Lavar louça à mão?	0	1	2	3
5. Aspirar a casa?	0	1	2	3
6. Fazer as camas?	0	1	2	3
7. Andar vários quarteirões (200 a 500 metros)?	0	1	2	3
8. Visitar a família ou os amigos?	0	1	2	3
9. Tratar das plantas ou praticar o seu passatempo?	0	1	2	3
10. Se deslocar, no seu próprio carro ou em transportes públicos?	0	1	2	3
11. Subir as escadas?	0	1	2	3

12. Na última semana, em quantos dias se sentiu bem?

0	1	2	3	4	5	6	7

13. Na última semana, quantos dias faltou ao trabalho e/ou não realizou as tarefas domésticas, devido à fibromialgia?

0	1	2	3	4	5	6	7

INSTRUÇÕES: Nas perguntas que se seguem, assinale um ponto na linha que melhor indica o modo como, **em geral**, se sentiu na **última semana**.

14. Nos dias que trabalhou, quanto é que a sua doença – Fibromialgia - interferiu no seu trabalho?

Trabalhei sem problemas •___|___|___|___|___|___|___|___|___|___• Tive grande dificuldade no trabalho

15. Que intensidade teve a sua dor?

Não tive dor •___|___|___|___|___|___|___|___|___|___• Tive dor muito intensa

16. Que cansaço sentiu?

Não senti cansaço •___|___|___|___|___|___|___|___|___|___• Senti um cansaço enorme

17. Como se sentiu quando se levantava de manhã?

Acordei bem repousada •___|___|___|___|___|___|___|___|___|___• Acordei muito cansada

18. Que rigidez sentiu?

Não tive rigidez •___|___|___|___|___|___|___|___|___|___• Senti muita rigidez

19. Sentiu-se nervosa ou ansiosa?

Não tive ansiedade •___|___|___|___|___|___|___|___|___|___• Senti-me muito ansiosa

20. Sentiu-se triste ou deprimida?

Não me senti deprimida •___|___|___|___|___|___|___|___|___|___• Senti-me muito deprimida