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# Pain perception and fibromyalgia

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**Introduction.** Although psychological factors and self-regulation processes rarely cause pain they have enough importance to exacerbate pain and contribute to its maintenance. Nevertheless, pain perception and associated beliefs can influence its confrontation and the sensation of intensity. Pain perception in fibromyalgia acquires special relevance due to an abnormal sensitivity to digital pressure on the so-called «tender points». This constitutes the main factor for its differential diagnosis.

**Method.** The aim of the present study is to determine differences in pain perception and associated beliefs that appear between a group of patients with fibromyalgia ( $n = 36$ ), a control group with chronic pain with objectified non-inflammatory locomotion apparatus pathology ( $n = 44$ ) and a control group with healthy subjects ( $n = 31$ ). Pain perception and beliefs concerning pain were assessed using Spanish versions of the following self-reports: West Haven Yale Multidimensional Questionnaire (WHYWP) and Pain Perceptions and Beliefs Inventory (PBAPI).

**Results.** Results show that the difference between patients with chronic pain is not related to pain global perception, but rather to greater perception of pain as more incapacitating when carrying out every day activities in fibromyalgic patients. In this sense, these people use escape-avoidance strategies in their every day lives believing that pain incapacitates them and therefore that physical activity should be avoided.

**Conclusions.** Measurement of pain perceptions and beliefs could be considered relevant for assessment and for intervention programs on pathologies associated with chronic pain.

**Key words:**  
Fibromyalgia. Chronic pain. Perception. Beliefs.

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## Percepción del dolor y fibromialgia

**Introducción.** Los factores psicológicos y los procesos de autorregulación si bien raramente causan dolor poseen la entidad suficiente para exacerbarlo y contribuir a su mantenimiento, pero la percepción y las creencias asociadas pueden influir en su afrontamiento y en la sensación de intensidad. La percepción del dolor adquiere especial relevancia en el caso de la fibromialgia, ya que la sensibilidad anormal a la presión digital en los llamados *tender points* constituye el factor principal para su diagnóstico diferencial.

**Método.** Se pretende determinar las diferencias en la percepción del dolor y en las creencias sobre éste que aparecen en un grupo de pacientes con fibromialgia ( $n = 36$ ), un grupo control con dolor crónico por patología objetivizada del aparato locomotor no inflamatoria ( $n = 44$ ) y otro grupo control formado por personas sanas ( $n = 31$ ). La percepción y creencias del dolor se evaluaron mediante versiones españolas de los autoinformes *West Haven Yale Multidimensional Questionnaire* (WHYWPI) y *Pain Perceptions and Beliefs Inventory* (PBAPI).

**Resultados.** La diferencia entre pacientes con dolor crónico no se encuentra relacionada con la percepción global del dolor, sino que ésta reside en la mayor percepción del dolor como inhabilitante para realizar actividades cotidianas por parte de los fibromiálgicos. Utilizan estrategias de escape-evitación en su quehacer diario sobre la creencia de que el dolor incapacita y por ello la actividad física debe evitarse.

**Conclusiones.** La percepción y las creencias sobre el dolor pueden ser consideradas relevantes tanto en protocolos de evaluación como en programas de intervención sobre patologías asociadas con dolor crónico.

**Palabras clave:**  
Fibromialgia. Dolor crónico. Percepción. Creencias.

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## INTRODUCTION

Psychology factors and self-regulation processes rarely cause pain. However, they have enough importance to ex-

acerbate pain and contribute to the maintenance of the disorders occurring with pain and influence malaise and incapacity associated with chronic pain<sup>1</sup>. The variations observed in pain intensity, that is, in its perception, and its associated beliefs, may influence its confrontation and the perception of its intensity. Thus, it is assumed that these variations are largely explained by cultural beliefs and attitudes and emotional states<sup>2</sup>. Furthermore, chronic pain perception is significantly related with the locus of pain control that, in turn, is directly related with pain confrontation strategies used<sup>3</sup>. On the other hand, different studies have demonstrated that beliefs on pain (which modulate its perceived intensity<sup>4,5</sup>) and confrontation strategies are involved in the use of the health services and in compliance of medical prescriptions<sup>6,7</sup>.

Based on the results obtained in the different investigations conducted on the subject and given the state of present knowledge on chronic pain disorders, involvement of psychosocial factors seems clear. However, although the different authors coincide in mentioning the variables involved in chronic pain evolution, there is no consensus on the instruments that should be used in their evaluation<sup>8</sup>. This situation enormously hinders the comparability of the results obtained, however this difficulty is even greater when an attempt is made to measure the aspects of the eminently subjective character associated with pain, as is the case of its perception by each patient.

On the other hand, fibromyalgia, a disorder characterized by suffering chronic generalized musculoskeletal, benign, non-articular and unknown etiology pain, seems to obtain special relevance when evaluating pain perception. This question is justified by one of the fundamental characteristics for its diagnosis, that is, by the abnormal sensitivity to digital pressure on certain zones (tender points)<sup>10</sup>.

The other characteristic, which according to the American College of Rheumatology<sup>10</sup> is a requirement for its diagnosis, is defined by the pain duration experienced. This should be greater than three months and determines the consideration of fibromyalgia as a chronic pain disorder. On the other hand, it should be noted that there seems to be important differences in the experience of emotional responses among fibromyalgic patients and patients suffering other chronic pain disorders, an aspect that contributes to the identification of a specific profile of the patient with fibromyalgia versus other chronic pain disorders<sup>11</sup>.

This study has aimed to determine pain perception and beliefs on it presented by a group of patients with fibromyalgia and to know if there are differences in these variables compared with a group of patients with chronic pain due to objectified non-inflammatory locomotion apparatus pathology and another control group formed by healthy persons.

## METHOD

Each one of the subjects who formed a part of either the fibromyalgia group or the non-fibromyalgic pain group (a group of patients with chronic pain due to objectified non-inflammatory locomotion apparatus pathology) received the diagnosis by their corresponding physicians of the Mallorca Primary Health Care Centers (PHCC). Once this first diagnosis was made, two physicians from the Incapacities Assessment Evaluating Medical Unit (IAEMU) of the National Institute of Social Security (NISS) of the Balearic Islands used a double blind procedure to perform a new evaluation, based on the criteria given in the international rheumatology protocols. Subsequently, using the same protocol, this diagnosis was confirmed or not confirmed by an external rheumatologist.

In regards to the sample description, a final sample of patients with fibromyalgia was obtained after all those persons with previous diagnoses of mental disease were eliminated. It was formed by 36 subjects, 31 women (86.1 %) and 5 men (13.9 %), with a mean age of 49.3056 (95 % CI: 46.5392; 52.0719). Once this sample was obtained, the subjects of the non-fibromyalgic pain group and control group were selected according to the matching procedure. This was based on the sociodemographic characteristics of each one of the experimental group components. Consequently, the non-fibromyalgic pain group was made up of a total of 44 subjects, 38 women (86.4 %) and 6 men (13.6 %), with a mean age of 45.8182 (95 % CI: 42.9742; 52.4323). Finally, the control group was made up of healthy persons with a total of 34 subjects, 31 women (91.2 %) and 3 men (8.8 %), mean age of 48.3824 (95 % CI: 44.3324; 52.4323) randomly chosen among those who came to the Primary Health Care (PHC) Services of Santa Ponsa (Calvià) due to mild health problems (cold, pharyngitis, etc.), who fulfilled the matching criteria with the fibromyalgic pain group. There were no statistically significant differences among the three groups in regards to age, which was normally distributed in the three groups, a fact verified after applying the corresponding normality tests.

Once the medical examination was performed, pain perception was evaluated. It is possible to state that this evaluation, performed in the Psychology Department of the University of the Balearic Islands (UBI) and in the PHCC of Santa Ponsa, was made for all the subjects belonging to each one of the three groups mentioned by evaluators who, at the time of the evaluation, were blind to the diagnosis and thus to which group the person evaluated belonged.

In regards to the evaluation procedures and instruments used, it should be observed that the American College Rheumatology criteria<sup>10</sup> were followed to diagnose fibromyalgia. This is an evaluation method elaborated to classify patients in order to homogenize the research of this syndrome and which, although its aim is not diagnostic, is the method used most in the clinical practice due to the ab-

sence of procedures that have been demonstrated to be better. In addition, this method makes it possible to establish a differential diagnosis with other disorders that have been called secondary fibromyalgia.

On the other hand, pain perception was evaluated with the West Haven Yale Multidimensional Pain Inventory (WHYWPI) (Spanish adaptation)<sup>12</sup>. This is a comprehensive, multidimensional instrument designed to evaluate different variables on chronic pain. Considering the conceptual framework of reference, WHYWPI considers pain as a complex subjective, multidimensional experience from a cognitive-behavioral perspective, although it basically focused on the psychosocial dimension of pain. Thus, its use is advised as part of a protocol that includes the evaluation of other subjective, behavioral and physiological pain variables.

The original WHYWPI 13 includes 52 items that define three sections or subscales. Section I, formed by 20 items, is made up of five factors: factor I, interference of pain on life and absence of satisfaction with the present functioning level in each one of these tasks; FII, social support perceived; FIII, pain severity and suffering; FIV, perceived self-control on life, and FV, affective malaise. Section II, made up of 14 items, includes 3 factors: FI, punishing responses; FII, responses requested, and FIII, distracting responses. Finally, section III is made up of 18 items distributed into 4 factors: FI, domestic tasks; FII, gardening and do-it-yourself works; FIII, activities outside of the home, and FIV, social activities.

The Spanish adaptation of WHYWPI maintains the same number of items in sections I and II, although there are two changes in section III regarding the original: the elimination of one item as it is considered to be included in the other (the item «cutting grass» is assumed to be implicit in the item «gardening work») and the inclusion of a new open response item that is not considered in the analysis of the results but that may be of interest in the patient's clinical evaluation. In the Spanish adaptation, section I includes six factors: FI, social support perceived; FII, general malaise the week before; FIII, changes in personal relationships; FIV, interference of pain on activity; FV, change in social activities and FVI, perceived self-control. Section II includes FI, distracting responses; FII, help responses, and FIII, negative feeling expression responses, and, finally, section III is formed by four factors: factor I, domestic tasks; FII, social activities; FIII, activities outside of the home, and FIV, do-it-yourself tasks. The original WHYMPI<sup>13</sup> has an alpha coefficient value between 0.70-0.90 in its different factors and the Spanish adaptation, on its part, reaches values between 0.59 and 0.89.

The Spanish adaptation of Pain Perceptions and Beliefs Inventory (PBAPI) (1997)<sup>5</sup> was also used. This inventory, which is made up of four factors («pain constancy», «self-blame», «pain as mystery» and «absence of chronicity») and that has an internal consistency ranging from 0.52 to 0.82 in the factors mentioned, includes 16 items that should be

assessed according to the polytomic scale graded from 1 to 4, where 1 means «greatly disagrees» and 4 «greatly agrees»), considering the usual way of thinking about pain that the person answering has.

The means of the three groups established in relationship to the variable pain perception were compared with the application of the unifactorial variance analysis. To do so, the hypothesis of homogeneity of variances has been verified by the Levene test, and then the size of effect, observed power and confidence intervals on the differences between the means were estimated. Given that the data comply with the hypothesis of homogeneity of the variances (homoscedasticity), the a posteriori contrasts used are those of Bonferroni to make the comparison between the non-fibromyalgic pain group and the fibromyalgic group and that of Dunnett to make the comparison between the former and the control group without pain. The statistical analyses were performed with the SPSS 11.0 program.

## RESULTS

Taking the perception of pain as a response variable in the analysis of the unifactorial variance (table 1), statistically significant differences were found between the measures of the control group, pain and fibromyalgia ( $F = 1.449$ ;  $p = 0.240$ ) (table 1).

The a posteriori tests (Dunnett > control) determine the existence of differences between the control group and non-fibromyalgic pain group ( $p = 0.001$ ), and between the control group and fibromyalgic group ( $p < 0.0001$ ). However, no statistically significant differences (Bonferroni) have been found between the non-fibromyalgic and fibromyalgic pain groups ( $p = 1.000$ ).

In the second place, when WHYMPI values were used as response variables in the unifactorial variance analysis (table 2), statistically significant differences were found between the means of the control, pain and fibromyalgia groups, both in section 1 (impact of pain on life ( $F = 18.761$ ;  $p < 0.0001$ )) and section 3 (performance of common daily activities) ( $F = 7.137$ ;  $p = 0.001$ ). However, section 2 (response of the partner or family member to the pain) does not have statistically significant differences ( $F = 0.278$ ;  $p = 0.758$ ).

In regards to the a posteriori tests (Dunnett > control) on section 1, the results show the existence of differences between the control group and non-fibromyalgic pain group ( $p = 0.001$ ), and between the control group and fibromyalgic group ( $p < 0.0001$ ). Statistically significant differences (Bonferroni) have also been found between the non-fibromyalgic and fibromyalgic pain groups ( $p = 0.003$ ). Finally, regarding section 3, significant differences have been obtained between the control group and non-fibromyalgic pain group ( $p = 0.002$ ), and also in relationship to the fibromyalgic group ( $p = 0.016$ ). However, no statistically significant

Table 1		Analysis of variance between groups on pain perception					
<b>Total PBAPI</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	417.498	2	208.749	7.983	0.001	0.143	0.950
Error	2,510.341	96	26.149				
Total	2,927.838	98					
<sup>a</sup> Calculated with alpha = 0.05.						Levene test F = 0.160; gl <sub>1</sub> = 2; gl <sub>2</sub> = 96; p = 0.852.	
Post hoc contrasts Total PBAPI Dunnett and Bonferroni		Differences between means	Standard error	Significance	95 % confidence interval		
					Lower limit	Upper limit	
Control	Pain	-4.0723	1.24179	0.003	-6.8521	-1.2925	
Control	Fibromyalgia	-5.0714	1.36668	0.001	-8.1308	-2.0120	
Pain	Fibromyalgia	-0.9992	1.24179	1.000	-4.0250	2.0266	
<b>PBAPI. Pain constancy (F1)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	373.900	2	186.950	17.486	< 0.0001	0.246	1.000
Error	1,143.955	107	10.691				
Total	1,517.855	109					
<sup>a</sup> Calculated with alpha = 0.05.						Levene test F = 10.084; gl <sub>1</sub> = 2; gl <sub>2</sub> = 107; p = 0.001.	
Post hoc contrasts Pain constancy T3 Dunnett		Differences between means	Standard error	Significance	95 % confidence interval		
					Lower limit	Upper limit	
Control	Pain	-3.3115	0.88106	0.001	-5.4718	-1.1511	
Control	Fibromyalgia	-4.5570	0.78734	<0.0001	-6.5061	-2.6080	
Pain	Fibromyalgia	-1.2456	0.61438	0.132	-2.7476	0.2565	
<b>PBAPI. Pain as mystery (F2)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	130.498	2	65.249	8.566	0.0001	0.141	0.963
Error	792.194	104	7.617				
Total	922.692	106					
<sup>a</sup> Calculated with alpha = 0.05.						Levene test F = 1.454; gl <sub>1</sub> = 2; gl <sub>2</sub> = 104; p = 0.238.	
Post hoc contrasts Pain as mystery Dunnett and Bonferroni		Differences between means	Standard error	Significance	95 % confidence interval		
					Lower limit	Upper limit	
Control	Pain	-1.7697	0.65347	0.024	-3.3598	-0.1796	
Control	Fibromyalgia	-2.8606	0.69623	<0.0001	-4.5548	-1.1665	
Pain	Fibromyalgia	-1.0909	0.63557	0.267	-0.4556	2.6374	
<b>PBAPI. Self blame (F3)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	1.749	2	0.874	0.256	0.775	0.005	0.089
Error	362.288	106	3.418				
Total	364.037	108					
<sup>a</sup> Calculated with alpha = 0.05.						Levene test F = 0.754; gl <sub>1</sub> = 2; gl <sub>2</sub> = 106; p = 0.473.	
<b>PBAPI. Absence of chronicity (F4)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Grupo	29.914	2	14.957	2.531	0.084	0.046	0.497
Error	614.591	104	5.910				
Total	644.505	106					
<sup>a</sup> Calculated with alpha = 0.05.						Levene test F = 1.987; gl <sub>1</sub> = 2; gl <sub>2</sub> = 104; p = 0.142.	
SS: sum of squares; MC: mean square; Obs. pow: observed power.							

Table 2		Analysis of variance between groups on the WHYMPI					
<b>WHYMPI. Section 1 (impact of pain on life)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	14,869.155	2	7,434.578	18.761	< 0.0001	0.301	1.000
Error	34,477.067	87	396.288				
Total	49,346.222	89					
<sup>a</sup> Calculated with alpha = 0.05.					Levene test F = 5.422; gl <sub>1</sub> = 2; gl <sub>2</sub> = 87; p = 0.006.		
Post hoc contrasts WHYMPI. Section 1 T3 Dunnett		Differences between means	Standard error	Significance	95% confidence interval		
					Lower limit	Upper limit	
Control	Dolor	-19,6207	5,07528	0,001	-32,0498	-7,1916	
Control	Fibromialgia	-34,3824	4,87226	< 0,0001	-46,4109	-22,3538	
Dolor	Fibromialgia	-14,7617	4,16710	0,003	-25,0492	-4,4742	
<b>WHYMPI. Section 2 (response of partner of family member to pain)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	151.820	2	75.910	0.278	0.758	0.006	0.093
Error	23,789.968	87	273.448				
Total	23,941.789	89					
<sup>a</sup> Calculated with alpha = 0.05.					Levene test F = 0.634; gl <sub>1</sub> = 2; gl <sub>2</sub> = 87; p = 0.533.		
<b>WHYMPI. Section 3 (performance of common daily activities)</b>							
Source	SS	gl	MS	F	Sig.	Partial Eta <sup>2</sup>	Obs. pow <sup>a</sup>
Group	3,202.222	2	1,601.111	7.137	0.001	0.141	0.924
Error	19,517.778	87	224.342				
Total	22,720.000	89					
<sup>a</sup> Calculated with alpha = 0.05.					Levene test F = 0.693; gl <sub>1</sub> = 2; gl <sub>2</sub> = 87; p = 0.503.		
Post hoc contrasts WHYMPI. Section 3 Dunnett and Bonferroni		Differences between means	Standard error	Significance	95% confidence interval		
					Lower limit	Upper limit	
Control	Pain	-12.4163	3.54659	0.002	3.7585	21.0741	
Control	Fibromyalgia	-12.8729	4.52034	0.016	1.8380	23.9077	
Pain	Fibromyalgia	-0.4566	4.30559	1.000	-10.0540	10.9672	
SS: sum of squares; MC: mean square; Obs. pow: observed power.							

differences have been found between the non-fibromyalgic pain group and the fibromyalgic group (p = 1.00).

Finally, table 3 includes the Pearson correlation coefficient values (bilateral significance grade) between the scores of the different WHYMPI sections and the PBAPI factors. The correlation coefficient values obtained by the PBAPI 1 variable («pain constancy») regarding the WHYMPI 1 variables («life impact») (r = 0.649; p < 0.0001), PBAPI 2 («pain as mystery») (r = 0.477; p < 0.0001), of positive sign, and in regards to the PBAPI 4 variable («absence of chronicity») (r = -0.511; p < 0.0001), with the presence of a negative relationship, fundamentally stand out (table 3).

Other important significant correlations of «Life Impact» (WHYMPI 1) such as «performance of tasks» (WHYMPI 3) (r = -0.343; p = 0.001), or «pain as mystery» (PBAPI 2) (r = 0.388;

p < 0.0001) have been obtained. Finally, the positive correlation between «self-blame» (PBAPI 3) and «absence of chronicity» (r = 0.308; p = 0.001) can be indicated.

### CONCLUSIONS

According to the data obtained in the WHYMPI, the factor that makes it possible to discriminate between patients with fibromyalgia and those with chronic pain due to objectified locomotion apparatus pathology does not refer to the perception on the pain in general but rather to the difference found in the perception of its impact on life. This question especially attracts attention given the fact that no significant differences are observed between these two groups in the repercussion or interference of pain in the performance of the daily life tasks perceived.

**Table 3** Correlations between PBAPI and WHYMPI factors

		WHYMPI 1	WHYMPI 2	WHYMPI 3	PBAPI 1	PBAPI 2	PBAPI 3	PBAPI 4
		Life impact	Partner response	Task performance	Pain constancy	Pain as mystery	Self blame	Absence of chronicity
WHYMPI 1	Vital impact	1.000						
WHYMPI 2	Partner response	0.297**	1.000					
WHYMPI 3	Task performance	-0.343**	-0.058	1.000				
PBAPI 1	Pain constancy	0.649**	-0.006	-0.210*	1.000			
PBAPI 2	Pain as mystery	<0.0001	0.956	0.049	0.477**	1.000		
PBAPI 3	Self blame	<0.0001	0.342	0.218	<0.0001	0.052	1.000	
PBAPI 4	Absence of chronicity	0.054	0.144	-0.116	-0.076	0.602	0.308**	1.000
		0.621	0.187	0.289	0.437	0.149	0.001	
		-0.291**	0.192	0.034	-0.511**			
		0.007	0.079	0.760	<0.0001			

\*  $p < 0.05$ ; \*\*  $p < 0.01$ .

On the other hand, considering the total results obtained in the PBAPI, that manifest differences in pain perception between the control group and the two pain groups studied but not between the patient group with fibromyalgia and the patient group with chronic pain due to objectified non-inflammatory locomotion apparatus pathology, it seems that the assessment made on pain suffering is not determined by the experience itself of pain.

As was found by Peyrot<sup>14</sup>, and on the contrary to that hypothesized by the psychogenic model, patients who suffer non-organic caused chronic pain (in our case, fibromyalgia) do not have a greater number of somatic complaints than other patients. On the contrary, our data suggest that pain perception is highly related with the social learning common to disorders that occur with chronic pain.

Furthermore, these data are supported by the results obtained after the administration of the WHYMPI as a psychometric tool. The fact that no differences were obtained in the interference that pain entails in the performance of common daily life tasks between the patient group with fibromyalgia and the non-fibromyalgic pain group suggests the idea that there is common behavioral learning in all the patients who suffer chronic pain regardless of the type of pain and of the assessment made by the patient on the impact pain means in his/her life. In this sense, the data make it possible to conceptualize the abandoning of performing the tasks in terms of escape/pain avoidance strategy, modulated by the belief that pain is incapacitating, a reason why physical activity should be avoided<sup>15</sup>.

It is equally important to refer to the results obtained in each one of the PBAPI factors. Just as differences are observed between the control group and patients belonging to the two other pain groups in regards to pain constancy, this factor does not make it possible to discriminate between fibromyalgic patients and chronic pain patients with objectified locomotion apparatus pathology. This finding manifests that the patients who suffer chronic pain, whatever its nature, perceive the pain experienced as constant in time. This result, although far from being surprising, has special relevance as the analyses performed show that it constitutes a variable highly related with the life impact perceived.

In consequence, this question should be considered in the elaboration of the intervention program, given that, on the one hand, the beliefs and confrontation strategies influence the patient's adaptation to chronic pain<sup>16</sup>; and, on the other, that pain constancy is highly related with responses such as anxiety, physical problems in general and its intensity<sup>17</sup>. In any case, although the constancy of the pain perceived has therapeutic implications, this does not seem to have any affect on the diagnosis, since it does not contribute to the establishment of a differential diagnosis of fibromyalgia.

Regarding the data obtained in the factor called «pain as mystery», it is possible to remember that although significant differences have been obtained between the control group and the two other pain groups in perception of pain as mystery, no differences are observed between the fibromyalgic group and that of patients with chronic pain

due to objectified locomotion apparatus pathology. This question attracts attention, given the circumstance that there is a clear identification of the pain origin in the group of pain due to objectified locomotion apparatus pathology. However, even so, attribution of it is not only external and stable, as suggested by the data obtained in the «self-blame» factor and in the factors of «absence of chronicity» and «pain constancy», respectively, but the pain is also interpreted as a random or destination product without causes that justify its appearance.

These findings point towards the existence of common self-regulating processes between the patients with chronic pain, in which the psychosocial factors of the experience itself seem to have greater weight in its acquisition and development. Consequently, although several studies manifest that the beliefs on pain are determined both by the patient's previous personal experience and by the observation of close persons who suffer or have suffered pain, and by the information from the health agents and communication systems<sup>5,18</sup>, our data show that previous experience of pain does not make it possible to differentiate between fibromyalgia and other types of pain. In other words, previous experience would constitute a relevant factor in the pain intensity perceived but does not seem to have sufficient importance to shape different belief systems on chronic pain based on suffering of different disorders of this nature.

Furthermore, this aspect has clear therapeutic implications in the sense that the elaboration of specific programs for fibromyalgia is not justified, according to the data obtained, in that part of the intervention aimed at modifying beliefs on pain in order to achieve an adequate adjustment of the patient with chronic pain. This occurs because, although there may be some differences between the beliefs of fibromyalgic patients and those of other patients who suffer chronic pain, these are not significant. On the contrary, these results indicate that the intervention should emphasize the modification of the constancy perceived. This is partially so because, as has already been mentioned, it seems to constitute the main differentiating factor between the two pain groups studied. On the other hand, according to our data, it is because this variable is highly related with both the life impact perceived ( $r = 0.649$ ;  $p < 0.0001$ ) and the interference of pain in task performance, although in this case with less magnitude ( $r = -0.210$ ;  $p = 0.049$ ).

Finally, the relationship found between the factor «pain as mystery» and life impact perceived ( $r = 0.388$ ;  $p < 0.0001$ ), but above all, the fact that «pain as mystery» accounts for almost 25% of the variance observed in the pain constancy perceived ( $r = 0.477$ ;  $p < 0.0001$ ), should also be mentioned. Thus, conceptualization of pain as mystery by those persons who suffer chronic pain acquires a determining role in the elaboration of cognitions on pain and its consequences. Therefore, the need is clear, on the one hand, to review the type of information that is given to these patients, and in its case, modify it so that the patients with chronic pain

focus their attention not so much on the supposed causes that explain or justify the pain but rather on those aspects that may contribute to its correct management, as is the case of acquiring an active role in it. On the other hand, it manifests the need for the chronic pain intervention programs to include training in control skills on it.

In this sense, it is also relevant to state that, in the light of the results obtained, the term «unjustified pain» is considered to be more adequate than «pain as mystery» since in addition to being more operative, it better reflects the process of self-regulation that the patients use with chronic pain in general and it includes other connotations included in the «self-blame» factor (internal attribution of pain), which does not make it possible to discriminate between the different groups studied.

Finally, the data obtained in the present study not only indicate the role played by perception and beliefs in the disorders occurring with chronic pain, supplying arguments that justify the inclusion of psychological and behavioral factors in chronic pain treatment<sup>1</sup>, but also identify some differentiating aspects of them not only regarding the general population but also, which is more relevant, those that make it possible to discriminate between different pain groups. Thus, it can contribute to the improvement of the evaluation and intervention procedures because it makes it possible to elaborate shorter evaluation protocols with better discrimination power and thus to elaborate equally shorter and more effective intervention protocols, above all, considering that the efficacy of the multidisciplinary intervention programs of pain are greater due to the changes produced in the belief system on pain<sup>19</sup>.

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