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The European Portuguese adaptation of the Fear of Pain Questionnaire

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ABSTRACT

In Portugal, it is estimated that chronic pain affects 36.7% of the population, constituting a multifactorial phenomenon with great impact at individual, family, community, and social levels. In the fear-avoidance model of pain, one of the most consistent consensual in the literature, the fear arises as one of the variables that can contribute to the development and maintenance of this condition. Thus, instruments for evaluating the fear of pain, as Fear of Pain Questionnaire (FPQ-III), may be useful in the conceptualization of the subjective experience of pain. Accordingly, this paper aims to describe the adaptation of FPQ-III for the European Portuguese. A total of 1094 participants (795 women; mean age = 25.16, *SD* = 7.72) completed the web based questionnaire. The results pointed to a different factor solution found in the first study of the original scale (five factors: minor pain, severe pain, medical pain, injection pain, and afflicted pain), good internal consistency (.75–.85) and good correlations (between .30 and .59) between subscales and (between .68 and .85) for the total score and subscales. Given the need to meet the various dimensions of subjective experience of pain, the Fear of Pain Questionnaire is assumed as a useful tool, in combination with other, may contribute to the evaluation and intervention procedures progressively more comprehensive and adjusted to the challenges raised with the issue of chronic pain.

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Fear of Pain Questionnaire: adaptação para o português europeu

R E S U M O

Em Portugal, estima-se que a dor crônica afete 36.7% da população, constituindo um fenômeno multifatorial com grande impacto em nível individual, familiar, comunitário e social. No modelo de medo-evitamento da dor, um dos mais consensuais na literatura, o medo surge como uma das variáveis que podem contribuir para o desenvolvimento e a manutenção dessa condição. Assim, instrumentos dedicados à avaliação do medo da dor, como o Fear of Pain Questionnaire (FPQ-III), podem ser úteis na conceitualização da experiência subjetiva de dor. Em concordância, este trabalho tem como objetivo descrever a adaptação do FPQ-III para o português europeu. Preencheram o questionário pela internet 1.094 participantes (795 mulheres; idade média = 25,16, *DP* = 7,72). Os resultados obtidos apontam para uma solução fatorial diferente da encontrada no primeiro estudo da escala original (cinco fatores: dor leve, intensa, médica, de injeção e aflita), uma boa consistência interna (entre .75 e .85), boas correlações entre subescalas (entre .30 e .59) e entre essas e a pontuação total (entre .68 e .85). Perante a necessidade de atender a várias dimensões da experiência subjetiva de dor, o questionário de medo da dor assume-se como uma ferramenta útil que, em combinação com outras, pode contribuir para processos de avaliação e de intervenção progressivamente mais compreensivos e ajustados aos desafios levantados pela problemática de dor crônica.

Introduction

Speaking of chronic pain means talking about a multifactorial phenomenon with a significant impact, either on an individual basis (because there are changes associated with functionality in day-to-day activities, well-being, suffering, and mental and physical health), and in terms of other dimensions (such as family, community, and socioeconomic environment). While it is recognized that chronic pain has a significant impact on several levels, being influenced by multiple variables (biopsychosocial model),[1] its definition is not completely consensual and may vary depending on the socio-historical-cultural dynamics. However, one of the most widespread definitions is the one proposed by the International Association for the Study of Pain (IASP),[2] which describes the pain as an unpleasant subjective, sensory and emotional experience, related to current or potential tissue harm, or to a description that can be contextualized in terms of such damage.

This complexity in the conceptualization of chronic pain is also reflected in terms of explanatory models of the phenomenon. One of the most investigated approaches is the cognitive-behavioral model of fear-avoidance of pain, which was first developed in the context of chronic low back pain,[3,4] but that has also been explored in other pain conditions, such as headache and fibromyalgia.[5–7] According to this model, the development and maintenance of chronic pain depend on the subject's response in the face of the experience of pain, that can be of coping or avoidance.[3,4,8,9] In a scenario of pain coping, the individual takes the necessary steps to restrict situations that could hinder his/her recovery process, and at the same time seeks gradually resume his/her activities. Therefore, the potential fear of pain weakens over time. On the other hand, in a case of pain avoidance, the subject catastrophizes the experience of pain, which means that there is a negative exacerbation of this experience, to the point of the development of a permanent fear of pain and/or of re-injury.[4] This fear is characterized by behaviors of escape/avoidance of activities that are considered as painful (functionality changes in everyday activities), by a greater physiological reactivity, by mood changes (e.g., irritability, frustration, depression), and also by an increased hypervigilance in the face of internal and external information indicating pain.[10] Thus, the catastrophizing behavior leads to the development of fear of pain, leading to a fear-avoidance cycle that self-perpetuates and contributes to the maintenance of chronic pain.[11]

Consistent with this model, several studies have shown that the fear of pain is a relevant variable in understanding the subjective experience of pain,[12] and it is related to the process of catastrophizing,[13] of hypervigilance in the face of somatic stimuli,[14] and of being directly implicated in explaining changes found in terms of functionality.[13,15–19]

Taking into account that self-report measures can be useful in the conceptualization of the experience of pain, this study is based on a specific fear measurement, the Fear of Pain Questionnaire (FPQ-III),[20] which can be used to assess fear of pain in a specific area (e.g., medical pain) or to assess the prevalence of fear across domains. From the original study,[20] we found that an intense fear of pain is associated with greater avoidance/evasion response, apart from the fact that people with chronic pain tend to report greater fear of pain. FPQ-III[20] has been used both in healthy populations, and in populations with chronic pain, in different socio-cultural contexts, showing good psychometric properties of reliability and validity.[1,20–22] In this context, and considering the usefulness of this instrument in clinical and research scenarios, the main objective of this study is to present an adaptation of FPQ-III[20] into Portuguese, since so far there are no data available, to our knowledge, for the Portuguese population.

Methods

Participants

The sampling method was of non-probabilistic type, and the questionnaire was initially circulated among students at the University of Porto (Portugal), who were also asked to disclose the study in their network of contacts. The sample consisted of 1094 individuals, of which 795 were women, recruited from the Portuguese population with access to a computer and the Internet, with a mean age of 25.16 (SD = 7.72) years. It is noteworthy that all participants whose mother language was not the Portuguese (n = 40) were excluded from this study.

Materials

FPQ-III[20] is a short questionnaire consisting of 30 items, which are answered in a Likert scale of five points, ranging from 1 (not at all) to 5 (extreme). Each item seeks to represent a potentially painful situation (e.g., breaking your leg, getting a paper cut in your finger, having a blood sample drawn with a hypodermic needle), and these situations are relatively common and accessible to the subject's experience, even if indirectly, by sharing experiences with others. FPQ-III[20] includes three subscales: a minor pain subscale, a severe pain subscale, and a medical pain subscale. The higher the score obtained (range 30–150), the greater the pain of fear levels. The psychometric properties reported in the original study are considered as satisfactory, with good internal consistency (α = 0.92 for total scale; α = 0.88 for severe pain; α = 0.87 for minor pain; α = 0.92 for medical pain) and good test–retest reliability (α = 0.74 for total scale; α = 0.69 for severe pain; α = 0.73 for minor pain; α = 0.76 for medical pain).[20] Other studies based on this scale or in adapted versions also reported similar results.[21–23]

Procedures

The translation and cultural adaptation of the questionnaire were carried out according to the internationally recommended methodology.[24–30] The following steps were taken: translation, pre-test on a sample of the target population, and retroversion. Three psychology professionals did the translation in parallel into the European Portuguese idiom using the original version of FPQ-III.[20] The translations were reviewed by a panel composed of these three psychology professionals and of a clinical psychology expert. The version that resulted from this meeting was administered to three pilot participants, resorting to the spoken reflection method. The three participants had a medium/higher level of education. For this purpose, a protocol with open-ended questions was developed, in order to explore the understanding of the instructions, the content of the items, and response alternatives. In general, this procedure sought to test whether the questionnaire contents were accessible and clear to the target population. None of the participants in the pilot study suggested any change; thus, the final version remained identical to that that had been decided at the consensus meeting. Finally, the retroversion of the final version into the English idiom was done by a bilingual English-Portuguese

psychologist, and the result was compared with the original version, to ensure the preservation of the meaning of items.[24–30]

The Portuguese version was included in Google Docs (2014, Google Inc., California, USA) and administered through the online questionnaires' module. The information necessary to obtain an informed consent (e.g., the study explanation, characteristics of a voluntary participation, confidentiality) was inserted, and also some items dedicated to the collection of demographic data. The link of the questionnaire was then made public to students of the University of Porto (Portugal) via e-mail; also the dissemination of the questionnaire by their contact network was requested. In the context of filling the questionnaire, the following instructions (translated from the original) were given, according to the aforementioned process: "The sentences listed below describe painful experiences. Please read each statement and think about how much FEAR do you have when experiencing the PAIN associated with each phrase. If you have never experienced the PAIN described in any specific phrase, please answer based on what you would expect to feel if you had such an experience. Please draw a circle around a score for each sentence in order to mark the FEAR TO THE PAIN with respect to each of the events."

Results

Table 1 presents the results of descriptive statistics of the Portuguese version for each item.

Factor analyses

A confirmatory factorial analysis to test the three-factor model suggested by the original authors of the Fear of Pain Questionnaire-III[20] was carried out. The model was evaluated using the Comparative Fit Index (CFI), the Goodness of Fit Index (GFI), and the Root Mean Square Error of Approximation (RMSEA). The adjustment indexes (CFI = 0.76, GFI = 0.79, RMSEA = 0.09) were not satisfatory[31]; therefore an exploratory factorial analysis was carried out.

The factorial analyses of FPQ-III[20] in the original study used varimax rotation. This is an orthogonal rotation, assuming that the extracted factors are independent of each other (that is, they have no correlation with each other).[32,33] The analysis resulted in five factors with eigenvalues greater than 1, also supported by the scree plot analysis.

The five factors model (severe pain, minor pain, medical pain, injection pain, and afflicted pain) represented 55.9% of total variance. The first factor explained 32.7% of the variance (eigenvalue = 9.82), the second factor explained 8.45% of the variance (eigenvalue = 2.54), the third explained 21.6% of the variance (eigenvalue = 1.86), the fourth explained 4.95% of the variance (eigenvalue = 1.49), and the fifth explained 3.58% of the variance (eigenvalue = 1.07).

The total variance explained by the five factors model is superior to the total variance of the results obtained by the authors of the original scale[20] (51.0%). The factor loadings for the five factors model are presented in Table 2.

Table 1 – Descriptive statistics of the items of the European Portuguese version of Fear of Pain Questionnaire (FPQ-III).

Items	M	SD	Asymmetry	Kurtosis
1. Being in an automobile accident	3.74	0.918	−0.470	−0.138
2. Biting your tongue while eating	2.15	0.954	0.671	0.079
3. Breaking your arm	3.27	1.051	−0.372	−0.502
4. Cutting your tongue licking an envelope	2.23	1.059	0.660	−0.266
5. Having a heavy object hit you in the head	3.56	1.035	−0.462	−0.349
6. Breaking your leg	3.50	1.022	−0.505	−0.246
7. Hitting a sensitive bone in your elbow-your "funny bone"	2.36	1.025	0.367	−0.534
8. Having a blood sample drawn with a hypodermic needle	2.02	1.108	0.961	0.108
9. Having someone slam a heavy car door on your hand	3.48	1.021	−0.429	−0.296
10. Falling down a flight of concrete stairs	3.45	0.952	−0.395	−0.204
11. Receiving an injection in your arm	1.76	0.921	1.367	1.843
12. Burning your fingers with a match	2.17	0.975	0.774	0.296
13. Breaking your neck	4.34	0.942	−1.699	2.726
14. Receiving an injection in your hip/buttocks	2.09	1.056	0.809	−0.010
15. Having a deep splinter in the sole of your foot probed and removed with tweezers	2.63	0.995	0.263	−0.492
16. Having an eye doctor remove a foreign particle stuck in your eye	3.13	1.147	−0.049	−0.844
17. Receiving an injection in your mouth	2.72	1.154	0.235	−0.741
18. Being burned on your face by a lit cigarette	3.40	1.040	−0.293	−0.522
19. Getting a paper-cut on your finger	1.92	0.868	0.856	0.535
20. Receiving stitches in your lip	3.09	1.041	−0.036	−0.576
21. Having a foot doctor remove a wart from your foot with a sharp instrument	2.71	1.035	0.167	−0.569
22. Cutting yourself while shaving with a sharp razor	1.85	0.850	0.976	0.886
23. Gulping a hot drink before it has cooled	2.02	0.849	0.576	−0.089
24. Getting strong soap in both your eyes while bathing or showering	1.93	0.869	0.873	0.700
25. Having a terminal illness that causes you daily pain	4.54	0.792	−1.920	3.648
26. Having a tooth pulled	2.61	1.074	0.276	−0.545
27. Vomiting repeatedly because of food poisoning	2.74	1.004	0.079	−0.479
28. Having sand or dust blow into your eyes	2.27	0.943	0.597	0.052
29. Having one of your teeth drilled	2.52	1.017	0.332	−0.413
30. Having a muscle cramp	2.23	0.978	0.563	−0.160

Items 12, 22, and 24 were excluded from the model, because they showed factor loadings below 0.50 and double saturation with differences smaller than 0.10 between two factors.

Internal consistency

Subscale–subscale intercorrelations

There are positive and significant correlations among all subscales. Specifically, medical pain subscale is strongly correlated with the injection pain subscale, $r(1094) = 0.59$ and afflicted pain subscale, $r(1094) = 0.58$. Severe pain subscale is strongly correlated with medical pain subscale, $r(1094) = 0.54$, with minor pain subscale, $r(1094) = 0.49$, with afflicted pain subscale, $r(1094) = 0.45$, and with injection pain subscale, $r(1094) = 0.30$. Minor pain subscale is strongly correlated with medical pain subscale, $r(1094) = 0.57$, with afflicted pain subscale, $r(1094) = 0.52$, and is also correlated with injection pain subscale, $r(1094) = 0.41$. Injection pain subscale is positively and significantly correlated with afflicted pain subscale, $r(1094) = 0.44$ (for all correlations, $p < 0.01$).

Subscale–total score intercorrelations

There are also positive and significant correlations between total score and subscales: severe pain, $r(1094) = 0.78$, minor pain, $r(1094) = 0.77$, medical pain, $r(1094) = 0.85$, injection pain, $r(1094) = 0.68$, and with afflicted pain subscale, $r(1094) = 0.76$.

Cronbach's alpha

The internal consistency of the subscales with the items that resulted from the exploratory factorial analysis was $\alpha = 0.81$ for minor pain subscale, $\alpha = 0.85$ for severe pain subscale, $\alpha = 0.80$ for medical pain subscale, $\alpha = 0.83$ for injection pain subscale, and $\alpha = 0.75$ for afflicted pain subscale. Overall alpha was $\alpha = 0.92$.

Calculation of reliability by the method of bipartition

The reliability index was also calculated by the bipartition method, with the following results: for total scale, $r(1094) = 0.86$; for minor pain subscale, $r(1094) = 0.78$; for severe pain subscale, $r(1094) = 0.81$; for medical pain subscale, $r(1094) = 0.77$; for injection pain subscale, $r(1094) = 0.80$; and for afflicted pain subscale, $r(1094) = 0.78$.

Discussion

The fear-avoidance model of pain has been one of those cognitive-behavioral conceptualizations more used to explain the development and maintenance of chronic pain conditions.[22] According to this view, the fear of pain, combined with other factors such as the catastrophizing and the anxiety related to pain, has been associated with a less adaptive adjustment in the face of pain experience, which contrasts with other more adaptive responses, such as the development of confrontational coping strategies, acceptance, openness to

Table 2 – Factor loadings of the five-factors model of the Fear of Pain Questionnaire (FPQ-III).					
Items	Minor pain	Severe pain	Injection pain	Medical pain	Afflicted pain
2. Biting your tongue while eating.	0.700				
7. Hitting a sensitive bone in your elbow-your "funny bone"	0.665				
4. Cutting your tongue licking an envelope	0.662				
19. Getting a paper-cut on your finger	0.649				
23. Gulping a hot drink before it has cooled	0.636				
24. Getting a strong soap into both eyes while taking a bath or shower.	0.562				0.507
22. Cutting yourself while shaving with a sharp razor	0.500			0.417	
12. Burning your fingers with a match	0.408			0.311	
6. Breaking your leg.		0.770			
3. Breaking your arm.		0.743			
13. Breaking your neck.		0.732			
5. Having a heavy object hit you in the head		0.636			
10. Falling down a flight of concrete stairs		0.629			
1. Being in an automobile accident		0.600			
25. Having a terminal illness that causes you daily pain		0.512			
9. Having someone slam a heavy car door on your hand		0.503			
11. Receiving an injection in your arm			0.847		
8. Having a blood sample drawn with a hypodermic needle			0.813		
14. Receiving an injection in your hip/buttocks			0.767		
17. Receiving an injection in your mouth			0.523		
16. Having an eye doctor remove a foreign particle stuck in your eye				0.628	
20. Receiving stitches in your lip				0.595	
18. Being burned on your face by a lit cigarette				0.585	
21. Having a foot doctor remove a wart from your foot with a sharp instrument				0.541	
15. Having a deep splinter in the sole of your foot probed and removed with tweezers				0.500	
29. Having one of your teeth drilled					0.694
27. Vomiting repeatedly because of food poisoning					0.640
26. Having a tooth pulled					0.608
28. Having sand or dust blow into your eyes					0.594
30. Have a muscle cramp					0.505

change, and greater self-efficacy.[34] Thus, the development, adaptation, and validation of evaluation tools targeted to fear of pain are an important step in the subjective conceptualization of the experience of pain. For all these reasons, primarily this study aimed to adapt to the European Portuguese idiom the FPQ-III questionnaire and to explore some of the psychometric properties of one the more applied questionnaires in this field.[20]

Based on our results, it was found that the European Portuguese version does not replicate the three factors model (minor pain, severe pain, medical pain) proposed in the original scale. This result was expected, since several studies have shown that the three-factor model with 30 items is not the best adjusted one.[21,23,35,36]

As for the internal consistency of FPQ-III,[20] Cronbach's alpha values between 0.87 and 0.92 for the total scale and subscales were found in the original study.[20] In other studies, including other factorial models,[21–23,35,36] the reported values remain near and above 0.70, as recommended.[37] Along the same line, the European Portuguese version of FPQ-III[20] with 27 items showed alpha values of 0.85 (Severe pain subscale)

and 0.92 (total scale). As part of the correlations between the scores of the subscales, and of subscales regarding the total scale score, these values are also similar to those reported in other studies,[20,23,35] and even slightly higher.

The data presented here for the European Portuguese version of FPQ-III[20] are limited, both in terms of exploration of the psychometric properties (assuming that it would be relevant to test other reliability properties, e.g., test–retest stability) or of validity (e.g., convergent validity, divergent validity) and also in terms of the possible generalization of the results achieved, given that the sample characteristics relate mainly to young university students. In this sense, one considers as convergent validity when the results are in line with other instruments which also assess the concept; on the other hand, discriminant validity is obtained by the analysis of its construct validity, i.e. the results of the questionnaire's application confirm the theoretical assumptions concerning the construct. Thus, future studies would focus on testing other psychometric properties of FPQ-III,[20] apart from the fact that it is essential to obtain data based on other representative groups of the population and on other sociocultural contexts (e.g., the

elderly, people with fewer years of formal education, and clinical populations). Based on these points, one can achieve a more systematic view on the influence of clinical and sociodemographic variables in the context of FPQ-III[20] and, more generally, in the fear of pain domain.

In addition, it is important to remember that this is the first study of FPQ-III[20] in which the data were collected through a sample of the Internet – and this also has its advantages and disadvantages.[38] On the one hand, it is recognized that data collection online is a useful methodology that, in contrast to traditional approaches, facilitates data collection in terms of time and costs and also allow a wider dissemination of the study. On the other hand, in relative terms, it is expected that the percentage of adherence to the study is lower and that the sample is less representative of the population, since there is the possibility of a bias for participants with higher education levels and greater access to technological tools,[39] which, moreover, seems to have occurred in this study. However, it is important to stress that the results obtained over the internet, and those obtained through a face-to-face interaction can be substantially different from each other,[39,40] but also very alike,[41] because this dynamic process depends on factors such as the subject under study, the target of the investigation, its methodology and the instruments used. It is therefore stressed that the results reported here presented several points of convergence with other studies that have implemented a traditional approach to a face-to-face data collection methodology, especially in terms of the results concerning the factorial structure, internal consistency, and the correlation between the total scale and subscales. For all that, the data obtained through the online administration appear to be comparable to a face-to-face methodology.

In conclusion, this study sought to provide data on the European Portuguese adaptation of FPQ-III,[20] in the face of the relevance given to the fear of pain under the pain of fear-avoidance model,[3,4] which has been reflected in terms of development of a number of studies on evaluation and intervention processes, taking into account the possible role of this variable in chronic pain.[16,19] The questionnaire is consistent, that is, all items measure the same thing within defined factors; moreover, this tool seems to be reliable, as its reliability indices are acceptable. In this context, FPQ-III[20] has several advantages; for instance,[20,23] this is a short, easy-to-apply and to valuate tool, which can be used both in clinical settings and in research; it can help to identify people whose fear of pain can interfere with the recovery and intervention process, as well as people with chronic pain who experience a high fear of the pain itself; the questionnaire can help to separate groups of people with lower/higher fear of pain; it can be used in conjunction with other tools and methodologies to anticipate which people have a potential for developing chronic pain conditions, thus adjusting the appraisal/intervention process. Nevertheless, it is critical to point out that FPQ-III[20] should be used in combination with other tools in terms of assessment and intervention, both because it is a self-report measure (as we are evaluating a subjective experience that can be overestimated or underestimated), and because we are dealing with a construct whose characteristics, directionality, and implications are not entirely clear within the development and maintenance of chronic pain.[15] Still, FPQ-III,[20] in combination with other tools, may be useful in developing assessment and intervention procedures progressively more comprehensive and tailored to the challenges raised by the issue of chronic pain.

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Conflicts of interest

The authors declare no conflicts of interest.

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