Evaluation of Patients With Fibromyalgia. Comparative Study of 4 Spanish Versions of the Fibromyalgia Impact Questionnaire (FIQ)

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Objective: To describe and compare the process of transcultural adaptation in the 4 validated Spanish versions of the Fibromyalgia Impact Questionnaire (FIQ).

Material and methods: a) Questionnaires. The first version (FIQ1) appeared as a doctoral thesis in 1988; the second (FIQ2) was published in a Spanish psychology journal; the third (FIQ3) was published in an English language journal; and the last (FIQ4) appeared in November 2004 in the Revista Española de Reumatología. b) Method. In each of the versions the following were assessed: 1) the semantic equivalence with respect to the original FIQ; 2) each version’s degree of development following a standardized method based on the GRAQoL Index (GI); and 3) the impact of publication.

Results: The FIQ4 showed a greater semantic equivalency. The degree of development shown by the GI produced the following results: FIQ1, 56%; FIQ2, 50%; FIQ3, 75%; FIQ4, 31%. Only the FIQ4 results were published in MedLine-indexed journals.

Conclusion: The Spanish FIQ3 version presents a greater degree of development and an acceptable semantic equivalency with respect to the original, and has achieved a greater impact.

Key words: Fibromyalgia. Quality of life. Questionnaires. Translations. Validation studies.

Evaluación de pacientes con fibromialgia. Estudio comparativo de 4 versiones españolas del Fibromyalgia Impact Questionnaire (FIQ)

Objetivo: Describir y comparar el proceso de adaptación transcultural de las 4 versiones españolas validadas del Fibromyalgia Impact Questionnaire (FIQ).

Material y métodos: a) Cuestionarios. La primera versión (FIQ1) se presentó como tesis doctoral en 1988; la segunda (FIQ2) se publicó en una revista española de psicología; la tercera (FIQ3), en una revista en inglés y la última (FIQ4) apareció en noviembre de 2004 en la Revista Española de Reumatología. b) Método. Para cada una de las versiones se evaluó: 1) la equivalencia semántica respecto al FIQ original; 2) el nivel de desarrollo de las versiones, siguiendo un método estandarizado basado en el Índice GRAQoL (IG); y 3) el impacto de publicación.

Resultados: El FIQ4 mostró una mayor equivalencia semántica. El nivel de desarrollo, a través del IG, arrojó los siguientes resultados: FIQ1, 56%; FIQ2, 50%; FIQ3, 75%; FIQ4, 31%. Sólo los trabajos del FIQ3 fueron publicados en revistas indexadas en MedLine.

Conclusión: La versión española FIQ3 presenta un mayor nivel de desarrollo, con una equivalencia semántica aceptable con respecto al original, y ha logrado un mayor impacto y visibilidad.


Introduction

Fibromyalgia is a multidimensional illness characterized by generalized chronic pain and the frequent coexistence of fatigue, sleep disorders, anxiety, depression, and multiple other affectations in a variable degree. The scarcity and inconsistency of the exploratory findings have caused that the evaluation of fibromyalgia be based solely on subjective measures. In this sense attention must be called to the usage of health questionnaires such as SF-36 and, above all, the Fibromyalgia Impact Questionnaire (FIQ) that by its characteristic brevity, ease of application, and multidimensionality has reached great acceptance on a global scale. Proof of this is the fact that it has been translated and adapted to multiple languages such as German, Korean, French, Turkish, Italian, Hebrew, or Swedish. In Spain we have 4 versions of the FIQ that...
have followed, all of them, an elaborate process of translation and adaptation. Even more, in a review of the Spanish literature we still find 2 more versions of the FIQ adapted to evaluate the response to specific treatments in patients with fibromyalgia.\textsuperscript{12,13} Faced with so many versions of the same instrument and with the goal of clarifying this situation, this study was planned with the objective of describing and comparing the process of transcultural adaptation of each one of the 4 validated Spanish versions of the FIQ.

**Material and Methods**

**Questionnaires**

The original FIQ, published by Burckhardt et al\textsuperscript{12} in 1991, is an autoapplied questionnaire of 10 items. The first item, named scale of physical function, is formed by another 10 items, al of Likert scale type response with 4 levels (0, always able to do; to 3, never able to do). On item 2 the patient must point out the number of days in which he or she felt well during the past week. Items 3 and 4 refer to work related activities of the patient: number of working days lost during the past week and degree of difficulty to work respectively. The 6 remaining items, the same as item 4, are scored using Visual Analog Scales (VAS) of 100 mm and their content evaluates pain, fatigue, morning fatigue, stiffness, anxiety, and depression. The way to obtain the final score consists of standardizing all of the items on a 1 to 10 scale and adding, afterward, the scores; the scoring of the questionnaire can oscillate between 0 and 80 or between 0 and 100, representing, in both cases, a worse health state with higher punctuations. The first Spanish version of the FIQ is the work of B. González et al (FIQ1), presented initially as a doctoral thesis in 1991, and published in the Revista Española de Reumatología.\textsuperscript{14} The psychometric characteristics came from 41 women from the Asociación Catalana de Afectados de Fibromialgia and the scoring range employed was 0 to 100.

**Comparative Analysis of the 4 Spanish Versions of the FIQ**

The authors were initially contacted to obtain a copy of each version to study (A) the semantic equivalent with respect to the original FIQ, (B) the level of development in each one of them, and (C) the impact of their publications.

**A. Semantic Equivalence**

A professional bilingual translator, originally from the United Kingdom, did a blinded retrotranslation of each one of the Spanish versions of the FIQ. After this, she compared them to the original version in English according to a standardized criteria employed beforehand,\textsuperscript{15} that consisted in classifying the items in 3 groups according to their level of agreement: items A (satisfactory agreement), the formulation and sense are equal to the original item; items B (quite satisfactory agreement), the formulation is not the same and there can be some discordant words but the item captures the sense of the original; items C (no agreement) the formulation and the sense of the item are different from the original.

**B. Level of Development**

A standardized method based on the GRAQoL index (GI) was carried out,\textsuperscript{16} according to which 8 different aspects or criteria of the transcultural process adaptation of each of the 4 Spanish versions of the FIQ were evaluated; each aspect was scored from 0 to 2 and the result expressed in percentage points. It was considered that a GI\textsuperscript{17} between 50% and 70% had an acceptable level and if <50% the development level was poor. The 4 versions were independently evaluated by the 2 authors of this study and the discrepancies were solved by consensus afterwards. The 8 criteria evaluated were the following:

1. Translations and retrotranslations. The process of translation to Spanish was evaluated, especially considering if any retrotranslations to English had been done.
2. Piloting. Piloting with patients to detect transcultural differences that could invalidate some aspect of the questionnaire was evaluated.
1. Sensibility to change. The presence of a sensibility to change in the results was compared to the ones of the original version of the FIQ.

2. Test-retest reproducibility analysis. Done using the Cronbach coefficient.

3. Structural validity. A structural study was carried out using factor analysis with the scores of the questionnaires.

4. Convergence-discriminant validity. Scores of the questionnaires were compared to other instruments that supposedly measure the same concept (convergence validity) and others that measure other concepts (discriminant validity). That way the evaluation of what measurements and instruments were employed to compare the other 4 Spanish versions of the FIQ.

5. Sensibility of the questionnaires to different populations.

6. Analysis of the internal consistency. It was analyzed through the Cronbach coefficient.

7. Test-retest reproducibility analysis. Done using the coefficient or agreement determination between the baseline punctuations of the different items and those obtained after 1 or a few weeks.

8. Sensibility to change. The presence of a sensibility to change in the results was compared to the ones of the original version of the FIQ.

C. Impact of Publication

A MedLine literature search using the key words “fiq” and “Spanish” or “fibromyalgia impact questionnaire” and “Spanish” was evaluated.

Therapeutic intervention previously considered effective to change analysis of the questionnaires altered some supposed measures.

8. Sensibility to change. The presence of a sensibility to change in the results was compared to the ones of the original version of the FIQ.

TABLE 1. Semantic Equivalence Between the Original FIQ and the 4 Spanish Versions*  

<table>
<thead>
<tr>
<th>Items</th>
<th>Satisfactory agreement</th>
<th>Quite satisfactory agreement</th>
<th>No agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Items A: Satisfactory agreement</td>
<td>10 (53%)</td>
<td>2 (11%)</td>
<td>3 (16%)</td>
</tr>
<tr>
<td>Items B: Quite satisfactory agreement</td>
<td>5 (26%)</td>
<td>5 (26%)</td>
<td>3 (16%)</td>
</tr>
<tr>
<td>Items C: No agreement</td>
<td>6 (31%)</td>
<td>3 (16%)</td>
<td>0</td>
</tr>
</tbody>
</table>

*Ten subitems of the physical function scale and the other 9 are jointly evaluated.

~Items C: “¿Se ha encontrado rígido? No/Sí” (FIQ1) was not considered concordant with the original “How bad has your stiffness been? No stiffness/Very stiff.” The item “Utilizar transporte público” (FIQ3) was not considered concordant with the original “Drive a car” although, in this case, the lack of agreement was deliberately looked for by the authors to prove that the great majority of their patients did not drive a car.

B. Level of Development. GRAQoL Index

The evaluation of the G1 by the 2 authors of this study was identical in the case of criteria 2, 3, 5, 6, and 7; in the remaining 3 criteria there were some discrepancies that were solved by consensus without that qualitatively affecting the results that are summarized on table 2 and commented below.

Criteria 1. Only the authors of FIQ and FIQ4 followed an organized process of translation/retrotranslation and final consensus. The rest did various translations of the original, and their differences were solved by consensus and were finally reviewed by a specialized translator.

Criteria 2. The authors of FIQ1 and FIQ2 did large pilot studies with their initial versions and this permitted showing that some subitems were not relevant in the Spanish population of patients with fibromyalgia, fundamentally “Drive a car” and “Do yardwork.”

Criteria 3. The structural validity was only evaluated by the authors of FIQ215 who found two dimensions: one grouped the intensity of pain, sadness, stiffness, and in a lesser way limitations for labor; the other one grouped the items referred to anxiety, physical function, and fatigue.

Criteria 4. The evaluation of the convergent-discriminant validity was done in an unequal manner by the authors of the 4 adaptations: Gonzalez et al13,14 compared the store of the FIQ1 with variables such as age, intensity of the symptoms of fibromyalgia, the ACR tender point count, and the pain threshold evaluated using a pain meter of 9 predetermined points. The agreement was low, though significant, between the global store of the FIQ1 and the number of tender points (r=0.29) or the pain threshold (r=0.37). De Gracia et al28 compared the store of the FIQ1 with the number of tender points (r=0.37) and the ACR tender point count.
Table 2. GRAQoL Index (GI) of the 4 Spanish Versions of the FIQ*

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>FIQ1</th>
<th>FIQ2</th>
<th>FIQ3</th>
<th>FIQ4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Translation and retranslation</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>2. Pilot study of the adaptation</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>3. Structural validity</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Convergent-discriminant validity</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5. Sensibility in different populations</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Internal trustworthiness</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>7. Test-retest reproducibility</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>8. Sensibility to change</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td><strong>GI</strong></td>
<td>56%</td>
<td>50%</td>
<td>75%</td>
<td>31%</td>
</tr>
</tbody>
</table>

* A score of 0 to 2 is assigned according to the degree of compliance of each one of the enumerated criteria. 0 indicates has not been done or is unknown; 1, has been done but is insufficient; 2, has been done. The GI is obtained using the following formula:

\[ GI = \frac{\text{Sum of Scores}}{\text{Maximum Possible Score}} \times 100 \]

Table 3. Test-Retest Reproducibility of the Spanish Versions of the FIQ and Their Comparison to the Original Version*

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>FIQ1</th>
<th>FIQ2</th>
<th>FIQ3</th>
<th>FIQ4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item 1</td>
<td>0.88</td>
<td>–</td>
<td>0.79</td>
<td>0.56</td>
</tr>
<tr>
<td>Item 2</td>
<td>0.74</td>
<td>–</td>
<td>0.68</td>
<td>0.83</td>
</tr>
<tr>
<td>Item 3</td>
<td>0.71</td>
<td>–</td>
<td>0.83</td>
<td>0.67</td>
</tr>
<tr>
<td>Item 4</td>
<td>0.82</td>
<td>–</td>
<td>0.76</td>
<td>0.68</td>
</tr>
<tr>
<td>Item 5</td>
<td>0.70</td>
<td>–</td>
<td>0.75</td>
<td>0.53</td>
</tr>
<tr>
<td>Item 6</td>
<td>0.34</td>
<td>–</td>
<td>0.66</td>
<td>0.12</td>
</tr>
<tr>
<td>Item 7</td>
<td>0.74</td>
<td>–</td>
<td>0.61</td>
<td>0.64</td>
</tr>
<tr>
<td>Item 8</td>
<td>0.83</td>
<td>–</td>
<td>0.60</td>
<td>0.63</td>
</tr>
<tr>
<td>Item 9</td>
<td>0.76</td>
<td>–</td>
<td>0.58</td>
<td>0.73</td>
</tr>
<tr>
<td>Item 10</td>
<td>0.70</td>
<td>–</td>
<td>0.67</td>
<td>0.91</td>
</tr>
<tr>
<td><strong>FIQ total</strong></td>
<td>0.89 (50)</td>
<td>–</td>
<td>0.82 (92)</td>
<td>0.81 (29)</td>
</tr>
</tbody>
</table>

*The test-retest reproducibility is unknown for FIQ2 and some partial aspects of FIQ. FIQ indicates Original FIQ; a, number of patients included in each study; r, Pearson correlation coefficient; rS, Spearman correlation coefficient. The method for evaluating the test-retest reproducibility of FIQ was different from the usual. This indicates that the correlations of this item did not reach statistical significance (P>0.05).

The internal trustworthiness showed similarly results in versions FIQ1 and FIQ3, with an alpha Cronbach coefficient in both of 0.82 for the group of the 10 principal items. Of the FIQ2 version we evaluated the internal consistency of 8 out of the 10 items (r=0.93), after excluding the analysis of the items referring to days in which the patient felt good or lost working days. Internal consistency was not evaluated for FIQ4.

Criteria 6. The internal trustworthiness showed similar results in versions FIQ1 and FIQ3, with an alpha Cronbach coefficient in both of 0.82 for the group of the 10 principal items. Of the FIQ2 version we evaluated the internal consistency of 8 out of the 10 items (r=0.93), after excluding the analysis of the items referring to days in which the patient felt good or lost working days. Internal consistency was not evaluated for FIQ4.

C. Impact of Publication

Only FIQ3 has been published in a MedLine indexed journal.14,21 FIQ2 and FIQ3 have been published in...
journals.10,12,13 and FIQ2, after its presentation as a doctoral thesis14 and in the ACR meeting,15 has not been published elsewhere.

Discussion

The transcultural adaptation of a health measurement instrument has turned, in the past few years, into a relatively standardized process14,15,25 and its steps can be summarized in a schematic form in the 11 criteria of the GRAQoL index, of which we only used the 8 applicable to the type of instrument represented by the FIQ in this study (Table 2). The FIQ, developed by González et al.16 was, chronologically, the first Spanish version of the FIQ, although it had the inconvenience of a scarce diffusion. The GRAQoL index showed an acceptable development level, but the semantic analysis showed an excessively poor agreement with respect to the original FIQ, not explained by the transcultural adaptation process. Manuel de Gracia et al developed the first version of FIQ to be published in a journal (FIQ3).17 That study gave an interesting factor analysis, though its results were different from those found in the original FIQ by Burckhardt et al.12 The semantic equivalent of this version with respect to the original was elevated and its level of development was relatively acceptable, but no piloting with patients was done. The number of patients included in the evaluation of the psychometric characteristics was scarce (41) which motivated the unexpectedly low correlation to the type of instrument represented by the FIQ in this study (Table 2). The FIQ, developed by González et al.16 was chronologically, the first Spanish version of the FIQ although it had the inconvenient of a scarce diffusion. The GRAQoL index showed an acceptable development level, but the semantic analysis showed an excessively poor agreement with respect to the original FIQ, not explained by the transcultural adaptation process. Manuel de Gracia et al developed the first version of FIQ to be published in a journal (FIQ3).17 That study gave an interesting factor analysis, though its results were different from those found in the original FIQ by Burckhardt et al.12 The semantic equivalent of this version with respect to the original was elevated and its level of development was relatively acceptable, but no piloting with patients was done. The number of patients included in the evaluation of the psychometric characteristics was scarce (41) which motivated the unexpectedly low correlation to the type of instrument represented by the FIQ in this study (Table 2). The FIQ, developed by González et al.16 was chronologically, the first Spanish version of the FIQ although it had the inconvenient of a scarce diffusion. The GRAQoL index showed an acceptable development level, but the semantic analysis showed an excessively poor agreement with respect to the original FIQ, not explained by the transcultural adaptation process. Manuel de Gracia et al developed the first version of FIQ to be published in a journal (FIQ3).17 That study gave an interesting factor analysis, though its results were different from those found in the original FIQ by Burckhardt et al.12 The semantic equivalent of this version with respect to the original was elevated and its level of development was relatively acceptable, but no piloting with patients was done. The number of patients included in the evaluation of the psychometric characteristics was scarce (41) which motivated the unexpectedly low correlation
discernible validity16 and the sensibility to change17 were especially interesting. Once the comparative study was finalized it is important to point out that the recent publication of an updated version of the original FIQ26 that has definitely established the scoring system of 0 to 100, has incorporated the consideration of the domestic work in items 3 and 4, and has substituted the VAS of the last 7 items for graded scales (0 to 10) and has added a sub item (“climb stairs”) to the physical function scale. In this sense, our work team has proposed the elaboration of a fan updated version of FIQ for the Spanish population that, parting from FIQ3, takes into consideration some important aspects of the other Spanish versions of the FIQ and the recent updated original version.

Acknowledgment

To Dr Cayetano Alegre, Manuel de Gracia, Javier Rivera, and Isabel Salvat for their collaboration in providing all of the information on their versions of the FIQ that was requested. To the medical team of the Hospital de Sant Vicent (Alicante) for their collaboration in lending the microphotographic version of the doctoral thesis of FIQ which today is out of print. To Jessica Gorlin, our bilingual translator and friend.

References


