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) Methods. 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.

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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 FIQ4 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.

**Palabras clave:** Fibromialgia. Calidad de vida. Cuestionarios. Traducciones. Estudios de validación.

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**Introduction**

Fibromyalgia is a multidimensional illness characterized by generalized chronic pain and the frequent coexistence of fatigue, sleep disorders, anxiety, depression, and multiple other affections 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.11,12 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 al13 in 1991, is an self-administered questionnaire of 10 items. The first item, named scale of physical function, is formed by another 10 items, 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 was 0 to 100 because the authors opted to find the arithmetic mean of the group of items of the questionnaire. The second version, FIQ2, is the work of M. de Gracia et al (1991, US) and it was published in a Spanish psychology journal.14 A particularity of this version was that it transformed the VAS of the last 7 items into a numerical scale. The psychometric characteristics were evaluated in a simple outpatient and the scoring range employed was 0 to 100. 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 equivalence 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,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,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>70% indicated a good level of questionnaire development, a GI between 50% and 70% had an acceptable level and if <50% the development level was poor. The 4 versions were independently evaluated by the 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.
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 questionnaire 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 in 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. In a complementary fashion, these results were compared to the ones of the original version of the FIQ.
8. Sensibility to change. The presence of a sensibility to change analysis of the questionnaires alter some therapeutic intervention previously considered effective was evaluated.

C. Impact of Publication
A MedLine literature search using the key words “fiq” and “Spanish” or “fibromyalgia impact questionnaire” and “Spanish.” In a complimentary manner we contacted the authors of the 4 versions of FIQ and the literature databases of the Consejo Superior de Investigaciones Científicas (CSIC).

Results
A. Semantic Equivalence
FIQ4 had the maximum agreement with the original FIQ. (Table 1) because 16 items (84%) were classified as “A,” and none were classified as “no agreement” with the original version. The least agreement was found with FIQ1, while versions FIQ2 and FIQ3 were situated in an intermediate position. For example, items A: “Ir a la compra” (FIQ1), “Ir de compras” (FIQ2), “Hacer la compra” (FIQ3), or “Ir a comprar” (FIQ4) were considered equivalent to the original “Do shopping.”

~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 GI 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 FIQ3 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 FIQ3 and FIQ4 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: González et al15 compared the punctuations of the FIQ3 with variables such as age, intensity of the symptoms of fibromyalgia, the ACR tender store punctuations of the FIQ1 with variables such as age, intensity of the symptoms of fibromyalgia, the ACR tender store punctuations 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 score of the FIQ, and the number of tender points (r=0.29) or the pain threshold (r=0.37). De Graica et al17 compared the store
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The FIQ showed a moderate correlation with item 5 (pain) of the ACR tender points. The VAS of pain today showed a correlation with the FIQ.

**Test-Retest Reproducibility**

The test-retest reproducibility was studied by repeating the administration of the questionnaire after 1 week. Their results were similar in versions FIQ1 and FIQ2. The test-retest reproducibility of the Spanish versions of the FIQ and Their Comparison to the Original Version.

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

<table>
<thead>
<tr>
<th>FIQ</th>
<th>FIQ1</th>
<th>FIQ2</th>
<th>FIQ3</th>
<th>FIQ4</th>
</tr>
</thead>
<tbody>
<tr>
<td>r</td>
<td>rS</td>
<td>rS</td>
<td>rS</td>
<td>rS</td>
</tr>
<tr>
<td>Item 1</td>
<td>0.88</td>
<td>−</td>
<td>0.79</td>
<td>0.79</td>
</tr>
<tr>
<td></td>
<td>0.56</td>
<td>0.95</td>
<td>0.95</td>
<td></td>
</tr>
<tr>
<td>Item 2</td>
<td>0.74</td>
<td>−</td>
<td>0.68</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>0.32</td>
<td>0.94</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Item 3</td>
<td>0.70</td>
<td>−</td>
<td>0.75</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>0.53</td>
<td>0.94</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Item 4</td>
<td>0.82</td>
<td>−</td>
<td>0.76</td>
<td>0.33</td>
</tr>
<tr>
<td></td>
<td>0.53</td>
<td>0.94</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Item 5</td>
<td>0.70</td>
<td>−</td>
<td>0.75</td>
<td>0.53</td>
</tr>
<tr>
<td></td>
<td>0.53</td>
<td>0.94</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Item 6</td>
<td>0.34</td>
<td>−</td>
<td>0.66</td>
<td>0.12</td>
</tr>
<tr>
<td></td>
<td>0.12</td>
<td>0.57</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Item 7</td>
<td>0.74</td>
<td>−</td>
<td>0.64</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td>0.64</td>
<td>0.57</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Item 8</td>
<td>0.83</td>
<td>−</td>
<td>0.60</td>
<td>0.63</td>
</tr>
<tr>
<td></td>
<td>0.63</td>
<td>0.57</td>
<td>0.69</td>
<td></td>
</tr>
<tr>
<td>Item 9</td>
<td>0.76</td>
<td>−</td>
<td>0.58</td>
<td>0.73</td>
</tr>
<tr>
<td></td>
<td>0.73</td>
<td>0.70</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>Item 10</td>
<td>0.70</td>
<td>−</td>
<td>0.67</td>
<td>0.91</td>
</tr>
<tr>
<td></td>
<td>0.91</td>
<td>0.70</td>
<td>0.94</td>
<td></td>
</tr>
<tr>
<td>FIQ total</td>
<td>0.89 (50)</td>
<td>0.82 (92)</td>
<td>0.81 (29)</td>
<td>0.57 (2)</td>
</tr>
</tbody>
</table>

*The test-retest reproducibility is unknown for FIQ2 and some partial aspects of FIQ. FIQ and Their Comparison to the Original Version.

**Tabla 1. 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 retrotranslation</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</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>GRAQoL Index:</td>
<td>56%</td>
<td>50%</td>
<td>75%</td>
<td>31%</td>
</tr>
</tbody>
</table>

*The GRAQoL index is a score that is assigned according to the degree of compliance of each criterion; 1, has been done or is unknown; 2, has been done, 3, has been done but is insufficient; 4, has been done. The GI is obtained using the following formula:

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

C. Impact of Publication

Only FIQ has been published in a MedLine indexed journal. The sensibility to change was satisfactorily evaluated by the authors of FIQ3, through a parallel clinical trial that compared the efficacy of one program of aerobic fitness evaluated.
journals, and FIQ2, after its presentation as a doctoral thesis and in the ACR meeting, 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 process and its steps can be summarized in a schematic form in the 11 criteria of the GRAGoL 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, was chronologically, the first Spanish version of the FIQ, although it had the inconvenient of a scarce diffusion. The GRAGoL 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 (FIQ2). That study gave an interesting factor analysis, though its results were different from those found in the original FIQ by Burckhardt et al. 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 between the anxiety scales and of the FIQ and the SLC-12.

The most notable aspect of FIQ4, Developer by Monterde et al, was its elevated agreement level with the original. Nonetheless, was relatively poor and the 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 between the anxiety scales and of the FIQ and the SLC-12 which motivated the unexpectedly low correlation between the anxiety scales and of the FIQ and the SLC-12.

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The most notable aspect of FIQ4, Developer by Monterde et al, was its elevated agreement level with respect to the original, with an acceptable level of semantic agreement with respect to the original. Its level of development, nonetheless, was relatively poor and the number of patients, scarce (41). This fact probable motivated a low test-retest reproducibility of items 2 and 4 of this version (Table 3). Lastly, the FIQ2 version of Rivera et al was the one with a highest level of development, with a semantic agreement considered acceptable with respect to the original FIQ and a publication in a journal with a larger impact, being the only one indexed on MedLine. The study of convergent-discriminant validity and the sensibility to change 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 FIQ2 that has definitely established the scoring system of 0 to 100, has incorporated the consideration of the domestic work tasks items 3 and 4, 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 FIQ2, takes into consideration some important aspects of the other Spanish versions of the FIQ and the recent updated original version.

Acknowledgment

To Drs 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 (Alacant) for their collaboration in lending the microphotographic version of the doctoral thesis of FIQ which was requested today is out of print. To Jessica Góerin, our bilingual translator and friend.

References