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Transcultural adaptation and validation of the Celiac Disease Quality of Life (CD-QOL) survey, a specific questionnaire to measure quality of life in patients with celiac disease

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ABSTRACT

Introduction: celiac disease is a chronic condition that requires continued treatment, with the resultant impact on health-related quality of life (HRQOL) of people who suffer it. Most studies in this field have used generic questionnaires to measure HRQOL in celiac patients. It was therefore decided to conduct a study to translate into Spanish and validate a specific questionnaire for celiac disease, the Celiac Disease Quality Of Life Survey (CD-QOL).

Objectives: to translate and validate in Spanish the specific celiac disease questionnaire CD-QOL.

Methods: a multicenter, prospective, observational study was designed consisting of two phases: In the first phase, the questionnaire was translated and adapted into Spanish using the translation/back translation procedure and an understandability study. In the second phase, internal consistency of the translated questionnaire was analyzed. For this, results of the CD-QOL were compared to those of EuroQol and the Daily Fatigue Impact Scale (D-FIS). Understandability of the translated and adapted questionnaire was tested in six patients, and the validation study was done in 298 celiac patients (201 treated with a gluten-free diet and 97 at diagnosis).

Results: in both celiac groups, Cronbach's alpha coefficient was high (0.90), feasibility was excellent (99.2 % of patients completed all questions), and there were no ceiling and floor effects. Spearman correlation to EuroQol and D-FIS was statistically significant ($p < 0.05$). CD-QOL score was different depending on whether state of health was good, fair, or poor based on the EuroQol score.

Conclusion: the Spanish version of the CD-QOL is a valid tool for measuring HRQOL in celiac patients.

Key words: Quality of life. Celiac disease. Validation. Questionnaire. CD-QOL.

INTRODUCTION

Most instruments for measuring health-related quality of life (HRQL) have been developed in countries with languages other than Spanish based on their cultural characteristics. In order to use instruments for measuring HRQOL in a setting other than the original setting, a literal translation is not sufficient. Transcultural adaptation of the questionnaire, followed by a validation to show its equivalence to the original, is also required (1). Transcultural adaptation of these questionnaires is less costly than development of a new tool, and also has the advantages of being faster and allowing for availability of questionnaires for standardized use in international studies, which allows for comparisons between different countries and cultures. Such adaptation should be done using methods that ensure the conceptual and semantic equivalence to the original questionnaire, understanding by patients of the adapted version, and preservation of adequate psychometric characteristics in the new version (2-4).

In Spain, different HRQOL measurement instruments, including both mental health questionnaires such as Golbdberg's General Health Questionnaire (5) and generic and specific questionnaires for different gastrointestinal and non-gastrointestinal diseases (6), have been adapted into Spanish. As regards celiac disease, it is well known that it has a negative impact on the health of patients, perceived by them as an impairment in all life dimensions (7).

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Impairment of HRQOL in celiac disease has mainly been tested using generic questionnaires such as SF-36, EuroQol, or the Gastrointestinal Quality of Life Index (8-10). Duly validated HRQOL questionnaires specific for celiac disease are not currently available. Four specific questionnaires to measure HRQOL in English-speaking celiac patients are available. Two of these, the Celiac Disease DUX (CDDUX) and the Celiac Disease Quality of Life Instrument for North American Children, were designed for children (11,12), while the other two instruments, the Coeliac Quality of Life Survey (CD-QOL) and the Celiac Disease Questionnaire (CDQ), were designed for adult celiac patients (13,14). However, none of them have been translated and validated in the Spanish-speaking population.

The steps recommended in the international literature for a transcultural adaptation are as follows: Translation of questionnaire instructions and items, item and category scaling, and studies of the validity and reliability of the final version (15,16). In addition to the above properties, sensitivity to change should also be assessed, particularly if the instrument is to be used in clinical trials (7).

The procedure most commonly used for the first part of the transcultural adaptation process in translation/back translation. This procedure consists of translation into Spanish followed by back translation into the original language by two bilingual translators, in order to compare the suitability of the last translation with the original version (18). This comparison of the adapted to the original version should be made by an expert group together with the translators' team in order to identify any semantic, syntactic, and conceptual problems with the items and, if found, to propose alternative versions. Once questionnaire translation is completed, it is advisable to conduct a pilot study with all possible degrees of disease to assess understanding of the questionnaire and to ascertain questionnaire feasibility or administration time. Some questionnaires include scaled items, i.e. each item has a different relative value representing the preference of individuals for a given item or health status. In these cases, the scaling method used in the original version should be replicated to determine the scalar equivalence and to ensure that the metric properties are kept in the Spanish questionnaire (19).

Once the questionnaire translation process is completed, any modifications that may have affected questionnaire validity and reliability must be ruled out. It is therefore advised to test the validity (20), homogeneity (21), and reproducibility (22) of the new questionnaire. If the adapted instrument shows psychometric properties similar to or higher than the original instrument, it may be considered as culturally acceptable.

Due to the lack of HRQOL measurement questionnaires specific for celiac disease in Spanish, all HRQOL studies conducted have used generic questionnaires, having less sensitivity and capacity to detect changes over time. The purpose of this study was to translate into Spanish the specific questionnaire for celiac disease in adults of the Coeliac Quality of Life Survey (CD QOL), and to establish whether the Spanish version retains adequate psychometric properties. The CD-QOL is a self-administered questionnaire consisting of 20 questions distributed into four dimensions –dysphoria, limitations, health concerns, and inadequate treatment– that should be answered in a Likert scale. This questionnaire was chosen because it was designed and validated for the adult population with celiac disease, has been shown to be equally valid in other European Union languages (23) and, unlike CDQ, is less focused on physical and psychical symptoms and more focused on disease-related needs, according to authors of the original CD-QOL.

MATERIAL AND METHODS

The study was approved by the Clinical Research Ethics Committee of "Hospital Universitari Vall d'Hebron" with code PR-AG-254-2012, and consisted of an initial phase of translation and assessment of understanding and a second validation phase.

Phase 1. Questionnaire translation into Spanish

For linguistic adaptation of CD-QOL, the object of validation, local bilingual Spanish-English translators made an initial translation. Translation of the text of questions and answers was revised at a translators' meeting, where a preliminary initial Spanish version of the CD-QOL was agreed. A separate translator subsequently made a back translation into English of the preliminary Spanish version. The final Spanish version was agreed at a new meeting.

Understanding of the questionnaire was then assessed. For this, the CD-QOL in Spanish was distributed to a group of patients diagnosed according to the criteria given in the following section. Patients completed the CD-QOL questionnaire in Spanish and underwent a structured interview to assess understandability of each question in the questionnaire. For this, participants were asked to answer for each questionnaire item the following questions: Have you had problems to understand the question? How would you ask the question? Do you think that a logical relationship exists between the question and the answer? The final Spanish version of the CD-QOL questionnaire was based on the result of the interview.

Phase 2. Questionnaire validation

A multicenter, national, prospective, observational, cross-sectional was designed in patients with celiac disease diagnosed according to the commonly accepted criteria: Positive IgA anti-tissue transglutaminase antibodies with

compatible endoscopic biopsy of the second or more distal portion of the duodenum in a patient with gluten in his/her diet at the time of biopsy (24,25). To participate in the study, patients should have 16 to 75 years of age. Two groups of patients were enrolled into the study, a first group already diagnosed who followed a gluten-free diet, and a second group of patients newly diagnosed with celiac disease that had not started a gluten-free diet yet. Patients with celiac disease who could not read or understand questionnaires, with other concomitant relevant chronic disease, or who refused to sign informed consent were excluded from the study.

Patients were stratified into two groups based on the proposed objectives: A group of patients with newly diagnosed celiac disease before treatment start and a group of patients previously diagnosed celiac disease treated with a gluten-free diet.

Sample size estimation

To establish difference between the groups with an expected difference in means of 4.0 and a standard deviation of 13.0 with an alpha error of 1 %, a minimum sample size of 230 patients was estimated.

Procedure

Patients who met the criteria for participation in the study were explained the protocol and signed an informed consent. Quality of life questionnaires were then administered, and clinical and epidemiological data were collected. Variable measured in this study phase included quality of life, monitoring of adherence to gluten-free diet and assessment of fatigue.

Quality of life

Quality of life was measured by administering the Spanish version of the specific questionnaire for patients to be validated, CD-QOL, and the generic EuroQol-5D questionnaire. EuroQol-5D (26,27) consists of two parts. The first part assesses health state through five dimensions: Mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each of these dimensions includes three items related to three severity levels. As the result, 243 different health states may be obtained. In the second part, patients score their health state in a visual analogue scale ranging from 0 (worst health state imaginable) and 100 (best health state imaginable).

All patients were administered the CD-QOL questionnaire previously translated in phase 1 of the study. Administration of the questionnaire provides an overall index expressed in a scale ranging from 0 (worst quality of life) and 100 (best quality of life), and four dimensions *(dysphoria, limitations, health concerns, inadequate treatment),* each expressed on the same 0-100 scale, where 100 corresponds to the best quality of life. To calculate questionnaire score, instructions given in the original publication were followed.

Monitoring of adherence to gluten-free diet

Adherence to diet of patients in the group receiving the gluten-free diet was assessed using the adaptation of the self-administered Morisky et al. questionnaire (28). This questionnaire consists of four items referring to treatment compliance which are answered using a binary scale (yes/no). The first two questions relate to unintentional non-adherence (I sometimes forget to follow the diet/I sometimes am not very careful in following diet), while the last two questions relate to intentional non-adherence (when I feel better, I sometimes stop diet/if I do not feel well, I sometimes stop diet). If answer to any of the questions 3 or 4 is yes, patient is considered to have voluntarily discontinued the diet. If answer to any of the questions 1 or 2 is yes, patient is considered to have involuntarily stopped the diet due to carelessness or forgetfulness. If no question is answered yes, diet adherence is considered to be good. This questionnaire was originally intended to be used for monitoring drug intake, and has therefore been adapted by replacing a drug by gluten-free diet and adding a fifth answer: I never forget to follow diet. This adaptation has previously been used in other studies of adherence to gluten-free diet in celiac disease (9).

Assessment of fatigue

Severity of subjective perception of fatigue was assessed using the Daily Fatigue Impact Scale (D-FIS). The D-FIS consists of eight items that assess impact of fatigue on daily quality of life. Each item is scored on a scale ranging from 0 (no problem) to 4 (extreme problem). Total score ranges from 0 and 32 points. The D-FIS questionnaire has been translated into Spanish and adequately validated (29), and has previously been used in celiac disease (30).

Based on the answers given in the questionnaires, the translated CD-QOL questionnaire was found to have the following psychometric properties:

– *Internal validity.* Internal validity of the questionnaire was established by measuring its feasibility (completion of all questions in the questionnaire), ceiling effect, floor effect, and internal consistency according to Cronbach's alpha.
– *Convergent validity.* Convergent validity quantifies whether the questionnaire measures what is actually intended to measure. As no well-defined, gold standard measure of quality of life is available for celiac patients; convergent validity was estimated by the correlation between the translated questionnaire and

other instruments that measure similar concepts (quality of life according to EuroQol and D-FIS).
– *Discriminant validity.* This assesses the capacity of the instrument to provide different scores when patients have different degrees of quality of life. Discriminant validity was evaluated by comparing the scores of treated and untreated patients.

Statistical analysis

Normality of variables was analyzed using a Kolmogorov test. As some variables did not follow a normal distribution, the median and 25^{th}-75^{th} percentiles were used for descriptive statistics, and the corresponding nonparametric tests (Spearman correlation to correlate the quality of life questionnaire translated to EuroQol and D-FIS, and a Mann-Whitney test to determine the existence of statistical differences between quantitative variables) for comparative statistics. A value of $p < 0.05$ was considered statistically significant.

RESULTS

Phase 1. Questionnaire translation into Spanish

The first phase of the project included translation, linguistic adaptation, and assessment of understandability of the questionnaire. After translation and back translation, a preliminary questionnaire with the same structure and contents as the original questionnaire was prepared. Ten statements were modified in the revision of this preliminary questionnaire by translators. To assess understandability of the revised preliminary questionnaire, this was administered to six women with previously known and treated celiac disease. Completion of the preliminary questionnaire by this group showed a 50 % feasibility (proportion of patients answering all questions), with no change suggested for answers and changes suggested for seven statements. The final translated questionnaire, resulting from introduction of the suggested changes, is enclosed in the Annex.

Phase 2. Questionnaire validation

Participants

The study was conducted in seven Spanish hospitals, where the questionnaire was administered to 299 patients. One of these patients was excluded from the study due to inadequate questionnaire completion. Of the 298 patients enrolled, 201 were already known to have celiac disease and were on a gluten-free diet, while 97 had recently been diagnosed with celiac disease and received no treatment. Table I summarizes the main characteristics of patients. No statistically significant differences were found between the treated and untreated groups in smoking, form of presentation, educational level, family situation, or place of residence, although age was older in the pre-treatment group.

As regards treatment adherence, most patients in the group on a gluten-free diet (67.5 %) stated that they never forgot to follow the diet, which has been considered as good treatment adherence. Unintentional non-adherence was found in 29.5 % of patients due to forgetfulness (20.4 %) or carelessness (9.1 %). Intentional non-adherence was found in 2.0 % of patients who discontinued the diet because they felt well, while no case of non-adherence despite feeling unwell was detected. The remaining 1.0 % of patients did not answer the Morisky questionnaire.

Results of the CD-QOL

Figure 1 shows the histogram of distribution frequencies of the overall CD-QOL score in patients previously diagnosed and on a gluten-free diet and in the pre-treatment group. The histogram shows a greater number of observations in the group on a gluten-free diet and that distribution is shifted to the right in both groups, which suggests a trend to high scores in both groups.

Individual values of the overall CD-QOL score for patients on a gluten-free diet and from the pre-treatment group, as shown in figure 2, show no floor effect, as no patient had the minimum score of 0 points. The maximum score of 100 points in the overall scale of the questionnaire was not reached either, which suggests an adequate ceil-

Table I. Epidemiological characteristics of study patients

	Group with GFD	*Pre-treat. Group*
n	201	97
Age	38.0 [24.2-46.7]	43-0 [34.5-53.5]*
Sex (% male)	26.4 %	32.3 %
Smoking (% smokers)	17.9 %	27.1 %
Time since onset (months)	50.0 [24.0-132.0]	
Classical clinical MAS (%)	25.8 %	17.4 %
Associated diseases (%)	31.3 %	32.3 %
Education (no/primary/secondary/university)	2/30/85/79	1/22/46/28
Family situation (single/married/other)	96/89/16	30/50/17
Place of residence (<1 x 10^5/1 x 10^5 to 5 x 10^5/ > 5 x 10^5 hb)	110/69/22	45/46/6

Results are given as absolute numbers, percentage, or medians with [25^{th}-75^{th} percentile].
GFD: Gluten-free diet; MAS: Malabsorption syndrome. *$p < 0.01$.

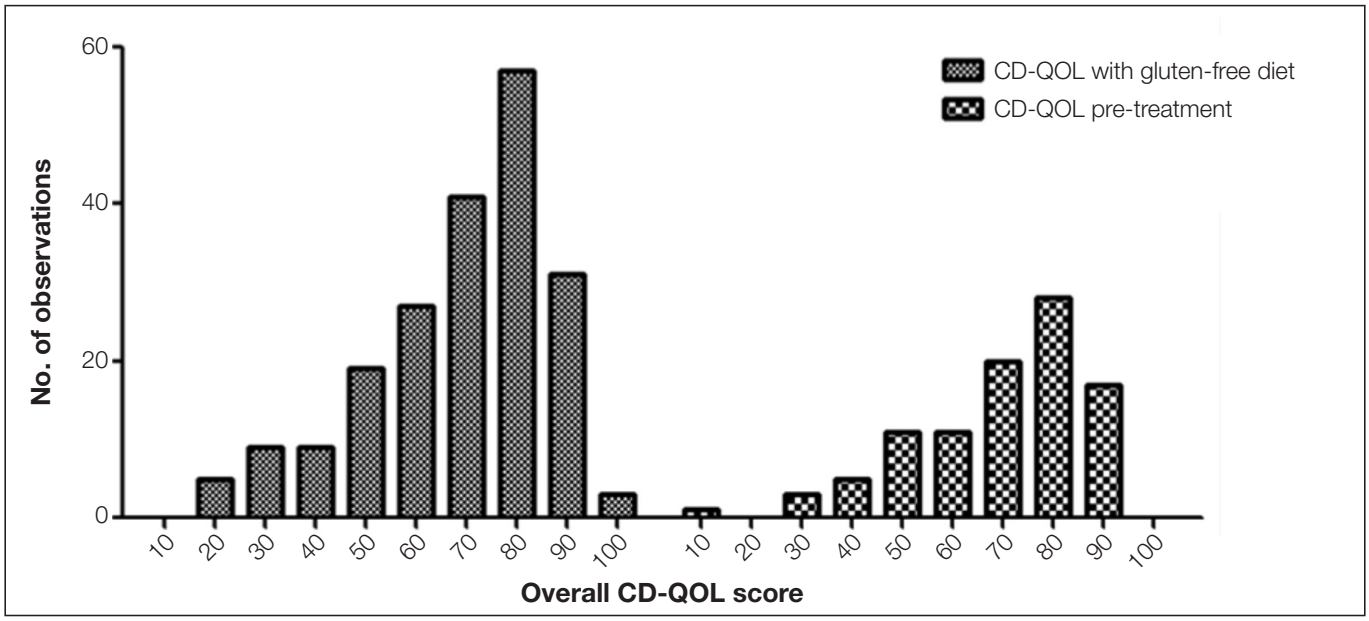

Fig. 1. Histogram of frequency of overall CD-QOL score in the group diagnosed and treated with a gluten-free diet (dotted bars) and in pre-treatment patients (bars with squares).

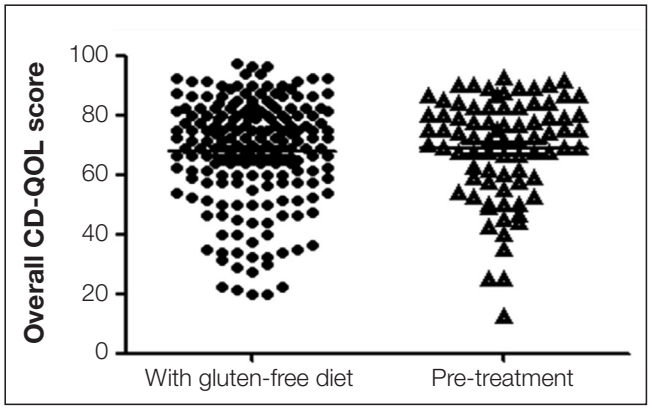

Fig. 2. Individual values of the overall CD-QOL score in the group of patients with known celiac disease treated with a gluten-free diet (circles) and in patients recently diagnosed with celiac disease before the start of treatment (triangles).

ing effect. Feasibility of the Spanish version of the questionnaire was excellent, as 99.3 % of patients answered all questions (only two patient left some question unanswered), which suggests a high completion rate. Reliability of the translated questionnaire was also adequate, with Cronbach alpha values of 0.90 for the overall scale and 0.905 and 0.895 for treated and pre-treatment groups respectively, a result suggesting the good internal consistency of the questionnaire.

To analyze the discriminant capacity of the Spanish version of the questionnaire, medians of the overall score with the EuroQol tariff and visual analogue scale and D-FIS in the pre-treatment and post-treatment groups were compared. Differences between the groups in the EuroQol and D-FIS scores were statistically significant for both the EuroQol tariff (0.87 [0.72-1.0] with diet *vs.* 0.72 [0.7-0.8] in the pre-treatment group, $p < 0.001$) and EuroQol visual analogue scale (80.0 [68.5-90.0] with diet *vs.* 60.0 [50.0-70.0] in the pre-treatment group, $p < 0.001$), and impact on perceived fatigue (2.0 [0.0-6.7] with diet *vs.* 7.0 [1.2-13.7] in the pre-treatment group, $p < 0.001$). All of this suggested a better quality of life and a lower perception of fatigue in the group of patients on a gluten-free diet as compared to untreated celiac patients. However, overall CD-QOL scores were similar in both patient groups (71.2 [58.1-81.2] with diet *vs.* 73.1 [57.8-82.5] in the pre-treatment group, p = ns). The similarity of the CD-QOL results between both groups was confirmed by the effect size index, which was 0.007, suggesting a significant overlapping between the two groups.

To study in more depth the discriminant capacity of the Spanish version of CD-QOL, overall CD-QOL scores were analyzed in three patient subgroups categorized by quality of life based on the result of the visual EuroQol scale: Good quality of life (visual scale score ranging from 70 and 100), fair quality of life (visual scale score ranging from 50 and 69), and poor quality of life (visual scale score ranging from 0 and 50) according to the previously validated distribution (31). In patients on a gluten-free diet, 150 (74.6 %) had a good quality of life, while only 34 (35.0 %) of patients from the pre-treatment group reported a good quality of life according to the above criterion ($p < 0.001$ according to the Fisher's exact test). Median overall CD-QOL score was statistically different in the three quality of life subgroups so that, according to the results of the Kruskal-Wallis test and identification of the different variables using a Dunn's multiple comparison test, the overall CD-QOL score was higher in the subgroup with good quality of life, lower in the subgroup with fair quality

of life, and even lower in the subgroup with poor quality of life (Fig. 3).

However, when the results obtained in the four dimensions of CD-QOL were compared between patients on a gluten-free diet and untreated patients, significant differences were seen between both. As shown in table II, score in the "dysphoria" dimension was statistically higher in the group on a gluten-free diet. For "inadequate treatment", statistically significant differences, although of doubtful clinical value, were found, as medians for both patient groups were similar. As regards median score in each dimension, according to the nonparametric Kruskal-Wallis ANOVA test, "dysphoria" was given the highest score in both groups and "inadequate treatment" the lowest score, also in both groups ($p < 0.001$).

An analysis was made of potential differences in quality of life depending on whether celiac disease was suspected based on serological or clinical data. For this, data from the group of pre-treatment patients, subdivided into those with serological (n = 18) and clinical (n = 79) suspicion, were analyzed. Medians in the two quality of life questionnaires tended to be worse in the subgroup with clinical suspicion, although differences did not reach statistically significant differences for both the overall CD-QOL index (77.5 [60.6-84.3] *vs.* 71.2 [56.8-80.0] respectively, p = ns) and the EuroQol tariff (0.76 [0.72-0.85] *vs.* 0.72 [0.67-0.80] respectively, p = ns), and visual analogue scale of EuroQol (70.0 [53.7-70.5] *vs.* 60.0 [50.0-70.0] respectively, p = ns).

As stated above, convergent validity of the questionnaire was established based on Spearman correlation between overall CD-QOL score and EuroQol and D-FIS indices. Correlations obtained were statistically significant (Table III) for all measurements, both for quality of life measured by the EuroQol tariff and visual analogue scale and for perception of fatigue as measured by D-FIS.

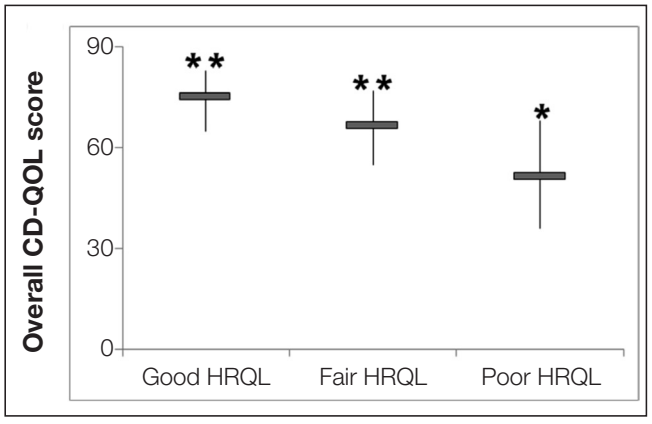

Fig. 3. Capacity of the Spanish version of CD-QOL to discriminate between good, regular, and poor health states based on the visual analogue scale score of the EuroQol. The overall CD-QOL index score was significantly different in the three subgroups depending on degree of quality of life (HRQL).

Table II. Median score and percentiles [25th-75th] obtained in each CD-QOL dimension in the group on a gluten-free diet (n = 201) and pre-treatment patients (n = 97)

	Overall CD-QOL Group treated with GFD	*Overall CD-QOL Pre-treatment group*	*p*
Overall	71.2 [57.8-81.2]	73.1 [57.8-82.5]	ns
Dysphoria	94.0 [75.0-100.0]	88.0 [69.0-94.0]	p < 0.01
Limitations	72.0 [53.0-83.0]	75.0 [62.5-86.0]	ns
Health concerns	70.0 [50.0-82.5]	70.0 [47.52-85.0]	ns
Inadequate treatment	50.0 [25.0-50.0]	50.0 [38.0-63.0]	p < 0.01

Results are given on a 0-100 scale. where 100 corresponds to the best quality of life.
GFD: Gluten-free diet; ns = Not significant.

DISCUSSION

The advantages of having specific instruments to measure HRQL in each chronic disease stimulate the creation of questionnaires. Many of these are designed in English for an Anglo-Saxon population and, because of the difficulty involved in creating and validating new questionnaires are usually translated and validated in the different languages and cultures. This led us to undertake this project, designed to translate and validate the CD-QOL, a specific questionnaire to measure quality of life in adult celiac disease. The project consisted of two phases, a first phase of translation and verification of understandability of the questionnaire, and a second phase of validation of the

Table III. Nonparametric Spearman correlation between the overall CD-QOL index in Spanish and the results of the reference questionnaires used, EuroQol and the D-FIS fatigue scale, in the group on a gluten-free diet (n = 201) and pre-treatment patients (n = 97)

	Overall CD-QOL Group treated with GFD	*Overall CD-QOL Pre-treatment group*
EuroQol TARIFF Group treated with GFD	0.46 **	
EuroQol TARIFF Pre-treatment group		0.26*
Visual analogue scale Group treated with GFD	0.33**	
Visual analogue scale Pre-treatment group		0.36**
D-FIS in group treated with GFD	- 0.30**	
D-FIS in pre-treatment group		- 0.30**

GFD: Gluten-free diet; *p < 0.05; **p < 0.01.

main psychometric properties of the CD-QOL translated into Spanish.

The preliminary version, obtained after translation and back translation by bilingual Spanish-English translators, was evaluated in a limited number of patients to optimize its understandability and create the final version. The final questionnaire consists, like the original version, of 20 questions to be answered in a 1-5-point Likert scale. The overall CD-QOL score is therefore expressed in a 100-point scale (Annex). The questionnaire also has four dimensions (dysphoria, limitations, health concerns, and inadequate treatment) resulting in four scales also expressed in a 100-point scale.

The psychometric properties tested in this study were internal, convergent, and discriminant validity. A multicenter study where the corresponding questionnaires were administered to celiac patients on a gluten-free diet and previously untreated was conducted for this purpose. Sensitivity to change was therefore not analyzed because of the cross-sectional design of the study. Internal validity of the CD-QOL in Spanish has been shown to adequately comply with the properties of floor and ceiling effects, feasibility, and reliability, with a very high value of Cronbach's alpha in both the overall patient group and in the subgroups of patients on a gluten-free diet and previously untreated. As no specific reference test is available to measure quality of life in celiac patients, convergent validity of the questionnaire was assessed using the widely accepted generic EuroQol questionnaire, also used in these patients. The D-FIS, an instrument to measure subjective perception of fatigue which is also widely accepted and is used in Spanish in other chronic gastrointestinal diseases, was also used (32). Correlation between the overall CD-QOL scale in Spanish and the EuroQol and D-FIS questionnaires showed "r" values of 0.3-0.4, which suggested that the poorer the quality of life and the greater the perception of fatigue, the lower the CD-QOL score with statistical significance. This showed adequate validity of the tested questionnaire.

Finally, the capacity of CD-QOL in Spanish to discriminate between potentially different health states was assessed. For this, results found in the pre-treatment versus treated subgroups and in patients diagnosed based on serological *versus* clinical suspicion were compared. These groups were selected because there was evidence suggesting that HRQL measured with generic instruments could be different (33). Results of this study show no statistically significant differences between pre-treatment *versus* gluten-free diet groups and groups diagnosed based on serological versus clinical suspicion. It is currently unknown whether the original and the Italian versions of the CD-QOL allow for distinguishing the above groups, as no reference is made to them in the results of the original and Italian validations (14,23). The original validation mentions the existence of differences between the groups with serological and clinical suspicion not detected in our study. Although the study was not designed for this purpose, the lack of relevant differences between both patient groups could probably be related, amongst other things, to the fact that several questions in the questionnaire refer to aspects related to the diet, which cannot be adequately assessed yet by newly diagnosed patient who have not started to exclude gluten from their diets.

The Spanish CD-QOL, however, adequately detected the existence of differences between different pre-established health states according to the EuroQol, so that the CD-QOL score is statistically different in the good, fair, and poor health states as measured by EuroQol. These results would support use of CD-QOL to assess HRQL in celiac patients both at diagnosis and on subsequent monitoring.

The conclusion drawn from the results of this study is that an instrument to specifically measure quality of life in patients with celiac disease and which may be used in daily clinical practice is now available in Spanish.

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Annex. Statement of questions of the Spanish version of the CD-QOL questionnaire

1. Me siento limitado por esta enfermedad.
2. Me siento preocupado por lo que yo pudiera sufrir por esta enfermedad.
3. Me siento preocupado porque esta enfermedad me pueda causar otros problemas de salud.
4. Me siento preocupado por tener más riesgo de cáncer por esta enfermedad.
5. Me siento socialmente estigmatizado por tener esta enfermedad.
6. Me afecta estar limitado en mis comidas con mis compañeros.
7. Me afecta no poder comer comidas especiales como pasteles de cumpleaños o pizza.
8. Siento que la dieta es un tratamiento suficiente para mi enfermedad.
9. Siento que no hay disponibles suficientes elecciones de tratamiento.
10. Me siento deprimido a causa de mi enfermedad.
11. Me siento asustado por tener esta enfermedad.
12. Tengo la impresión de no saber suficiente acerca de la enfermedad.
13. Me siento abrumado por tener esta enfermedad.
14. Tengo problemas en mi vida social por tener mi enfermedad.
15. Tengo dificultades para viajar o hacer trayectos largos a consecuencia de mi enfermedad.
16. Tengo la impresión de no poder tener una vida normal a consecuencia de mi enfermedad.
17. Tengo miedo de comer fuera porque mi comida pueda estar contaminada.
18. Me siento preocupado por el riesgo de que algún familiar mío pueda tener la enfermedad celiaca.
19. Tengo la impresión de estar siempre pensando en la comida.
20. Estoy preocupado porque mi salud pueda afectarse a largo plazo.