



Original Article

Cultural Adaptation Into Spanish of the Airways Questionnaire 20, a Short Health-Related Quality-of-Life Questionnaire for the Clinical Evaluation of Asthma and Chronic Obstructive Pulmonary Disease

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ABSTRACT

Background and Objective. The routine use of health-related quality-of-life questionnaires in patients with chronic respiratory disease is limited due to the time required to complete them. The Airways Questionnaire 20 (AQ20) contains 20 easy-to-answer questions, making it ideal for use in routine practice. However, a Spanish version is not available. Our aim was to create a version of the AQ20 for use in Spain that would be equivalent to the original English questionnaire.

Method. The original questionnaire was adapted using the translation-backtranslation method. We evaluated the conceptual equivalence of the translation to the original questionnaire, classifying items as type A if they were fully equivalent, type B if they contained questionable wording, and type C if there were doubts about their equivalence. The items in categories B and C were re-examined by the researchers and translators, with input from the author of the original questionnaire and a group of patients. The final version was piloted among 30 patients.

Results. Low difficulty ratings were given to both the translation (3.45) and backtranslation (3.52). Sixty-five percent of the backtranslated items were considered to be fully equivalent to the original English items (type A), 15% were classified as type B, and 20% as type C. The final Spanish version, produced after discussion of items B and C, was administered to 15 patients with asthma (66% women; mean [SD] age, 53.13 [19.6] y) and 15 patients with chronic obstructive pulmonary disease (13% women; mean age, 67.8 [8.94] y). A Cronbach α of 0.92 was obtained.

Conclusion. The adaptation process produced a Spanish questionnaire that is conceptually equivalent to the English original, easy to understand, and satisfactory in terms of internal consistency.

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Adaptación transcultural al español del Airways Questionnaire 20 (AQ20), un cuestionario de calidad de vida abreviado para la evaluación clínica del asma y la EPOC

RESUMEN

Introducción y objetivos. El uso habitual de cuestionarios de calidad de vida relacionada con la salud en enfermedades respiratorias crónicas está limitado por el tiempo que requiere su cumplimentación. El Airways Questionnaire 20 (AQ20) consta de 20 ítems con un formato de respuesta sencillo, idóneo para aplicar en la práctica asistencial, pero aún no se dispone de una versión para su uso en España. Así pues, nuestro objetivo ha sido elaborar una versión del AQ20 en lengua española equivalente al original inglés.

Método. Para la adaptación del cuestionario utilizamos el método de traducción-retrotraducción. Evaluamos la equivalencia de cada uno de los ítems con los de la versión original clasificándolos como totalmente equivalentes (tipo A), con alguna expresión dudosa (tipo B) o de equivalencia dudosa (tipo C). Se volvieron a evaluar los ítems de tipo B y C mediante la discusión entre investigadores y traductores, con las aporta-

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ciones del autor del cuestionario y la consulta a un grupo de pacientes. Con la versión final se realizó un estudio piloto en 30 pacientes.

Resultados. Las puntuaciones de dificultad de traducción y retrotraducción fueron bajas (3,45 y 3,52, respectivamente). En cuanto a la equivalencia conceptual entre la versión retrotraducida y el cuestionario original, el 65% de los ítems se calificó de tipo A, el 15% de tipo B y el 20% de tipo C. Tras la discusión de los ítems B y C se elaboró la versión española final del AQ20, que se aplicó a 15 pacientes con asma (un 66% mujeres; edad media \pm desviación estándar: 53,13 \pm 19,6 años) y a otros 15 con enfermedad pulmonar obstructiva crónica (un 13% mujeres; edad media: 67,8 \pm 8,94 años), y se obtuvo un alfa de Cronbach de 0,92.

Conclusión. El proceso de adaptación ha permitido obtener un instrumento en español conceptualmente semejante al original inglés, de fácil comprensión y con una consistencia interna adecuada.

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Introduction

In recent years, health-related quality of life (HRQOL) has become an important outcome measure in epidemiologic studies and clinical trials. Nonetheless, in patients with asthma and chronic obstructive pulmonary disease (COPD), there is poor agreement between HRQOL scores and lung function variables^{1,2}; furthermore, objective treatment response and perceived improvement are not always closely correlated.³ These discrepancies, however, are not due to the inadequacy of HRQOL questionnaires as these are designed to provide information on health aspects that are not detected by traditional lung function testing.⁴ HRQOL questionnaires provide information on physical, mental, and social well-being from the patient's perspective and are viewed as a means of gaining additional clinical information that can help to identify which aspects of a patient's life are most seriously impacted by disease and to what degree they are affected. This information is also useful when adapting treatment to specific psychosocial needs. Accordingly, HRQOL questionnaires are used in addition to traditional methods to measure changes in disease over time, to identify advantages and disadvantages of new treatments, and to compare the efficacy of different drugs.^{5,6}

Although numerous specific HRQOL questionnaires are available for studying patients with chronic diseases with airflow limitation,⁷⁻¹⁰ their use tends to be confined to epidemiologic studies as the time required to complete and score them makes them impractical for routine clinical practice. Several questionnaires that are easy to answer and score have been proposed in an attempt to overcome this problem. Quirk and Jones,¹¹ for example, developed the Airways Questionnaire 20 (AQ20), drawing from 5 different asthma and COPD questionnaires: the St George's Respiratory Questionnaire (SGRQ),¹² the Chronic Respiratory Questionnaire (CRQ),¹³ the Asthma Quality of Life Questionnaire (AQLQ),⁸ the Asthma Attitudes Questionnaire,¹⁴ and the Living with Asthma Questionnaire (LWAQ).⁷ To choose relevant items for this short questionnaire, the authors applied a mathematical model based on principal component analysis and selected items that dealt with perceived health and were affected by minimum bias due to age, sex, disease duration, and diagnosis.¹⁵ The result was a 20-item questionnaire with a yes, no, or not applicable answer format, in which only affirmative answers were scored. The total score ranges from 0 to 20. No special training is required to administer the questionnaire and the questions can be completed without supervision and the test scored in a matter of minutes. The AQ20 has good psychometric properties, high internal consistency,¹⁶ good test-retest reliability,¹¹ and good agreement both with more complex questionnaires such as the SGRQ,¹⁶⁻¹⁸ the AQLQ,^{17,19} and the CRQ,¹⁶ and with clinical markers of asthma^{17,20} and COPD.¹⁶ It also has satisfactory sensitivity to change and good agreement with changes reflected by the AQLQ, SGRQ, LWAQ, and CRQ^{16,17,19} and with forced expiratory volume in 1 second (FEV₁).¹⁹

The AQ20 was designed for English-speaking patients and no version for use in Spain has been available. The aim of this study was

to produce a Spanish version that would be conceptually equivalent to the English original and easy to understand.

Methods

For the cultural adaptation of the AQ20, we followed the general guidelines proposed by the International Test Commission for adapting tests to other languages²¹ and specific recommendations for adapting HRQOL questionnaires across cultures.²² We used the same method as that used to develop the Spanish versions of other HRQOL questionnaires such as the Sickness Impact Profile,²³ the Nottingham Health Profile,²⁴ the SF-36 Health Survey,²⁵ the SGRQ,²⁶ the Marks AQLQ,²⁷ the Juniper AQLQ,²⁸ and the CRQ.²⁹ This method consisted of a translation-backtranslation³⁰ phase performed by medical professionals and a pilot study involving a group of patients. The different steps are summarized in Table 1 and described briefly in the following sections.

Translation of the AQ20 Into Spanish

Two native Spanish translators with a good knowledge of English and extensive experience in the field of respiratory medicine each translated the original AQ20 into Spanish. To ensure technical, semantic, and conceptual equivalence, the translators were informed that conceptual equivalence to the original version was more important than literalness. The translators were also asked to rate the difficulty of producing a conceptually equivalent translation for each of the items using a scale of 1 (least difficulty) to 10 (greatest difficulty).

Comparison of the 2 Spanish Translations

Two of the researchers—a pulmonologist (M.B.A.) and a psychologist (I.V.R.)—met to compare the 2 translations, to establish conceptual equivalence, and to improve the naturalness and correctness of the Spanish. Items containing questionable wording

Table 1
Adaptation of the Airways Questionnaire 20 for Use in Spain

1. Two translations into Spanish
2. Comparison of the 2 translations and discussion of differences
3. Development of first Spanish version of the questionnaire
4. Evaluation of conceptual equivalence and naturalness/correctness of the Spanish version
5. Two backtranslations into English
6. Comparison of the 2 backtranslations with the original questionnaire and drafting of first backtranslation
7. Consultation with the author of the original questionnaire about items for which there were doubts
8. Drafting of the second backtranslation based on input from the author
9. Consultation with a group of patients to establish definitive expressions
10. Drafting of the definitive version of the questionnaire
11. Piloting among patients to check intelligibility and applicability

were discussed with the 2 translators in order to produce an acceptable version for the subsequent stage. During this discussion, account was taken of the expressions used in 2 of the Spanish versions of HRQOL questionnaires used to produce the AQ20: the AQLQ²⁸ and the SGRQ²⁶. When it seemed that subtle conceptual differences might be involved, it was decided to keep both translations proposed.

Backtranslation Into English

The preliminary version of the Spanish questionnaire (containing 2 options for several items) was backtranslated into English by 2 bilingual translators with extensive knowledge of respiratory disease. The backtranslators were also asked to rate the difficulty of producing a conceptually equivalent translation for each item on a scale of 1 (least difficulty) to 10 (greatest difficulty).

Comparison of the 2 Backtranslations With the Original Questionnaire and Development of Consensus on an Acceptable Backtranslation

The 2 researchers compared the backtranslations with the original English questionnaire in order to detect possible semantic differences. An item was considered to be conceptually equivalent to the original if the backtranslation was both literal and semantically equivalent or just semantically equivalent. Items were classified as type A if they were fully equivalent, type B if they were quite equivalent but contained questionable wording, and type C if there were doubts about their equivalence.

The researchers and backtranslators then met to discuss semantic discrepancies (type B and C items) and to propose alternative expressions. Two options were included in the resulting backtranslation for some of the items. This text was then sent to the author of the original questionnaire (Professor P. Jones at St George's Hospital, University of London, UK) with a request for clarification of the meaning of items that had received translations with different meanings or that had been ambiguous when interpreted and for suggestions. With the author's input, a second version of the backtranslation was produced.

Meeting and Discussion With a Group of Patients

A third, provisional version of the Spanish translation was drawn up based on the second version of the backtranslation. This Spanish version was given to a small group of patients to test intelligibility and resolve ambiguities. The group consisted of 10 men and women (5 with asthma and 5 with COPD) of different ages and with different stages of illness. All the patients had a low or middle socioeconomic level. They were asked to interpret the different items and for those with 2 translated options, the researchers chose the one that seemed to be interpreted closest to the intended meaning of the original item. The group was urged to point out any difficulties they had in answering the questions. The feedback received was used to produce a new version of the questionnaire.

Piloting

The questionnaire was piloted among 30 volunteers (15 with asthma and 15 with COPD) to test applicability, intelligibility, and utility, to fine-tune technical aspects, and to identify and correct possible deficiencies. The volunteers were all outpatients who had been referred to the pulmonology laboratory at our hospital for lung function testing.

The patients with asthma were older than 16 years and had a smoking history of less than 20 pack-years. They had positive bronchodilator reversibility tests, with an increase of over 12% in FEV₁ or an increase of at least 20% in peak expiratory flow after

inhaling 20 µg of salbutamol, or airway hyperresponsiveness during any stage of a methacholine challenge; they were all clinically stable, meaning that over 1 month had passed since the last exacerbation (defined by a need for oral corticosteroids or antibiotics, or both). The patients with COPD were over 40 years old and had a smoking history of over 20 pack-years, a postbronchodilator FEV₁/forced vital capacity ratio of less than 0.7, and a postbronchodilator FEV₁ of less than 80% of predicted based on reference values³¹ recommended by the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR). They were clinically stable (no treatment changes in the last month) and had no signs or symptoms of asthma.

The patients were asked to explain each of the items in their own words and when their interpretation differed from the intended meaning, they were asked to indicate which expression they would normally use in this case. One of the researchers (M.B.A.) evaluated the patients' answers and interpretations during the meeting. The patients were also asked to underline words they did not understand or that caused them to hesitate. Once this stage was complete, the definitive version of the Spanish questionnaire was drawn up. Internal consistency was calculated using the Cronbach α ,³² which is a measure of the degree of covariance between items in a questionnaire.

Results

The mean difficulty rating given to the translation of the original questionnaire items into Spanish was 3.45 and none of the items received a rating of over 5 (Table 2). A difficulty rating of 5 was given to 3 items: item 2 ("Because of your chest trouble do you often feel restless?"), item 10 ("Because of your chest trouble are there times when you have difficulty getting around the house?"), and item 18 ("Do you feel drained after a cold because of your chest trouble?").

A comparison of the translations by the 2 translators showed that items 1, 2, 4, 5, 7, 8, 9, 11, 12, 13, 14, 15, 17, 18, and 20 were very similar conceptually and semantically. In item 2, it was decided to use 2 adjectives (*intranquilo* and *inquieto*, literally meaning not tranquil and not still) to cover with greater accuracy the meaning of the English word *restless*. The English expression "attack of chest trouble" in item 4 was translated as "*ataque de su problema respiratorio*" (literally, attack from/of your respiratory problem) as this was similar to the expression used in item 6 of the Spanish version of the SGRQ.²⁶ In item 11, the expression "*en caso de estar en situación laboral activa*" (literally, if you are in a situation of active employment) was added to narrow the context in which this question should be considered and because it was in the preliminary version of the original questionnaire. The sentence order was changed in items 12 and 18 to ensure the same structure was used throughout the questionnaire. The English word *breathless* (used in items 3, 7, 11, 12, 13, and 15) was translated as "*falta de aire*" (lack of air) for stylistic reasons, ie, to avoid using the words *respiratorios* (respiratory) and *respiración* (breathing) in the same sentence.

The options proposed by both translators were kept for items 3, 6, 10, 16, and 19. Furthermore, the expression "*trabajar en el jardín o en el huerto*" (working in the garden or a vegetable garden/allotment) was used instead of "maintaining the garden" as this was the expression used in item 6 of the self-administered version of the Spanish AQLQ²⁸. Table 2 shows the first version of the Spanish questionnaire (agreed on by the translators and researchers and containing 2 options for some items) and the mean difficulty ratings given by the translators.

The difficulty ratings for the backtranslation of this first version ranged from 1.5 to 7 (mean, 3.52) although 4 items were given a rating of over 5 (item 2 [7], item 4 [6.5], item 10 [5.5], and item 19 [5.5]) (Table 3).

Sixty-five percent of the backtranslated items were classified as type A (conceptually equivalent to the original English), 15% as type

Table 2
First Spanish Version of the Airways Questionnaire 20 and Difficulty Ratings

Original Questionnaire	First Spanish Version	Mean Difficulty Rating ^a
1. Do you suffer from coughing attacks during the day?	1. ¿Tiene Ud. ataques de tos durante el día?	1.5
2. Because of your chest trouble do you often feel restless?	2. Debido a sus problemas respiratorios ¿se siente frecuentemente intranquilo o inquieto?	5
3. Because of your chest trouble do you feel breathless maintaining the garden?	3. <i>Version 1:</i> Debido a sus problemas respiratorios ¿le falta el aire cuando trabaja en su jardín o huerto? <i>Version 2:</i> Debido a sus problemas respiratorios ¿le falta el aire cuando cuida su huerto?	3.5
4. Do you worry when going to a friend's house that there might be something there that will set off an attack of chest trouble?	4. ¿Al ir a visitar a un amigo le preocupa que pueda haber algo en su casa que le desencadene un ataque de su problema respiratorio?	4.5
5. Do you suffer from chest symptoms as a result of exposure to strong smells, cigarette smoke or perfume?	5. ¿Nota Ud. síntomas respiratorios cuando se expone a olores fuertes, gases, humo de tabaco, perfumes?	3
6. Is your partner bothered by your chest trouble?	6. <i>Version 1:</i> ¿Le molestan a su pareja sus problemas respiratorios? <i>Version 2:</i> ¿Su pareja está preocupada por sus problemas respiratorios?	2.5
7. Do you feel breathless while trying to sleep?	7. ¿Siente que le falta el aire cuando intenta dormir?	3
8. Do you worry about the long term effects on your health of the drugs that you have to take because of your chest trouble?	8. ¿Le preocupan los efectos a largo plazo de los medicamentos que toma para su enfermedad respiratoria?	3
9. Does getting emotionally upset make your chest trouble worse?	9. ¿Cuando está disgustado o angustiado empeoran sus problemas respiratorios?	4.5
10. Because of your chest trouble are there times when you have difficulty getting around the house?	10. <i>Version 1:</i> ¿Hay veces en que tiene dificultades para manejarse en su casa debido a sus problemas respiratorios? <i>Version 2:</i> Debido a sus problemas respiratorios ¿a veces tiene dificultades para caminar por casa?	5
11. Because of your chest trouble do you suffer from breathlessness carrying out activities at work?	11. Debido a sus problemas respiratorios ¿nota que le falta el aire cuando está trabajando? (En caso de estar en situación laboral activa)	4
12. Do you feel breathless walking upstairs because of your chest trouble?	12. Debido a sus problemas respiratorios ¿le falta el aire cuando sube las escaleras?	3
13. Because of your chest trouble do you suffer from breathlessness doing housework?	13. Debido a sus problemas respiratorios ¿nota que le falta el aire al hacer las tareas de casa?	2
14. Because of your chest trouble do you go home sooner than others after a night out?	14. Debido a sus problemas respiratorios ¿tiene que retirarse antes que los demás cuando sale por la noche?	2.5
15. Because of your chest trouble do you suffer from breathlessness when you laugh?	15. Debido a sus problemas respiratorios ¿nota que le falta el aire cuando se ríe?	2
16. Because of your chest trouble do you often feel impatient?	16. <i>Version 1:</i> Debido a sus problemas respiratorios ¿pierde la paciencia frecuentemente? <i>Version 2:</i> ¿Sus problemas respiratorios le hacen sentirse frecuentemente impaciente?	4.5
17. Because of your chest trouble do you feel that you cannot enjoy a full life?	17. Debido a sus problemas respiratorios ¿siente que no puede disfrutar plenamente de la vida?	3
18. Do you feel drained after a cold because of your chest trouble?	18. Debido a sus problemas respiratorios ¿se siente agotado después de un resfriado?	5
19. Do you have a feeling of chest heaviness?	19. <i>Version 1:</i> ¿Nota Ud. una sensación de pesadez en el pecho? <i>Version 2:</i> ¿Nota Ud. una sensación de opresión en el pecho?	4.5
20. Do you bother much about your chest trouble?	20. ¿Está Ud. muy preocupado por su problema respiratorio?	3

^aMean ratings given by 2 Spanish translators using a scale of 1 (least difficulty) to 10 (greatest difficulty).

B (quite equivalent but containing questionable wording, items 3, 9, and 10), and 20% as type C (doubts about equivalence, items 2, 6, 16, and 19).

The researchers analyzed the 3 type-B items and the 4 type-C items and agreed on a solution for 1 of these (item 9). This discussion gave rise to the first agreed-on backtranslation, which included 2 options for some ambiguous items (Table 3).

To clarify the meaning of items for which there were doubts (2, 3, 6, 10, 16, and 19) and to choose the most suitable expression in each case, the author of the original questionnaire was asked to describe situations in which the phrase might be applied. His input was used to produce a second backtranslated version, whose equivalence to the original questionnaire was confirmed by the author.

The translated item 16 (for "Because of your chest trouble do you often feel impatient?") was also tested in a group of volunteers consisting of 5 patients with asthma (60% women; mean [SD] age, 53 [9.8] y) and 5 patients with COPD (20% women; mean age, 68.4 [5.3] y). They all understood the expression used for "feel impatient" to mean "lose your patience," thus coinciding with the intention of the author of the original questionnaire. The proposed translation was finally accepted following consideration of the input received during this process and of the expression used for item 6 of the Spanish version of the CRQ.²⁹

The definitive Spanish version of the AQ20 (Table 4) was piloted among 30 patients (15 with asthma and 15 with COPD). The mean (SD) age of these patients was 53.13 (19.6) years (range, 22-79 y) for

those with asthma and 67.8 (8.94) years (range, 56-84 y) for those with COPD. There were 5 men and 10 women in the first group and 13 men and 2 women in the second. Asthma severity, assessed in accordance with the classifications of the Global Initiative for Asthma,³³ was mild persistent in 5 patients, moderate persistent in 8 patients, and severe persistent in 2 patients. COPD severity, in turn, assessed according to the criteria of the Global Initiative for Chronic Obstructive Lung Disease,³⁴ was stage II in 4 patients, stage III in 5 patients, and stage IV in 6 patients.

The pilot study demonstrated that the Spanish version of the AQ20 was easy to understand and answer. The patients felt that it dealt with issues that were relevant to their respiratory problems. Furthermore, they did not raise any objections or propose alternative expressions for any of the items. With this stage of the process completed, it was decided that no changes to the questionnaire were necessary. The Cronbach α was 0.92.

Discussion

The translation-backtranslation method used to adapt the original AQ20 to the Spanish language and culture produced a questionnaire that is conceptually equivalent to the original, easy to understand for patients, and satisfactory in terms of internal consistency.

Because it is short and easy to answer, the AQ20 could be used in routine clinical practice to evaluate patients with obstructive airway diseases. The original questionnaire was developed for English-

Table 3
First Backtranslation of the Airways Questionnaire 20, Difficulty Ratings, and Conceptual Equivalence

Backtranslation	Mean Difficulty Rating ^a	Conceptual Equivalence ^b
1. Do you have cough attacks during the day?	2	A
2. Do your breath problems often get yourself disturbed or restless?	7	C
3. <i>Version 1:</i> Because of your respiratory problems do you get breathless when you are working at garden? <i>Version 2:</i> Because of your breathing problems do you feel as if you can't breathe when you garden?	3	B
4. Are you worry about it when you go to a friend's house it there is something that can provoke a respiratory disease attack?	6.5	A
5. Do you feel respiratory symptoms when you are exposed to strong smells, cigarette smoke, perfumes?	3	A
6. <i>Version 1:</i> Do your breath problems annoy your partner? <i>Version 2:</i> Is your partner worried about your breathing problems?	3.5	C
7. Do you feel as if you can't breathe when you are trying to sleep?	3.5	A
8. Are you worried about the long term effects of the medicines you are taking for your breathing problems?	3	A
9. When you get upset do your breathing problems get worse?	4	B
10. <i>Version 1:</i> Are there times when you have difficulties moving around your house because of your respiratory problems? <i>Version 2:</i> Because of your respiratory problems, are there times when you have difficulty in walking in your house?	5.5	B
11. Because of your respiratory problems do you feel as if you can't breathe when you are working? (paid employment)	4	A
12. Because of your respiratory problems do you feel as if you can't breathe when you go up the stairs?	2	A
13. Because of your respiratory problems do you find it difficult to breathe when you do the housework?	1.5	A
14. Because of your breathing problems do you go back home earlier than the others when you go out at night?	2.5	A
15. Because of your respiratory problems do you feel as if you can't breathe when you laugh?	1.5	A
16. <i>Version 1:</i> Because of your breathing problems do you often lose the patience? <i>Version 2:</i> Because of your breathing problems, do you often feel impatient?	3	C
17. Due to your respiratory problem, do you feel that cannot enjoy a full life?	3	A
18. Because of your respiratory problems do you feel exhausted after a cold?	4.5	A
19. <i>Version 1:</i> Does your chest feel heavy? <i>Version 2:</i> Do you feel a tightness in your chest?	5.5	C
20. Are you very worried about your breathing problems?	2	A

^aMean ratings given by 2 backtranslators using a scale of 1 (least difficulty) to 10 (greatest difficulty).

^bConceptual equivalence was evaluated by classifying items as A if they were fully equivalent, B if they were quite equivalent, and C if there were doubts about their equivalence.

Table 4
Definitive Spanish Version of the Airways Questionnaire 20

Item	Sí	No	NA
1. ¿Tiene usted ataques de tos durante el día?			
2. Debido a sus problemas respiratorios ¿se siente frecuentemente intranquilo o inquieto?			
3. Debido a sus problemas respiratorios ¿le falta el aire cuando trabaja en su jardín o huerto?			
4. ¿Al ir a visitar a un amigo le preocupa que pueda haber algo en su casa que le desencadene un ataque de su problema respiratorio?			
5. ¿Nota usted síntomas respiratorios cuando se expone a olores fuertes, gases, humo de tabaco o perfumes?			
6. ¿Su pareja está preocupada por usted debido a sus problemas respiratorios?			
7. ¿Siente que le falta el aire cuando intenta dormir?			
8. ¿Le preocupan los efectos a largo plazo de los medicamentos que toma para su enfermedad respiratoria?			
9. ¿Cuando está disgustado o angustiado empeoran sus problemas respiratorios?			
10. Debido a sus problemas respiratorios ¿a veces tiene dificultades para moverse por casa?			
11. Debido a sus problemas respiratorios ¿nota que le falta el aire cuando está trabajando? (En caso de estar en situación laboral activa)			
12. Debido a sus problemas respiratorios ¿nota que le falta el aire cuando sube las escaleras?			
13. Debido a sus problemas respiratorios ¿nota que le falta el aire al hacer las tareas de casa?			
14. Debido a sus problemas respiratorios ¿tiene que retirarse antes que los demás cuando sale por la noche?			
15. Debido a sus problemas respiratorios ¿nota que le falta el aire cuando se ríe?			
16. Debido a sus problemas respiratorios ¿pierde la paciencia frecuentemente?			
17. Debido a sus problemas respiratorios ¿siente que no puede disfrutar plenamente de la vida?			
18. Debido a sus problemas respiratorios ¿se siente agotado después de un resfriado?			
19. ¿Nota usted una sensación de opresión en el pecho?			
20. ¿Está usted muy preocupado por su problema respiratorio?			

Abbreviation: NA, *no aplicable* (not applicable)

speaking patients^{17,18} and it is currently available in Japanese^{16,19,20} and Brazilian Portuguese.³⁵ The translation-backtranslation method³⁰ we used is the standard one for ensuring cultural equivalence when adapting HRQOL questionnaires to populations with a different language and culture to those for which the questionnaires were originally developed.²² Quality-of-life assessment tools can also be adapted by repeating the stages used to design the original questionnaire in the target population.³⁶ While this method provides greater conceptual equivalence, it requires more time and resources and may make it difficult to compare results.

In our adaptation of the AQ20, low difficulty ratings were given to both the translation (mean rating, 3.42) and backtranslation (3.52) although 4 of the items to be backtranslated were given a difficulty rating of over 5. Because this indicated that the backtranslators had had certain difficulties with some of the items, we decided to take several actions to ensure equivalence, including a meeting between

researchers and translators and consultation with a group of patients and the author of the original questionnaire. These actions played a key role in helping us to resolve ambiguities and choose the most suitable expressions for problematic items.

The Spanish version of the AQ20 had high internal consistency, with a Cronbach α of 0.92, which is higher than the minimum recommended value for group comparisons (0.70).³⁷ The internal consistency score obtained for our questionnaire shows that the items measured HRQOL consistently with little room for random error. This score of 0.92 is even higher than the figure of 0.81 reported by Hajiro et al¹⁶ for the Japanese version of the AQ20 piloted in 165 patients with COPD and than the α of 0.88 reported by Chen et al³⁸ on administering a modified version of the original questionnaire to 352 patients with asthma, COPD, and chronic bronchitis.

Although the method used to adapt the AQ20 to Spanish produced a questionnaire that is conceptually equivalent to the original and

has high internal consistency, further studies are required to provide more reliability data, to analyze its validity and sensitivity to change, and to confirm its full equivalence to the original and its applicability in routine clinical practice.

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