

Development of an interviewer-administered version of the Asthma Control Questionnaire (ACQ-IA) for 6-10 year old patients in 11 languages

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Background and Objective

- The Asthma Control Questionnaire (ACQ) was developed and validated to measure the adequacy of asthma control in patients 6-70 years.^{1,2}
- Since younger children have difficulty reading and understanding the instructions, questions and response options, an interviewer version (ACQ-IA) for 6-10 year old patients was developed in UK English. If children had difficulty understanding an ACQ question, standardised alternative wording was added (see Table 1).
- The objective was to develop the ACQ-IA in a further 11 languages [English (Australia), French (Belgium), Korean, Norwegian, Portuguese (Brazil, Portugal), Spanish (Argentina, Guatemala, Peru and the USA), and Swedish] based on the adult ACQ versions, using the methodology developed for the UK ACQ-IA.
 - Juniper EF et al. Development and validation of a questionnaire to measure asthma control. Eur Respir J 1999; 14: 902-7.
 - Juniper EF. Validation, measurement properties and interpretation of the Asthma Control Questionnaire in children. Eur Respir J 2010; 36: 1410-6.

Methods

- The instructions of the UK English ACQ-IA and the translated adult ACQ versions were used as source documents.
- For each language, the following steps were performed:
 - Instructions of the ACQ-IA
 - Translation of the instructions (forward/backward method);
 - Testing of the translated version with interviewers.
 - Questions and response options of the translated adult ACQ
 - Cognitive interviews with children (6-10yr) with symptomatic asthma (n=5) to identify questions difficult to comprehend;
 - Development of alternative wording for these questions;
 - Testing of the alternatives on a different sample of children (n=5);
 - Developer's review.

Results

- Three questions required alternative wording in all languages: items 2, 3 and 6 (see Table 2).
- Most frequently children had problems understanding medical terms such as "asthma," "symptoms," "wheeze," and "short-acting bronchodilator" (see Table 3 for examples in Spanish-speaking countries).
 - "Asthma" was usually replaced by "breathing problems" ("problèmes respiratoires" in French, "problemas respiratorios" or "problemas para respirar" in Spanish).
 - "Symptoms" was in most cases followed by examples in brackets (hard to breathe, cough, wheeze).
 - For "wheeze", "whistling sound when you breathe" was the most common alternative: e.g., "sifflements quand tu respirais" in French, or "silbido o chillido cuando respirabas" in Spanish (Argentina).
 - As for "short-acting bronchodilator", children usually know it as their "relief", "emergency" medicine, or "medicine for asthma attacks." In some countries (Belgium and USA), it was suggested to the interviewer to prompt the children with the color of the reliever (if needed and as indicated in the UK version).
- In all cases, the changes (alternatives) requested by the first sample of children were confirmed by the second round of cognitive interviews designed to test the alternatives.

Table 1. List of items of the British Interviewer-administered version of the ACQ

First, read each question to the child using the primary wording. If the child does not fully understand the question, read it again using the secondary wording marked with 'a' (e.g. 2a, 3a etc.).

- During the past week, how often were you **woken by your asthma** during the night?
- During the past week, how **bad were your asthma symptoms when you woke up** in the morning?
 - During the past week, how **bad were your asthma symptoms (for instance, hard to breathe, wheeze, cough) when you woke up** in the morning?
- During the past week, how **limited were you in your activities** because of your asthma?
 - During the past week, how **bothered were you in the things you do every day** because of your asthma?
- During the past week, how much **shortness of breath** did you experience because of your asthma?
 - During the past week, how much **shortness of breath (hard or difficult to breathe, breathless)** did you have because of your asthma?
- During the past week, how much time did you **wheeze**?
- During the past week, how many **puffs/inhalations of short-acting bronchodilator** (e.g. Ventolin/Bricanyl) have you used each day?
 - During the past week, how many **puffs of your Reliever** (your blue puffer) have you used each day?

Table 2. List of items requiring alternative wording per countries

Countries	Items with alternatives
UK	2, 3, 4, 6
Australia	2, 3, 4, 5, 6
Belgium (French)	1, 2, 3, 4, 5, 6
Argentina	1, 2, 3, 4, 5, 6
Guatemala	1, 2, 3, 6
Peru	1, 2, 3, 5, 6
US (Spanish)	1, 2, 3, 4, 5, 6
Portugal	1, 2, 3, 4, 5, 6
Brazil	1, 2, 3, 4, 5, 6
Norway	2, 3, 4, 5, 6
Sweden	1, 2, 3, 4, 5, 6
Korea	1, 2, 3, 4, 5, 6

Table 3. Examples of alternatives in items 2, 3 and 6 in four countries

UK	Australia	Belgium (French)	Argentina	Guatemala	Peru	US (Spanish)
2. During the past week, how bad were your asthma symptoms when you woke up in the morning?	2. In the last week, how were your asthma symptoms when you woke up in the morning?	2. Au cours des 7 derniers jours, comment étaient tes symptômes d'asthme (toux, essoufflement, ...) le matin au réveil ?	2. Durante los últimos 7 días, ¿cuán graves han sido tus síntomas de asma cuando te despertabas a la mañana?	2. ¿Qué tan fuertes han sido tus síntomas de asma cuando te despertabas por la mañana durante los últimos 7 días?	2. ¿Cuán intensos han sido tus síntomas del asma cuando te despertabas por la mañana durante los últimos 7 días?	2. ¿Qué tan graves han sido tus síntomas del asma cuando te despertabas por la mañana durante los últimos 7 días?
2a. During the past week, how bad were your asthma symptoms (for instance, hard to breathe, wheeze, cough) when you woke up in the morning?	2a. In the last week, how bad were your asthma symptoms (for instance, hard to breathe, wheeze, cough) when you woke up in the morning?	2a. Au cours des 7 derniers jours, comment étaient tes problèmes respiratoires (par exemple, difficultés pour respirer, sifflements quand tu respirais, toux) le matin quand tu te réveillais ?	2a. Durante los últimos 7 días, ¿cuán graves han sido tus problemas respiratorios (por ejemplo, dificultad para respirar, silbido o chillido cuando respirabas) al despertar a la mañana?	2a. ¿Qué tan malos han sido tus problemas para respirar (p. ej., no podías respirar, silbido, tos) cuando te despertabas por la mañana durante los últimos 7 días?	2a. ¿Cuán fuertes han sido tus molestias del asma (dificultad para respirar, silbado el pecho, tos) cuando te despertabas por la mañana durante los últimos 7 días?	2a. ¿Qué tan fuertes han sido tus problemas por la tos, falta de aire o ruido en el pecho cuando te despertaste por la mañana en los últimos 7 días?
3. During the past week, how limited were you in your activities because of your asthma?	3. In the last week, how limited were you in your day-to-day activities because of your asthma?	3. Au cours des 7 derniers jours, t'es-tu senti(e) limité(e) dans tes activités à cause de ton asthme ?	3. Durante los últimos 7 días, ¿cuánto te ha limitado tu asma para hacer tus actividades ?	3. ¿Qué tanto te ha limitado el asma en tus actividades durante los últimos 7 días?	3. ¿Cuánto te ha limitado el asma en tus actividades (te ha impedido hacer tus cosas) durante los últimos 7 días?	3. ¿Qué tanto te ha limitado el asma en tus actividades durante los últimos 7 días?
3a. During the past week, how bothered were you in the things you do every day because of your asthma?	3a. In the last week, how limited were you in the things you do every day (studying, playing, sports) because of your asthma ?	3a. Au cours des 7 derniers jours, t'es-tu senti(e) dérangé(e) dans tes activités (comme par exemple, étudier, jouer, faire du sport) à cause de tes problèmes respiratoires ?	3a. Durante los últimos 7 días, ¿cuánto te han molestado tus problemas respiratorios para las cosas que hacías todos los días (estudiar, jugar, hacer deportes) ?	3a. ¿Qué tanto te han limitado los problemas para respirar en tus actividades durante los últimos 7 días?	3a. ¿Cuánto te ha impedido el asma hacer tus cosas (estudiar, jugar, hacer deportes) durante los últimos 7 días?	3a. ¿Qué tanto te ha molestado la tos, falta de aire o ruido en el pecho para hacer cosas como estudiar, jugar, hacer deportes en los últimos 7 días?
6. During the past week, how many puffs/inhalations of short-acting bronchodilator (e.g. Ventolin/Bricanyl) have you used each day?	6. In the last week, how many puffs of relief medication (short-acting bronchodilator such as Ventolin, Bricanyl, etc.) have you used each day?	6. Au cours des 7 derniers jours, combien de bouffées de ton médicament "de secours" (bronchodilatateur à courte durée d'action comme le Ventolin / le Bérotec / le Bricanyl) as-tu prises par jour ?	6. Durante los últimos 7 días, ¿cuántos disparos / inhalaciones del broncodilatador de efecto inmediato (por ejemplo, Ventolin / Salbutamol) te has dado por día?	6. Durante los últimos 7 días, ¿cuántos disparos/inhalaciones hiciste cada día con un broncodilatador de efecto inmediato (Ej.: Ventolin/Salbutamol)?	6. Durante los últimos 7 días, ¿cuántos disparos/inhalaciones del broncodilatador de efecto inmediato (por ejemplo, bombita de Ventolin/inhalador de Bricanyl) te has aplicado cada día?	6. Durante los últimos 7 días, ¿cuántos disparos o inhalaciones del broncodilatador de efecto inmediato (p. ej. Ventolin o Proventil) te has aplicado cada día?
6a. During the past week, how many puffs of your Reliever (your blue puffer) have you used each day?	6a. In the last week, how many puffs of your reliever (such as Asmol, Ventolin, Bricanyl, etc.) have you used each day?	6a. Au cours des 7 derniers jours, combien de puffs de ton médicament "de secours" (médicament pour les crises d'asthme comme le Ventolin / le Salbutamol) as-tu pris par jour ? (Interviewer : si nécessaire, l'aérosol de secours de l'enfant peut être identifié par sa couleur.)	6a. Durante los últimos 7 días, cuando te sentiste tan mal por tus problemas respiratorios, ¿cuántos puffs / inhalaciones del remedio que te alivia enseguida (por ejemplo, Ventolin / Salbutamol) usaste por día o te dio por día la persona que te estaba cuidando?	6a. Durante los últimos 7 días, ¿cuántos esprayasos/inhalaciones hiciste cada día con la medicina de emergencia (Ej.: Ventolin/Salbutamol)?	6a. Durante los últimos 7 días, ¿cuántos disparos/inhalaciones del broncodilatador de efecto inmediato (por ejemplo, bombita de Ventolin/inhalador de Salbutamol) has usado cada día?	6a. En los últimos 7 días, cuántas veces apretaste el inhalador de emergencia (p. ej. Ventolin o Symbicort), cada día? (Entrevistador: si es necesario, identifique el inhalador de emergencia del niño/a por su color)

Conclusion

- Cognitive interviews with children were crucial for identifying ACQ questions difficult for 6-10 year olds to understand and for formulating the alternative wording in each language.
- The validity of this novel methodology for the ACQ-IA cultural adaptation has been further supported by these successful adaptations.

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