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Translation and cultural adaptation of a questionnaire to measure knowledge of chronic obstructive pulmonary disease

Traducción y adaptación cultural de un cuestionario para medir conocimientos de la enfermedad pulmonar obstructiva crónica

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ABSTRACT

Keywords:
Pulmonary disease chronic obstructive;
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Introduction: The Bristol COPD Knowledge Questionnaire (BCKQ) presents detailed elements of symptoms, treatment, exacerbations, which make it a complete tool to assess knowledge of chronic obstructive pulmonary disease (COPD). Currently there is not a Colombian Spanish version of this questionnaire. **Objective:** Describe the process to translate and culturally adapt the BCKQ questionnaire to Colombian Spanish. **Method:** The process followed seven steps: preparation, translation from English to Spanish, synthesis meeting, back translation, back translation review, consultation with experts and informants, and final review of the questionnaire. **Results:** This study obtained a Spanish version of the Bristol COPD knowledge questionnaire. Consultation with thematic and language experts was required to resolve doubts in the translation process. The cultural adaptation included reaching the conceptual, semantic, and item equivalence of all the aspects evaluated in the questionnaire. **Conclusions:** The translation and cultural adaptation process should follow steps proposed in guidelines consulting language professionals, thematic experts, and official documents that facilitate achieving a version that is easy to understand according to the context of the questionnaire application.

RESUMEN

Palabras clave:
enfermedad pulmonar obstructiva crónica;
conocimiento;
encuestas y cuestionarios;
traducción.

Introducción: el cuestionario Bristol COPD Knowledge Questionnaire (BCKQ) presenta elementos detallados de los síntomas, tratamiento, exacerbaciones, entre otros, que lo hacen una herramienta completa para evaluar el conocimiento de la enfermedad pulmonar obstructiva crónica (EPOC). En la actualidad no se cuenta con una versión en español colombiano del instrumento. **Objetivo:** describir el proceso realizado para traducir y adaptar culturalmente el cuestionario BCKQ al español colombiano. **Método:** el proceso se llevó a cabo en siete pasos: preparación, traducción inglés a español, reunión de síntesis, retrotraducción, revisión de retrotraducción, consulta con expertos e informantes y revisión final del cuestionario. **Resultados:** se obtuvo una versión en español del cuestionario Bristol de conocimientos de EPOC. Se requirió consulta con expertos temáticos y del lenguaje para resolver dudas en el proceso de traducción. La adaptación cultural tuvo en cuenta alcanzar la equivalencia conceptual, semántica y de ítem de todos los aspectos evaluados en el cuestionario. **Conclusiones:** en los procesos de traducción y adaptación cultural se deben seguir pasos propuestos en guías para traducción y adaptación, incluyendo la consulta a profesionales del lenguaje, expertos temáticos y documentos oficiales que faciliten lograr una versión de fácil comprensión en función del contexto de aplicación del instrumento.

INTRODUCTION

Knowledge is essential to any behavior change¹ and is the first component of self-management processes². In health, it is important to measure people's knowledge about a particular disease so that patients can develop skills to manage their condition and that health professionals can design patient-centered interventions. Chronic obstructive pulmonary disease (COPD) is the leading cause of respiratory mortality worldwide³, and its approach requires pharmacological treatments, education, and strategies to improve self-management and pulmonary rehabilitation. In this regard, the Global Initiative for Chronic Obstructive and Pulmonary Diseases (GOLD) 2023 guideline⁴ recognizes the importance of personalized education to improve health behaviors.

To measure knowledge about the disease, the health professional may have objective measures such as questionnaires to approach the patient's situation most effectively. In Spanish, two questionnaires have been used to measure knowledge of COPD: the COPD-Q⁵, known as EPOC-C in Spanish⁶, and the Lung Info Needs Questionnaire (LINQ)⁷, adapted and translated into Colombian Spanish⁸, although they still need to be entirely satisfactory. The COPD-C questionnaire is a short questionnaire that measures some aspects of knowledge about COPD but does not measure aspects related to the causes of the disease, nor does it delve into aspects related to dyspnea. The LINQ questionnaire measures the information the patient perceives they should receive about their condition but does not measure concepts about the disease. In addition to the above, the Bristol COPD Knowledge Questionnaire (BCKQ)⁹, designed in Bristol (England), includes 65 items distributed in 13 dimensions. The BCKQ has been used to measure knowledge of the disease in patients¹⁰⁻¹⁴, caregivers^{12,13}, and health professionals^{15,16}. In addition, it has been used to measure the results of education and exercise programs¹⁷⁻²⁰, self-management interventions^{21,22}, and pulmonary rehabilitation programs⁹. The BCKQ questionnaire is available in English and, to date, has not been culturally adapted to Colombian Spanish.

In the context of health assessment, it is possible to use questionnaires created initially in other

languages and other cultures when translated and adapted culturally to the target population²³. However, this translation process and cultural adaptation of instruments do not follow unique processes as they vary according to the complexity of the questionnaire, the target language, and the different cultures²⁴. To the above, it must be added that to use a questionnaire from another language and culture, it is not enough to translate it; also, a semantic equivalence of the translated terms must be achieved and cultural agreements established through experts in different disciplines²⁵.

The objective of this article was to describe the process carried out to translate and culturally adapt the Bristol COPD Knowledge questionnaire. Questionnaire (BCKQ) to Colombian Spanish.

METHOD

A qualitative study of translation and cultural adaptation of the Bristol COPD knowledge questionnaire was carried out, following seven steps recommended in the available guidelines for this process^{23,26-28}. The participants were experts recruited in different ways: The non-medical translator through the Upwork platform, the linguist through contact with universities that offer programs in linguistics, and pulmonologists and physiotherapists in recognized respiratory health institutions in Colombia.

Description of the BCKQ

The BCKQ⁹ includes 65 items distributed in 13 dimensions. This questionnaire was chosen to be translated and adapted because it includes detailed items related to the epidemiology and different causes of COPD, symptoms and treatment of the disease, and exacerbations, including corticosteroids and antibiotics. In addition, the questionnaire includes an assessment of common misconceptions in COPD, for example, that "difficulty breathing is often assumed to be associated with low blood oxygen levels, that steroid inhalers can be used as needed, and that quitting smoking will result in better lung function"⁹.

Step 1: Preparation

Permission to translate and culturally adapt the questionnaire was requested from the original authors. The other professionals supporting the process were contacted and agreed to participate in the translations and the synthesis meetings.

Step 2: Translation from English to Spanish

The original English version of the BCKQ was provided to two bilingual individuals to translate the questionnaire from English to Spanish. Translator A was a bilingual physiotherapist with 20 years of experience in respiratory care and pulmonary rehabilitation who authored this article and acted as a medical translator. Translator B was a non-medical bilingual woman with a master's degree in translation and interpretation. Both translators were native speakers of Colombian Spanish. The translators were instructed to use a common language used by the patients and avoid using ambiguous or derogatory medical terms. The result of this step was two translations: translation A and translation B. The translators were asked to report the translation techniques used.

Step 3: Summary meeting

The synthesis meetings were held via Zoom in two sessions that lasted 3.5 hours. The two translators, a linguist and a physiotherapist who led the synthesis process, participated in the meetings. During the meeting, each participant chose one of the translated options (translation A or translation B), seeking an agreement. If there was no agreement, the participants discussed the arguments for choosing each option. When neither of the two translations satisfied the participants, a new translation of the item was proposed, searching for words and phrases that maintained the meaning of the items in Colombian Spanish.

During the process of cultural adaptation of the questionnaire, adjustments were made to the items seeking to maintain the equivalence of the questionnaire in the Colombian context. The participants in the synthesis meeting were instructed on the resources to achieve conceptual equivalence, item equivalence, and semantic equivalence of the questionnaire. Conceptual equivalence consists of exploring the construct of interest (in this case

EPOC) in the place of origin and in the target population where the instrument will be used²⁹. Item equivalence exists when the words or phrases estimate the same parameters and are equally relevant and acceptable in both cultures³⁰. Meanwhile, semantic equivalence implies transferring the meaning from the concepts contained in the original questionnaire to the translated version²⁹.

Step 4: Back translation

In order to assess whether the items translated into Spanish maintained their meaning, the back-translation was performed to be compared with the original version in English. The Spanish version obtained at the synthesis meeting was sent to the bilingual translator by profession as a nurse, to translate from Spanish to English. Since the questionnaire is an instrument to assess knowledge of the disease, it was decided that a person with health knowledge should translate to maintain the meanings of the concepts to be evaluated. The translator, who was not involved in the previous steps and did not know the original English version, was instructed to use the appropriate language for patients in the questionnaire.

Step 5: Review the back translation

The two physiotherapists who participated in the synthesis meeting reviewed the two versions: the original English version and the English version obtained in the back-translation. In this step, all the items were reviewed and evaluated if they maintained the concepts and adaptations made during the synthesis meeting.

Step 6: Consultation with experts and informants

In order to request the opinion of experts for the items that it was impossible to translate and adapt in the previous steps, three pulmonologists and an internist with experience in the management of patients with COPD were consulted. Bilingual Colombian informants and professionals from different areas without medical knowledge were also consulted. For each item submitted for consideration, two translation alternatives were offered, with the possibility of suggesting another option if one of the two offered was not appropriate. These inquiries were made via email.

Step 7: Final review of the questionnaire

The concepts of the doctors and the informants were included in the final version of the questionnaire. This final version was subjected to content validation by ten health professionals. The data from the content validation of the questionnaire can be consulted in the institutional repository of the Rod Library of the University of Northern Iowa³¹.

Declaration on ethical aspects

According to Resolution 008430 of 1993²⁷, this study is classified without risk in force in Colombia. This work adhered to the precepts established in the Declaration of Helsinki for research in human beings and was approved by the Research Ethics Committee of the University of Northern Iowa. The approval notice was received on July 10, 2020, by filed IRB 20-0204.

RESULTS

The author of the BCKQ in English granted permission for the questionnaire to be translated. At the time of this research, there needed to be more information on another version of the questionnaire in Spanish.

Translation from English to Spanish

Translator A translated each item supported by four Internet translators (Bing, Collins, deepL, and Google translator). The translation chosen for each item used the expressions that best matched the terms used by the patients in the Colombian context. Translator B used the Omega T software for professional translators and the Proz terminology dictionary (<https://www.proz.com/search>). Additionally, it consulted the United States government Internet resources available in Spanish³² and English³³ to find equivalent terms in both languages. The translators used literal translation, transposition, and equivalence as translation techniques. Examples of these techniques are shown below.

The literal translation, which is the translation that closely follows the form and words of the source

language, was used to translate items such as item 4d: "*Breathlessness is a normal response to exercise*," which was translated as: "shortness of breath is a normal response to exercise." The transposition technique, in which the order of the subject or verb is changed in the translated element, was used, for example, in item 5e: "*Clearing phlegm can be assisted by breathing exercises*," which was translated as follows: "some breathing exercises can help expel phlegm." For its part, the equivalence technique, in which some words that cannot be translated are replaced by words or phrases that maintain their meaning in the target language, was used, for example, for item 6a: "*Chest infections often cause coughing of blood*," since "*coughing of blood*" cannot be translated as "tos de sangre" because that term is not used in Colombian Spanish; therefore, the phrase chosen was "coughing up blood," and the item was translated as "respiratory infections usually cause coughing up blood."

Synthesis meeting

After reviewing the two translation options for each item, a final version was obtained by consensus for 64 of the 65 items of the instrument. Due to the difficulty in obtaining a consensus for the translation of item 8b: "*Stopping smoking will slow down further lung damage*," it was necessary to consult with two pulmonologists who are experts in smoking. The translation chosen after his comments was: "Quitting smoking decreases the risk of further lung damage."

Back translation and revision of the back translation

In the back-translation review process, only three items were found that did not reach equivalence with the questionnaire in English, and it was decided to submit them to review by experts and informants to choose the best translation option.

In these items, the question was about the best translation for the verbs "*can develop*," "*be administered*," and for the adverb "*often*." After consultation with experts and informants, the option that prevailed among them was chosen, and the final version in Spanish was obtained. Table 1 describes the translation options offered for each item and the final option chosen by the experts and informants.

Table 1. Result of the consultation process with experts and informants of the items that did not reach equivalence after back-translation.

original item	Translation Options	Chosen translation
2c. Longstanding asthma can develop into COPD.	to. Chronic asthma can turn into COPD. b. People with chronic asthma can develop COPD.	People with chronic asthma can develop COPD.
6a. Chest infections often cause coughing of blood.	to. Respiratory infections often cause coughing up blood. b. Respiratory infections often cause you to cough up blood.	Respiratory infections often cause you to cough up blood.
13d. Inhaled steroids should be administered before the bronchodilator.	to. The inhaled steroid should be applied before the bronchodilator. b. The inhaled steroid should be used before the bronchodilator.	The inhaled steroid should be used before the bronchodilator.

The following paragraphs show the results that made it possible to achieve conceptual equivalence, item equivalence, and semantic equivalence. Examples of these adaptations are summarized in Table 2.

Conceptual equivalence

To achieve conceptual equivalence and explore the language used for patients, the non-physician translator consulted information for COPD patients from the US National Library of Medicine^{32,33}, and the National Heart, Lung and Blood Institute of the United States^{34,35}. During the questionnaire synthesis meeting, the COPD clinical practice guide for patients and caregivers of the Ministry of Health and Social Protection of Colombia was consulted³⁶. Similarly, therapists with knowledge and experience in managing COPD clarified doubts about some concepts to the non-medical translator and linguist so that some terms could be expressed more appropriately in certain questionnaire items.

Item equivalence

During the summary meeting, it was decided to use common words in Colombian Spanish to maintain a language appropriate to the Colombian context. Some items could be translated without modification, such as the terms "fatigue (tiredness)," which were translated as "fatigue (tiredness)," or "*inhaled bronchodilators*," which were translated as "inhaled bronchodilators."

Other items required minimal modifications, such as the word "*severe*," which was translated as "*serious*," or the word "*longstanding*," which was translated as "*chronic*." It was decided to include extra words that gave a better meaning to the translated expression, for example, the term "*high temperature*," which was expressed as "high body temperature" and "*oxygen levels*" as "oxygen levels in the blood."

Likewise, some items were presented that were difficult to translate and adapt because there were no equivalent terms in Spanish. For example, the word "*crushing*" in item 3d, the expressions "*large meals*" in item 4b, and "*clearing phlegm*" in the items of dimension 5, as well as the verb "*slow down*" in item 8b. These terms had to be adapted to the context of common terminology used by health professionals when addressing patients or by commonly used expressions used by patients in the Colombian context (Table 2).

Semantic equivalence

Although the original questionnaire did not present it, it was decided to explain the meaning of the abbreviation COPD by putting its meaning in Spanish in brackets: "Chronic Obstructive Pulmonary Disease." In some items, it was decided to keep medical expressions together with common expressions, such as "sputum" next to the term "phlegm" (in dimension 5) and "germs" next to the

term "bacteria" (item 11b), to provide more possibilities of understanding to the reader.

Likewise, it was decided to keep the medical term "sibilancias" as an adaptation of "wheezing," given the difficulty of finding a less specialized lexical construction in Spanish. This term was maintained by adding, between parentheses, the phraseological unit "whistles or whistles when breathing" contained in the guidelines for patients with COPD of the Government of Colombia³⁶. In the same way, the lexical construction "lack of air (choking)" was chosen to refer to the expression "breathlessness," using conceptual equivalences based on the already mentioned official guides of the Government of Colombia. In item 7c, the term "density" was maintained, but it was suggested that this concept be explored with patients to assess its comprehensibility.

Aspects of the form included in the questionnaire

It was decided to keep statements with subject + verb + complement sentence structure when possible. In some items, those words that function as synonyms from medical terminology to the colloquially chosen term or vice versa were included in parentheses; such is the case, for example, of "shortness of breath" (including "choking" in parentheses to give more clarity) or "exacerbations" (including the word "worsening" which is more informal). The use of "you" was maintained when the item referred directly to the patient (for treatment, for example).

DISCUSSION

At first glance, the English BCKQ seemed feasible to translate and adapt. Unlike questionnaires that assess perceptions, attitudes, or subjective constructs, feelings, or emotions –such as depression inventories, which impose difficulties in the

translation and adaptation process—the BCKQ assesses facts, which facilitates its adaptation. Although the BCKQ questionnaire contains 65 items, which could have complicated the translation process, the items are short, and each item contains an average of 10.6 words. The brevity of the items minimized the challenges in the translation and adaptation process. DuBay et al.³⁷, in their study on the translation of an autism screening tool, found that the most complex items to translate contained an average of 17.1 words in contrast to those that were least complex to translate, which contained 13.3 words per item. The less complicated items to translate were described as simple concepts and lacked complex syntax or language structures. Brislin³⁸ suggests that the sentences included in a questionnaire should be simple, short, and contain less than sixteen words.

For the translation and cultural adaptation of the BCKQ, the steps proposed in the guides available for this process were followed; however, some variations were made for the process to be executed effectively and in a reasonable amount of time. Among the study's strengths is the extensive experience of the participating health professionals. In the case of the medical translator, this allowed for precise knowledge of the questionnaire that was useful for the summary meeting, the review of the back translation, and the item review process when the help of experts and informants was required.

Table 2. Examples of the adaptations made during the translation and cultural adaptation of the BCKQ questionnaire.

Item was taken from the original version of the BCKQ ⁹	questionnaire Adjustment / Adaptation	Item translated into Spanish
2b. COPD can be caused by occupational dust exposure	Although it does not appear in the original questionnaire, "certain types" was included to specify that not all occupational dust causes COPD.	2b. COPD can be caused by exposure to certain types of dust at work.
1e. COPD is unusual in people less than 40 years old	Given the option of unusual or rare as a translation of "unusual," the phrase "rare" was chosen to express that the disease is rare in people under 40 years of age.	1e. COPD is rare in people under the age of 40.
10c. Spacers (for instance, volumetric, nebulizer, and aerochamber) should be dried with a towel after washing.	Inhalation chambers " was included to complement the original term "spacers," as it is more common in the Colombian medical context. The examples of the types of spacers were omitted since they are not commonly used brands in Colombia.	10 c. The inhalochambers (spacers) should be towel dried after washing.
11e. You should seek advice if antibiotics cause severe diarrhea	For the translation of "seek advice," the expression "consult the doctor" was chosen instead of "go to the health services" since it is more typical of the Colombian context.	11e. You should see your doctor if antibiotics cause severe diarrhea.
12a. Steroid tablets help strengthen muscles.	It was decided to use the expression "steroid pills" to refer to tablets (<i>tablets</i>) since the word pills are more in line with Colombian Spanish.	12a. Steroid pills help build muscle.
8a. Stopping smoking will reduce the risk of heart disease.	The present indicative tense was chosen for some items initially written in the future ("will" in English) since they are intended to be evaluated as factual facts.	8a. Quitting smoking reduces the risk of heart disease.
10 d. Using a spacer device will increase the amount of drug deposited in the lungs.	Other terms were adapted to make them less formal for the Colombian context, such as "que llega" instead of "depositada" (as a translation <i>deposited</i>).	10d. Using an inhalation chamber will increase the amount of medicine that reaches the lungs.
6a. Chest infections often cause coughing of blood.	The option of choosing "respiratory infection" or "chest infection" was chosen as it was more relevant for the instrument.	6a. Respiratory infections often cause coughing up blood.
7c. Exercise can help maintain your bone density.	Terms were used to explain the medical concept of "bone density" and "heart disease" and were replaced by "bone density" and "heart disease."	7c. Exercise can help maintain bone density.
8a. Stopping smoking will reduce the risk of heart disease.		8a. Quitting smoking reduces the risk of heart disease.
3d. crushing chest pain	The translation of " <i>crushing</i> " into Spanish is crushing or overwhelming; however, the medical term "oppressive pain in the chest" was chosen by including the word pressure in parentheses to add meaning to the oppressive term.	3b. Crushing pain (pressure) in the chest
4b. Breathlessness can be worsened by eating large meals.	" <i>large</i> " was found to express a large meal in Spanish. It was decided to use "large amounts of food," and it was suggested to evaluate their understanding by the patients.	4b. Shortness of breath can worsen by eating large amounts of food.
5b Clearing phlegm is more difficult if you get dehydrated.	The expression expels phlegm was equivalent to the expression " <i>clearing phlegm</i> ."	5b. Expel phlegm is more difficult if you are dehydrated.

While the available guidelines for the translation process for healthcare instruments suggest that medical translators should be experts in the translation process, it is also important that they have a thorough understanding of the subject matter being translated. The specific jargon and vocabulary of the

translated material often need to be translated correctly by professional translators, even if they consider themselves experts in health matters. In the study by Tsai et al.³⁹, although the translators provided by a professional translation agency were qualified as health experts, they needed to gain more

knowledge of the health system and its terminology. In the study by Lindberg et al, one of the barriers encountered in the translated materials was that some professional translations were "inaccurate or written at a reading level higher than the literacy level of the participants"⁴⁰.

Knowledge of the source and target language is essential for translation and cultural adaptation researchers. Steele and Edwards²⁵ indicate that researchers must rely on more than just the process of translation, back translation, and the synthesis committee. Researchers must take responsibility for analyzing the problems presented during the process and use a problem-oriented approach to arrive at a better solution for each translated item. These authors found that when researchers have limited knowledge of the target language, it is not easy to mediate when differences in interpretations appear.

Also, part of the strengths of this study is working with few people in the synthesis meeting, this allowed the discussion to be precise and the sessions to be completed without significant problems. For synthesis meetings, it is vital to consider the time, attitude, and costs of those participating. Steele and Edwards²⁵ found that professionals sometimes have busy schedules that make it challenging to participate in sessions. They also discovered that they could assume a passive role in the sessions, leading to burnout and loss of time.

Consultation with experts was a vital part of the cultural adaptation process. Physicians did not participate in the synthesis meetings but were consulted when difficulties were found in translating some items after the synthesis meeting and back-translation. Two pulmonologists with experience in smoking cessation were consulted to request their suggestions for translating an item on smoking. In addition, other clinicians acted as informants to find the best translation for three items after a back-translation review. Although in this type of study, the researchers must allocate sufficient time, effort, and budget⁴⁰ to translate and adapt materials, the participation of physicians in the synthesis meetings would have been expensive and caused scheduling problems. The strategy of presenting selected parts of the translated documents to native Spanish-speaking health professionals has been used in other studies to ensure the clarity of translated materials^{39,40}.

The participants in the synthesis meeting used some strategies to achieve the equivalence of the questionnaire. Cultural differences meant that some of the terms in the original questionnaire could not be used in the Colombian Spanish version. To overcome this, a standard equivalent term in Spanish was selected using reference documents from the Ministry of Health and Social Protection available in Colombian Spanish. Furthermore, although the guidelines for the translation process indicate that medical terms should be avoided in the questionnaires, this was not possible in translating some BCKQ terms. In this case, the strategy was to use the medical terms together with a common term. Adding those terms offers the option of clarification for the reader and educates the user on the meaning of these concepts. Other studies have used additional descriptions to help patients/participants interpret the items accurately³⁷.

One limitation of this study is that the adaptation made applies to Colombian Spanish, and for its use in other Spanish-speaking countries, a cultural adaptation to its linguistic variation must be made.

CONCLUSION

The translation and cultural adaptation of the Bristol COPD knowledge questionnaire was possible by following the steps proposed in the guides for translation and adaptation, considering the pertinent variations that facilitated reaching solutions without losing methodological rigor. For future translation and cultural adaptation studies, we recommend using language professionals (translators and linguists) who not only have some knowledge or experience in the field in which the questionnaire is registered but also can recognize the different sociocultural variables that may affect the final interpretation of the instrument.

In the same way, working with few people makes it easier to reach agreements and speed up the process, so we always recommend reducing the number of experts and professionals in the translation and adaptation process as much as possible while maintaining the rigor of the investigation. If other concepts are required, experts who know the jargon and specific terminology and informants can be consulted to find the most appropriate translation. Researchers should be active participants, especially

in synthesizing and reviewing translations, and not rely solely on expert committees.

As strategies for cultural adaptation, having official terminology in the source and target language as support is always recommended. In some cases, if an item needs to be clarified due to its complex terminology or the use of medical terms, more common descriptions can be added that adjust to how particular phenomena are designated in said culture that allows the reader to understand the item concept being evaluated.

Based on the experience during this research, we recommend that for the creation of new questionnaires, the items should be short (less than 16 words) since they are generally more straightforward at a semantic and syntactic level, avoid the use of adverbs and popular slang that hinder translation and adaptation to a second language.

DECLARATION ON CONFLICTS OF INTEREST

The authors declare that does not exist a conflict of interest. Vilma Gómez, the principal author of this research, declares that she has received financial assistance to carry out this research from the University of Northern Iowa in the United States. This funding was received while completing the master's studies in community health. The teachers of the community health program offered guidance for carrying out the research but did not intervene in any of the processes carried out to obtain the final results of this study.

AUTHORS' CONTRIBUTION

First author: She participated in the design and development of the study, data analysis, and the manuscript's preparation.

Second author: She participated in the development of the study, data analysis, and the manuscript's preparation.

Third author: He participated in the study's development and in the manuscript's preparation.

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