Translation and Cross-Cultural Adaptation of the 6-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale Questionnaire Into Brazilian Portuguese

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Abstract

Background: There are several medical questionnaires to evaluate the quality of life of carpal tunnel syndrome patients. However, most measures are only available in English. We chose to translate and culturally adapt to Portuguese the Six-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale (CTS-6) questionnaire because it provides objective assessment using a small number of questions. **Methods:** The translation and cultural adaptation were carried out according to the medical literature and consisted of five steps: (1) initial translation by two translators fluent in both languages, (2) association of initial translations, (3) back translation to Portuguese by two native speakers of English, (4) association of back translation and (5) comparison with the original version. **Results:** The Portuguese version was administered to patients with carpal tunnel syndrome and difficulties were noted concerning the comprehension and completion of the translated questionnaire. Patients had difficulty in understanding the horizontal layout of the response choices. Without altering the content, we changed the response choices to a vertical layout and re-administered the questionnaire to a new sample of patients followed up in the same ambulatory care service. We noted a substantial improvement in comprehension and completion of the questionnaire after the modifications. **Conclusions:** Availability of a Portuguese version of the Six-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale (CTS-6) questionnaire will allow an objective evaluation of the treatment of a syndrome that is very prominent in medical practice.

Keywords: 6-Item Carpal Tunnel Syndrome scale, questionnaire, carpal tunnel syndrome

Introduction

Carpal tunnel syndrome is the most common compressive neuropathy in the upper limbs and consequently has a substantial, detrimental impact on patients' social and professional quality of life. Its clinical diagnosis is based on symptoms of pain, numbness, and tingling in the median nerve distribution.⁶ Objective evaluation of patients with carpal tunnel syndrome symptoms is of great importance for scientific research and can facilitate the treatment of these patients in a nonacademic environment. There are several tools to evaluate pain severity and limitation of activities, such as the 6-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale (CTS-6),¹ the Self-administered Boston Questionnaire (Boston questionnaire),⁹ Disabilities of the Arm, Shoulder, and Hand (DASH) Questionnaire,³ the Brief Michigan Hand Outcomes Questionnaire (BMHQ),¹³ and the 36-Item Short Form Health Survey (SF-36).¹⁴

The Boston questionnaire is the most frequently used questionnaire for evaluating patients with carpal tunnel syndrome.¹⁰ This questionnaire is often tiring to complete and our patients have had difficulty in understanding it.⁴ The CTS-6 questionnaire has been used to evaluate patients with carpal tunnel syndrome. Questionnaires with fewer questions are more efficient, reduce the stress of patients during completion, and minimize the effects of lack of data.⁵

The purpose of this study was to translate the CTS-6 from English to Portuguese and obtain a cultural equivalence for

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Brazilian patients, making the use of this questionnaire possible in Brazil.

Materials and Methods

The CTS-6 questionnaire was developed by Atroshi et al¹ and consists of 8 questions divided in 2 parts, Appendix 1 (6 questions) and Appendix 2 (2 questions). The first part consists of 6 questions that evaluate the symptoms of median nerve compression in the wrist. The second part of the questionnaire comprises 2 questions that evaluate palmar pain. Cross-cultural adaptation and translation of the CTS-6 were carried out according to the recommendations of Guillemin et al^{8,7} and Beaton et al.²

The CTS-6 was initially translated from English to Portuguese by 2 translators fluent in both languages and with no connections with the study, creating 2 questionnaires (B1 and B2). Questionnaires B1 and B2 were evaluated and combined by 3 researchers connected to the study and after appropriate evaluation resulted in questionnaire B12. Questionnaire B12 was translated again into English by 2 native English-speaking translators, creating questionnaires B12.1 and B12.2. These 2 questionnaires were examined and combined in English to create questionnaire B12.3, which was compared with the original CTS-6 to determine the grammatical and semantic equivalency of the translated questionnaire.

Cultural Equivalence

After translation of the original questionnaire, the resulting B1 and B2 Portuguese questionnaires were read and evaluated by 3 researchers connected to the study—2 doctors and 1 hand therapist—to establish and evaluate the cultural equivalence of the CTS-6 for Brazilian culture. During the evaluation of the observed cultural differences, the questionnaire was adapted to be relevant to Brazilian patients.

The Portuguese version of the questionnaire (B12) was applied for the first time to 43 patients, selected at random with a diagnosis of carpal tunnel syndrome during June and July 2013. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.¹¹ Informed, written consent was obtained from all patients for inclusion in the study. A diagnosis of carpal tunnel syndrome was made for patients whose history and physical examination showed 3 or more of the following diagnostic criteria⁶: (1) paresthesia in the median nerve territory, (2) nocturnal paresthesia, (3) thenar atrophy, (4) positive Tinel test, (5) positive Phalen test, and (6) decreased sensitivity evaluated by nylon monofilaments. Confirmation of the diagnosis was carried out by electroneuromyography of the compromised upper limbs. The main purpose of this stage

of the study was to evaluate any questions that the patients did not understand.

During the administration of the B12 questionnaire, we noted that patients had difficulty relating the questions to the response options because of the table layout. Many of them asked about the correct place in which to mark their responses or did not understand that every line was equivalent to one question. In addition, the items in Appendix 2 of version B12 displayed more than one answer for the same question, which we believe occurred because the response alternatives were not differentiated adequately in the Brazilian fashion.

Following this stage, we changed the questionnaire layout, creating version B13 to make the structure of the questions more relevant to Brazilian culture and to facilitate patient understanding. We transcribed the questions from Appendix 1 onto a table layout to allot one line to each question and to repeat the 5 alternative response choices. In Appendix 2, we placed each of the 5 response alternatives on one line following a traditional multiple-choice question format. The B13 questionnaire (Tables 1 and 2) was then administered to 55 patients (selected in the same way as described previously) during June and July 2014.

Results

A total of 98 patients ($n = 98$) returned B12 and B13 questionnaires 91 females and 7 males. From this group, 43 patients returned version B12 and 55 returned version B13.

Of the 55 completed version B13 questionnaires, 47 (85.45%) were answered completely and had been adequately understood by the participants. Only 7 (12.7%) questionnaires contained unanswered questions; none contained incorrectly marked responses.

Discussion

Relevant questionnaires currently available in Portuguese are the BMHQ, the Boston questionnaire,¹³ the SF-36,¹⁴ and the DASH questionnaire.³ However, these measures contain a large number of questions, which reduces both the likelihood of participants completing them and the reliability of responses. In addition, they demand more responsibility of the participant who must provide a greater amount of correct information. As the CTS-6 has fewer questions, it is faster and more efficient to fill in. Participants are more likely to complete it and provide reliable responses.

Modifications to the presentation of the questions in Appendices 1 and 2 (Tables 1 and 2) increased the percentage of the questionnaires answered completely and with only one alternative response marked. We believe that using a format similar to that used in the Brazilian school evaluations, with alternatives in a vertically fashion, facilitated the understanding of the questions.

Table 1. The Original Appendix 1 of the CTS-6 in English Language and Brazilian Portuguese Version of the Appendix 1 of CTS-6 After Translation and Cross-Cultural Adaptation.

Appendix 1—the 6-Item CTS Symptoms Scale						Apêndice 1 - Escala de 6 itens para avaliar a intensidade dos sintomas da Síndrome do túnel do carpo.					
The following questions refer to your symptoms for a typical 24-hour period during the past 2 weeks. Mark one answer to each symptom:						As perguntas abaixo referem-se aos sintomas que você pode ter sentido, por um período típico de 24 horas durante as últimas 2 semanas. Marque somente uma (1) resposta para cada sintoma.					
How severe are the following symptoms in your hand?	None	Mild	Moderate	Severe	Very severe	1. Qual a intensidade da dor na sua mão durante a noite?					
Pain at night	☐	☐	☐	☐	☐	☐ Nenhum ☐ Pouco ☐ Moderado ☐ Forte ☐ Muito forte					
Pain during daytime	☐	☐	☐	☐	☐	2. Qual a intensidade da dor na sua mão durante o dia?					
Numbness or tingling at night	☐	☐	☐	☐	☐	☐ Nenhum ☐ Pouco ☐ Moderado ☐ Forte ☐ Muito forte					
Numbness or tingling during daytime	☐	☐	☐	☐	☐	3. Qual a intensidade da dormência ou formigamento na sua mão durante a noite?					
How often did the following symptoms in your hand wake you up at night?	Never	Once	2 or 3 times	4 or 5 times	More than 5 times	☐ Nenhum ☐ Pouco ☐ Moderado ☐ Forte ☐ Muito forte					
Pain	☐	☐	☐	☐	☐	4. Qual a intensidade da dormência ou formigamento na sua mão durante o dia?					
Numbness or tingling	☐	☐	☐	☐	☐	☐ Nenhum ☐ Pouco ☐ Moderado ☐ Forte ☐ Muito forte					
						5. Quantas vezes você acorda durante a noite por causa da dor?					
						☐ Nunca ☐ Uma vez ☐ 2 ou 3 vezes ☐ 4 ou 5 vezes ☐ Mais de 5 vezes					
						6. Quantas vezes você acorda durante a noite por causa da dormência ou formigamento?					
						☐ Nunca ☐ Uma vez ☐ 2 ou 3 vezes ☐ 4 ou 5 vezes ☐ Mais de 5 vezes					

Note. CTS-6, 6-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale.

Patients' level of education is an important influence on their understanding of the questions.¹² Many of our patients have low level of literacy; they can read and answer the questions but they cannot understand the period to which the question refers. Although they might correctly complete

the questionnaire, their responses do not always correspond to the specified period of the last 2 weeks. During the short period in which the patients answered the questions, we noted that they ignored the specified time when they commented on their responses. We did not offer any comments

Table 2. The Original Appendix 2 of the CTS-6 in English Language and Brazilian Portuguese Version of the Appendix 2 of CTS-6 After Translation and Cross-Cultural Adaptation.

Appendix 2—the CTS Palmar Pain Scale	Apêndice 2 - Escala de dor palmar na Síndrome do túnel do carpo
How much pain or tenderness do you have in the surgical scar or palm? ☐ None ☐ Very mild ☐ Mild ☐ Moderate ☐ Severe ☐ Very severe	1. Quanta dor ou sensibilidade você tem na cicatriz cirúrgica ou na palma da mão? ☐ Nenhuma ☐ Muito pouca ☐ Pouca ☐ Moderada ☐ Forte ☐ Muito forte
How much does the pain or tenderness in the surgical scar or palm limit your activities? ☐ Not at all ☐ A little bit ☐ Moderately ☐ Quite a bit ☐ Extremely	2. Quanto que a dor ou sensibilidade na cicatriz cirúrgica ou na palma da mão limita suas atividades? ☐ Nada ☐ Um pouco ☐ Moderadamente ☐ Muito ☐ Extremamente

Note. CTS-6, 6-Item Carpal Tunnel Syndrome Symptoms Scale and Palmar Pain Scale.

to patients as they completed the questionnaires to avoid influencing their understanding of the translation.

The objectivity provided by this questionnaire could optimize the time during anamnesis and facilitate understanding of the patient's condition; it could help to evaluate their preoperative and postoperative quality of life. In addition, this questionnaire is easy to administer by general practitioners who are often the first contact that the patient seeks.

Ethical Approval

This study was approved by our institutional review board.

Statement of Human and Animal Rights

All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Statement of Informed Consent

Informed consent was obtained from all individual participants included in the study.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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