SCIENTIFIC ARTICLE

Cross-Cultural Adaptation, Validation, and Reliability Process of the Michigan Hand Outcomes Questionnaire in a Turkish Population

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Purpose The Michigan Hand Outcomes Questionnaire (MHQ) is a domain-specific questionnaire that was developed to be used as a standardized instrument capable of measuring outcomes for patients with all types of hand disorders. The purpose of this study was to develop the Turkish version of the MHQ and to examine whether it is a valid and reliable tool for assessing the outcomes in hand disorders.

Methods Translation and back-translation of the MHQ were performed, according to published guidelines. A total of 70 patients with hand complaints completed the final version of the MHQ and the Disabilities of the Arm, Shoulder, and Hand (DASH) questionnaire Turkish version (DASH-T) twice, on their first visit and after an interval of 7 days. Visual analog scale (VAS) results for pain intensity and grip strength measurements of the individuals were also taken in both assessments consecutively.

Results Translation and back-translation revealed no major difficulties. The Turkish version of the MHQ met set criteria of reliability and validity. The intraclass correlation coefficient of the test–retest reliability for the 6 subscales ranged from 0.79 to 0.96. The internal consistency of the MHQ, estimated by Cronbach's alpha, ranged from 0.85 to 0.96 for all subscale scores. There were high to moderate correlations between MHQ and DASH scores and VAS and grip strength scores of the injured side.

Conclusions The Turkish version of the MHQ has excellent test–retest reliability and validity, and it is an adequate and useful instrument for measuring functional disability in hand disorders of Turkish-speaking patients. *(J Hand Surg 2011;36A:486–492. Copyright © 2011 by the American Society for Surgery of the Hand. All rights reserved.)*

Key words Cross-cultural adaptation, Michigan Hand Outcomes Questionnaire, outcome measures, Turkish version.

Many objective outcome methods, such as sensibility, grip and pinch strength, range of motion, and dexterity tests, have been used to evaluate physical function in upper extremity disorders. However, none of these assessment methods reflect the actual use of the upper extremity in daily living. Self-administered questionnaires were introduced to assess functional outcomes subjectively.[1,2] These question-

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naires provides information on the patient's perception of symptoms and functional status.[2]

Most of the functional status questionnaires are constructed in English. Cross-cultural adaptation of validated outcome instruments has been advocated to facilitate their use in international, multicenter clinical trials.[3] Direct translation of questionnaires into other languages does not guarantee maintenance of validity. It is well recognized that, if measures are to be used across cultures, the items must be not only translated linguistically but also adapted culturally to maintain the content validity of the instrument across different cultures. To maintain the validity of the original instrument, while taking into consideration important cultural differences, a specific methodology has been developed for the adaptation process.[3,4] This would also reduce the need for developing new instruments that have the same purpose.[5]

The MHQ is a domain-specific questionnaire that was developed to be used as a standardized instrument capable of measuring outcomes for patients with all types of hand disorders.[6] It was developed to measure health state domains that are important to patients with hand disorders. The instrument can be used to evaluate a patient before hand surgery and to monitor function after the surgery. The validity, reliability, and responsiveness have been reported for a variety of upper extremity conditions.[1,7–9]

The purpose of the study was to perform cross-cultural adaptation of MHQ and examine whether it is a valid and reliable tool for assessing the outcomes in hand disorders. The process of translation and adaptation is stated in detail to guide other researchers who are interested in translating a widely available outcomes instrument for international application.

MATERIALS AND METHODS

The study was divided into 2 phases. First, the English version of the MHQ was translated into Turkish and the MHQ was developed through a cross-cultural adaptation process. Second, the MHQ was tested on patients with hand problems to verify its reliability and validity.

Translation and cross-cultural adaptation

The cross-cultural adaptation process was performed by following the guidelines provided by Ruberto et al and Beaton et al.[4,10] Two forward translations were carried out by independent translators from English to their native language, which is Turkish. The first unified version with appropriately represented correspondence of all items was obtained by checking the 2 forward translations. This version was then back-translated by 2 independent translators whose native language was English. The 2 back-translators had not seen the original English text of the MHQ and were not aware of the purpose of the study. The 2 back-translations were then reviewed by 2 of the authors of this article to ascertain that the attained translation was comprehensible and in accordance with the original English version. The attained Turkish translation's cultural adaptation requirement was determined by the team, including the 2 translators whose native language is English, a linguistic scientist, and physiotherapists. This team checked the English and Turkish translations again to control the meaning differences and inconsistencies.

A near-final version was created and subjected to field testing on 30 patients (16 women, 14 men) with different hand injuries. This version was finalized after slight changes were made by consensus.

Patients

This study was conducted between January 2009 and December 2009. The sample consisted of 70 patients (28 male, 42 female) with an average age of 42 ± 11 years (range, 21–56 y) with different hand problems of at least 4 weeks' duration. Patients were referred to the outpatient department of physiotherapy or occupational therapy at Hacettepe University, Faculty of Health Sciences. The diagnoses were confirmed by the department of orthopedics, and appropriate diagnostic work-ups, including radiological and neurophysiologic investigations done by orthopedists at Hacettepe University.

Patients (1) who were unable to read or write in Turkish, (2) who had cognitive dysfunction, (3) who had neurologic disease, (4) whose symptoms had changed between the first and second measurements, (5) who were unable to complete the questionnaire independently, (6) who had any open wound or skin lesion, and (7) who had elbow and/or shoulder problems in addition to hand injury were excluded from the study. Patients who had hand surgery were included in the study at least 4 weeks after the surgery.

Written, informed consent was obtained from all participating patients at their first visit. The study conforms to the Helsinki Declaration.

Procedure

Data were collected on the day of the patient's initial visit by a physical therapist experienced in hand rehabilitation. During the patients' initial visit to the clinic, the MHQ, the DASH-T, and grip strength measurements with J-Tech Tracker Functional Capacity Evalu-