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Scientific/Clinical Article

The cross-cultural adaptation of the DASH questionnaire in Thai (DASH-TH)

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ABSTRACT

Study design: Clinical measurement.*Introduction:* Currently there are no self-report questionnaires in Thai to evaluate disability levels in patients suffering from upper extremity musculoskeletal disorders.*Purpose of the study:* To translate and cross-cultural adaptation the disabilities of the arm, shoulder and hand (DASH) questionnaire to Thai version and to evaluate content validity, construct validity and internal consistency of the questionnaire.*Methods:* The DASH-TH was produced by following cross-cultural adaptation guidelines stated by the Institute for Work and Health (IWH). Forty Thai patients with arm, shoulder or hand problems participated in field testing of the questionnaire. Content validity was determined by obtaining the item-objective congruence (IOC) value for each questionnaire item. Correlation between the DASH-TH score and numeric rating scale was used to assess construct validity. Internal consistency of DASH-TH was measured using Cronbach's alpha coefficient.*Results:* Forty patients (14 males, 26 females) with arm, shoulder or hand problems enrolled in the present study. The average age of patients was 44.8 years. The index of item-objective congruence (IOC) of each item ranged from 0.7 to 1.0. The Cronbach's alpha coefficient of the questionnaire was 0.938. There was no correlation between DASH-TH score and numeric rating scale.*Conclusion:* The DASH-TH has high content validity and internal consistency.*Level of evidence:* N/A.

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Introduction

Musculoskeletal problems of the upper extremities commonly cause limitations to perform self-care activities. The objective evaluation of the extent of the resulting disability often presents a clinical challenge. For the past 10 years, different patient-orientated questionnaires have been produced as standardized assessment tools. However, most are limited to single specific upper extremity joint or pathology only.^{1–3} Sometimes patients present with multiple joint involvement, making choosing the “right” disability measurement tool even more difficult. There is thus a need for an outcome measure which is generic enough to evaluate overall resulting upper extremity function while maintaining adequate specificity. Therefore the Institute for Work and Health (IWH) together with the American Academy of Orthopedic Surgeons (AAOS) developed a self-reported 30-item questionnaire called the disabilities of the arm, shoulder and hand (DASH) outcome measure which assessed the ability to perform daily

activities regardless of the site(s) and nature of musculoskeletal pathology.⁴ The DASH questionnaire items correlated well with the international classification of functioning, disability and health (ICF) assessment.⁵ Previous systematic reviews have summarized the DASH as the most extensively studied tool with the most supporting evidence for good clinimetric quality.^{6–9} Currently, the DASH has been translated to over 40 languages, all are available for download from IWH website (<http://www.dash.iwh.on.ca>).

The DASH has been shown to have high internal consistency,¹⁰ suggesting the possibility of item redundancy. Therefore, in 2005, the QuickDASH was developed using what was called a concept-retention approach. The QuickDASH consists of 11 items, instead of 30 items for the self-report disability and symptoms questionnaire (DASH-DS) while the two optional modules remain the same. The QuickDASH may be more appealing to use than the DASH because a shorter questionnaire is associated with less burden on the responders as well as less administrative burden. The QuickDASH was proved to be reliable, valid and responsive; retaining similar measurement properties comparing to the 30-item DASH.^{11,12}

There are many outcome measures that were translated via cross-cultural adaptations into the Thai language such as the

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Rolande Morris Disability Questionnaire,¹³ Oswestry low back pain disability questionnaire^{14,15} and Boston questionnaire.¹⁶ These condition-specific health status measures are commonly used as outcome measures in research and to assess patient progress in clinical practice.^{17–19}

At present, however, no upper extremity outcome measure is available in Thai to be used with local people. In situations where physicians do not have access to suitable translations, they may rely solely on physical impairment measures. This may affect the extent to which they are able to be patient centered in their treatment approaches. The Thai version of the DASH (DASH-TH) would provide patients whose primary language is Thai the opportunity to communicate more effectively with their physicians and participate in clinical research with this outcome tool.

Purpose of the study

The authors hypothesized that DASH-TH was valid and reliable to evaluate the disability associated with musculoskeletal problems of the upper extremities.

Hence, the purpose of this study was to: 1) produce an authorized and culturally-related Thai translation of the DASH questionnaire (DASH-TH), and 2) verify DASH-TH content validity, construct validity and reliability.

Methods

DASH questionnaire

The DASH questionnaire consists of the main 30-item, self-report disability and symptoms questionnaire (DASH-DS) and two optional modules, which are, work module (DASH-W) and sports/performing arts module (DASH-SA). The DASH is designed to measure physical function and symptoms in people with any of several musculoskeletal disorders of the upper extremity. For DASH-DS, items 1–21 ask about the degree of difficulty when performing various physical activities because of an arm, shoulder or hand problems; items 22, 23 evaluate the extent of social activities and work/daily activities limitation; item 29 asks about the effects of the upper extremity problem on sleep and the last item, item 30 asks for the patient's perception of him/herself in the light of the upper extremity problems. The patients rate their difficulty in performing specified tasks on a five-point Likert scale from 1 "no difficulty or no symptom" to 5 "unable to perform activity or very severe symptom." The DASH-DS score is then calculated. The lowest possible score ranges from 0 (no disability) to 100 (severest disability). The higher the score indicates greater disability. A DASH score may not be calculated if there are more than 3 missing items. The DASH-W and DASH-SA each contain 4 items for the patient to rate the ability to work and to perform sports or play musical instruments on a scale of 1–5 similar to the DASH-DS. An optional module score may not be calculated if there are any missing items. The scoring instructions for DASH-DS, DASH-W and DASH-SA are convenient and provided in the DASH questionnaire (<http://www.dash.iwh.on.ca>).

Translation and cross-cultural adaptation process

The authors first contacted the IWH for the permission to translate. Adaptation process was accepted by IWH and the translated form can be seen on IWH website. The authors then followed the given translation and cross-cultural adaptation protocol (see Fig. 1).

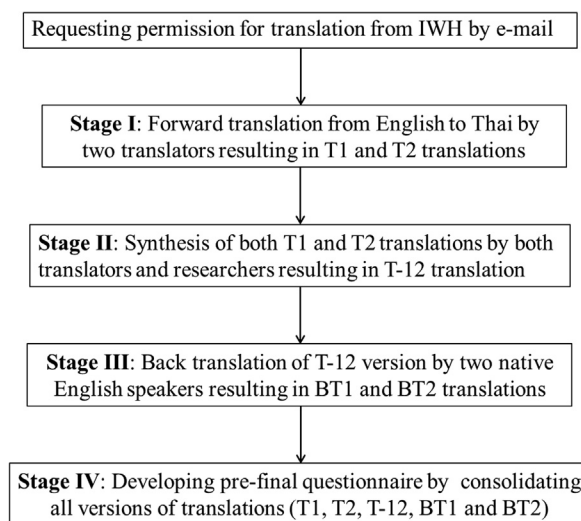


Fig. 1. Translation with cross-cultural adaptation process.

Step 1: forward translation

Forward translation was performed by two independent bilingual translators whose first language is Thai. One of the translators is a physician. The other translator had a master degree in English literature. The results were T1 and T2 versions.

Step 2: synthesis of the translations

T1 and T2 versions were rearranged using the format provided by the IWH for synthesis of the translations process. Two translators and one research team member go through each part of each person's translated questionnaire and resolve any disagreement step by step. Any discrepancies were resolved by discussion to reach a consensus and one common forward translation version called T-12 was produced.

Step 3: back translations into English

This step was to make sure that the translated versions still retained the concept of the original language. Two back translators are missionaries whose first language was English without any medical background translated the T-12 version, therefore resulting in two back translations, BT1 and BT2.

Step 4: revision by expert committee

The expert committee's role was to develop the pre-final version of the questionnaire for field testing by consolidating all the versions and components of the questionnaire (T1, T2, T-12, BT1, BT2). Our expert committee consisted of one rehabilitation specialist, one linguistic expert, one methodologist, all four translators, and a principal researcher as translation synthesis recorder.

Item was reviewed one by one, when discrepancy occurred, extensive discussion led by the linguistic expert took place in order to reach a consensus before moving on to the next item.

Field testing of the pre-final DASH-TH

Before field testing, the authors evaluated content validity of the DASH-TH by recruiting a team of experts consisting of 2 hand surgeons and 5 rehabilitation specialists. The experts rated individual items on the degree to which they do or do not measure specific objectives listed by the test developer. The scoring system for each questionnaire item is

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