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Original article

## French translation and cross-cultural adaptation of the Michigan Hand Outcomes Questionnaire and the Brief Michigan Hand Outcomes Questionnaire<sup>☆</sup>

*Traduction et adaptation culturelle du Michigan Hand Outcomes Questionnaire et brief Michigan Hand Outcomes Questionnaire de l'anglais au français*

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### ABSTRACT

Patient-Reported Outcome Measures (PROMs) are important clinical devices for evaluating injuries and surgeries of the hand. However, some of the most widely used questionnaires, such as the MHQ and bMHQ, are currently unavailable in French, which prevents them from being used in the French Canadian province of Quebec as well as in other French-speaking nations. We therefore intend to develop valid and culturally adapted French translations of the afore-mentioned questionnaires. Two independent bilingual translators converted all English questionnaires to French. Two distinct translators then translated the French versions back to English in reverse-blinded fashion. Discrepancies between the original and second English versions were examined by a committee of four bilingual healthcare professionals before final French translations of all documents were produced. Thirty patients bilingual in French and English were then asked to complete the original and French versions of the MHQ and bMHQ. Their answers were compared in order to assess the accuracy of our translation. In light of these findings, revised French versions were produced. French versions of the MHQ and bMHQ questionnaires produced metrological qualities of validity and fidelity with an inter-class correlation superior to 0.90 and a kappa coefficient of 0.81 to 1. Clinical applicability revealed the distribution of scores according to disease process was reproducible between the English and French versions. PROM translation requires a rigorous process in order to achieve strong metrological qualities in both the original and translated versions. We produced French translations of the MHQ and bMHQ by abiding to the Beaton method of cross-cultural adaptation of self-reported measures.

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### R É S U M É

Les *Patient-Reported Outcome Measures* (PROMs) sont un outil important dans l'évaluation des pathologies et des traitements en chirurgie de la main. Toutefois, certains questionnaires couramment employés dans la littérature, tels que le *Michigan Hand Questionnaire* (MHQ) et le *brief Michigan Hand Questionnaire* (bMHQ), ne sont pas disponibles en français. Nous avons donc pour objectif de développer une traduction française de ces questionnaires que nous pourrions utiliser auprès de nos patients francophones. Premièrement, deux traducteurs bilingues ont produit une version française initiale des questionnaires. Cette version a ensuite été retraduite en anglais par deux autres traducteurs à l'aveugle.

<sup>☆</sup> Le rédacteur en chef a souhaité la publication de l'article en français et en anglais, de sorte que les lecteurs français qui seraient peu à l'aise avec l'anglais puissent prendre connaissance facilement de la traduction de ces questionnaires et de l'étude scientifique réalisée à leur occasion.

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Les différences entre les versions anglaises, originale et retraduite, ont été évaluées par un comité de quatre professionnels de la santé bilingues, puis une version française corrigée a été produite. Trente patients bilingues en français et en anglais suivis pour une pathologie quelconque de la main ont ensuite rempli les versions française corrigée et anglaise originale de chaque questionnaire, et leurs réponses ont été comparées afin de déterminer la concordance des résultats. À l'aide de ces données, les versions françaises finales du MHQ et bMHQ ont été complétées. Les versions françaises des MHQ et bMHQ ont démontré une validité interne avec une corrélation interclasse supérieure à 0,90 et un coefficient kappa de 0,81 à 1,00. La concordance entre chaque élément mesuré dans le questionnaire était reproductible entre les versions française et originale. La traduction des PROMs nécessite une méthodologie adéquate afin de reproduire la validité et l'adaptation culturelle dans une autre langue. Nous présentons donc les versions finales françaises des questionnaires MHQ et bMHQ, produites selon la méthode Beaton.

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## 1. English version

### 1.1. Introduction

Several standardised measures have been developed in recent years with the intent to quantify the burden of disease and the response to medical treatments from the patient's perspective. Such clinical evaluation tools and questionnaires have been coined with the term Patient-Reported Outcome Measures (PROMs) [1]. In practice, PROMs are used in different settings, from diagnostic measurements to monitoring of treatment regimes, including within research protocols for screening or treatment outcomes.

Surgical procedures of the upper extremity often require rehabilitation protocols in which PROMs are routinely employed to monitor progress. The Disabilities of the Arm, Shoulder and Hand (DASH) [2], the Brigham and Women's Hospital carpal tunnel questionnaire (CTQ) [3], the Patient-Rated Wrist Evaluation questionnaire (PRWE) [4], the Short-Form-36 (SF-36) [5] and the Arthritis Impact Measurement Scales 2 (AIMS2) [6] are some examples of commonly used outcome measures. In addition to the aforementioned PROMs, the Michigan Hand Outcomes Questionnaire (MHQ) provides valuable psychometric data focused on the hand and fingers regrouped into 6 categories: overall hand function, activities of daily living, pain, work performance, aesthetics and patient satisfaction with hand function [7]. A brief version of this questionnaire (bMHQ) was developed to minimize the time of administration and to reduce responder burden, which demonstrates excellent reliability and validity [8].

When testing for validity of a questionnaire, one requirement demands fluency of the participant in the language of the administered test [9]. Therefore, non-English patients cannot benefit from the psychometric data purveyed by the PROM, if it has not been translated and validated in the desired language. This is the case for MHQ and bMHQ in patient populations where French language is predominant. Without proper translation and cultural adaptation of the original English versions into French, many francophone patients cannot benefit from monitoring of self-assessed function and enrolment into research projects measuring specifically hand function. The aim of this study was to translate and culturally adapt the MHQ and bMHQ to French language.

### 1.2. Patients and methods

#### 1.2.1. Patients

In total, 30 patients were enrolled in the translation study, of which 16 were women and 14 were men (Table 1). The mean age of participants was 53 years old and reasons for rehabilitation protocols included 12 patients with release of carpal tunnel, 8 with thumb carpo-metacarpal arthritis, 3 with tendons lacerations repaired primarily, 3 with replantation of a finger, 2 with digital nerve lacerations and 2 with Dupuytren's contractures. On the

**Table 1**

Patient demographics and characteristics upon completion of the translated version of the MHQ/bMHQ.

	Number <i>n</i> = 30	Percentage (%)
Sex		
Men	14	47
Women	16	53
Race		
Caucasian	29	97
Other	1	3
Dominance		
Right	30	100
Left	0	0
Reason for rehabilitation		
Carpal tunnel syndrome	12	40
Thumb arthritis	8	27
Tendon lacerations	3	10
Finger replantation	3	10
Nerve lacerations	2	7
Dupuytren's contractures	2	7
Level of education		
High school or less	7	23
College/Technique studies	10	33
University or more	13	43
Socioeconomic status		
Less than 30,000 CAD (€20,200)	7	23
30,000–70,000 CAD (€20,200–€47,000)	14	47
More than 70,000 CAD (€47,000)	9	30

demographic section of the MHQ, 23% responded to a level of education "high school graduate or less", 33% as "college graduate or technical studies" and 43% with a degree "university graduate or post-graduate degree". For economic status, the majority of patients (47%) reported an income ranging from 30,000–70,000 CAD (€20,200–€47,000), compared with 23% below 30,000 CAD (€20,200) and 30% above 70,000 CAD (€47,000).

### 1.3. Methods

A license for academic and research education use of the MHQ and bMHQ was obtained from the copyright holders. Translation and cross-cultural adaptation of the MHQ and bMHQ was performed according to the methodology described by Beaton et al. [9]. The process requires completion of 5 stages with appraisal of written reports by the developers of the targeted questionnaire. First, two accredited translators produced an initial version of the French questionnaire (T1a & T1b). Then, the initial French translations were synthesized into a combined version (T2) and reviewed by an expert panel composed of 4 bilingual members to review for any discrepancy between the initial translators' reports. The members of the committee were healthcare pro-

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