Cultural Adaptation and Linguistic Validation of the Beliefs about Medicines Questionnaire in Malaysia

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A B S T R A C T

Background: Low rate of adherence was found strongly associated with patients' beliefs across the studies about chronic diseases with hypertension. A crucial move is needed to bridge the gap between appropriate assessment tools and local hypertensive patients' medication adherence. **Objective:** To produce a translated version in Malay language of Beliefs about Medicines Questionnaire (BMQ) that was "conceptually equivalent" to the original English version for use in local clinical practice and research. **Methods:** The forward translation process was conducted by two independent professional translators and back translation was done by two other independent translators. A reliability analysis was conducted on 238 conveniently selected hypertensive patients. Intraclass correlation coefficient (ICC) was used to assess test-retest reliability for the randomly selected 40 patients in a period of 2 weeks. Discriminant validity was tested through Necessity-Concerns differential, BMQ subscales, and other parameters. **Results:** The overall Cronbach alpha for the internal consistency was good (0.860). The subscales of the BMQ demonstrated adequate

internal consistency, with Cronbach alpha value of 0.759 for Specific-Necessity, 0.762 for Specific Concern, 0.624 for General-Overuse, and 0.756 for General-Harm. The ICC was excellent (0.922). Discriminant validity revealed that BMQ Specific-Necessity score was significantly inversely correlated with the systolic blood pressure level. Systolic and diastolic blood pressure levels ($P = 0.038$; $P = 0.05$) were reported to be significantly correlated with the Necessity-Concerns differential, with Necessity score equal or exceeding Concerns score. **Conclusions:** The Malay-translated version of BMQ is a reliable and valid tool to assess patient belief about medication, especially medication adherence among the hypertensive patients in Malaysia.

Keywords: Beliefs about Medicines Questionnaire (BMQ), hypertension, medication adherence, validation.

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Introduction

Despite the advancement in antihypertensive therapy, less than a quarter of hypertensive patients around the world are still far from optimal blood pressure control [1]. Medication adherence is the primary determinant to underpin the effectiveness of the treatment [2]. A wide variation in nonadherence rate (i.e., 7%–67%) has been reported among patients with cardiovascular diseases [3]. It is evident that many hypertensive patients have obstacles that prevent them from adhering to their medication regimens [4]. Approximately half the hypertensive patients were found to be nonadherent, leading to suboptimal clinical benefits [5,6]. In Malaysia, only 35% of hypertensive patients have

controlled blood pressure level with antihypertensive medications [7]. Of late, about 50% of treatment failures are due to poor medication adherence and this results in substantial morbidity and mortality [5,8]. Worldwide, approximately $177 billion was spent in direct and indirect health care cost annually due to poor adherence [9].

Patients' belief and attitude have been reported to influence medication adherence [10–12]. Low rate of adherence was found to be strongly associated with patients' beliefs across the studies about chronic diseases with hypertension [13], coronary heart disease [14], diabetes [15], asthma [16], and renal disease [17]. Exploring the health beliefs of patients is vital to improve compliance and thereby blood pressure among hypertensive

patients [13,18]. Literature demonstrated that patients' beliefs about medication yielded a significant predictor for medication adherence compared with social demographic factors [14]. To maximize treatment outcomes, a number of rigorous reviews were focused on the modifying factors, such as patients' beliefs, rather than nonmodifying demographic variables [14,19].

Patients' beliefs toward beneficial and harmful effects of medications have strongly correlated with patients' choice in taking medication [20,21]. As a result, deepening patients' beliefs of medication is vital to improve medication adherence [15,22]. To improve adherence and treatment therapy, Horne et al. [12] developed Beliefs about Medicine Questionnaire (BMQ) to assess cognitive representations of medication. The BMQ consists of two separate scales: The BMQ-Specific assesses the patient's need and concern about medication and the BMQ-General evaluates the patient's view about the overuse and harmfulness of medication [12].

The well-established BMQ has been translated and validated in some European [23,24] and Middle East countries [24,25]. BMQ appears to be a valid and reliable tool for hypertensive [25] and cardiovascular patients [12]. In view of the limited tools to assess medication adherence available in Malaysia, there is a need to bridge the gap between appropriate assessment tools and local hypertensive patients' medication adherence. Thus, the objective of this study was the cultural adaptation of the BMQ into Malay language and its validation for use in local clinical practice and research.

Methods

Ethics Approval

Ethical approval (reference no. USM-HLWE/IEC/2014 [0003]) from Universiti Sains Malaysia–Hospital Lam Wah Ee Ethics Committee was obtained before the commencement of the study. Written consent was obtained from the participants. The participants were also informed about the study objective, study procedure, and the confidentiality of data obtained.

Participants and Study Design

A cross-sectional study design was adopted in this study. Convenient sampling was done at the five districts in the state of Penang, Malaysia. Poster invitations were put on the notice board 1 month before the event. Education booths and health awareness programs were set up at the residential area and multipurpose hall in each district during the weekend over the 2-month period. All the residents were eligible to participate in the health screening activities. Several health screening activities were conducted by well-trained pharmacy students and nurses including blood pressure monitoring, measuring of body weight, medication counseling, and health education talk. Respondents were requested to be seated for at least 10 minutes before their blood pressures were being measured. A blood pressure monitoring apparatus (Omron® model HEM-7080) was used to monitor respondents' blood pressure level. Systolic and diastolic blood pressure levels were recorded on the questionnaire form. Throughout the health screening program, hypertensive patients with the following criteria were recruited: adult patients (i.e., 18 years and older), being diagnosed with hypertension by a registered medical practitioner for at least 3 months (patients need to bring the medical appointment card for verification), prescribed with at least one antihypertensive medication for the past 3 months, and able to communicate in English or Malay. Patients with severe enduring health problems of cognitive impairment were excluded from the study. Five or more participants per item of questionnaire are required to validate the translated version of BMQ [26]. In addition, 40 participants were randomly selected for a 2-week reliability test-retest analysis.

Data Collection

A total of 10 data collectors were recruited in this study. The data collectors were trained by the researcher (C.S.T.) to ensure the consistency of data acquisition. For validation purpose, data on the demographic characteristics of the participants including age, ethnicity, education level, duration of hypertension, and other diseases were also collected.

Description of the Original Instrument

The BMQ comprises 18 questions that can be divided into two parts: specific and general beliefs about medication. The BMQ-Specific assesses patients' belief toward the necessity of medication (Specific-Necessity) and concerns about the danger and toxicity of medication (Specific-Concerns) [12]. The BMQ-General examines the belief of harmfulness caused by medication (General-Harm) and assesses patients' belief about pharmacology management by general practitioner (General-Overuse) [12]. The score for each section of the BMQ is based on the five-point Likert scale, where 1 = strongly disagree, 2 = disagree, 3 = uncertain, 4 = agree, and 5 = strongly agree. A higher score indicates a stronger belief and concern in the concept reflected for each part of assessment.

Instrumentation Translation

Translation and Cultural Adaptation of Patient-Reported Outcomes Measures-Principles of Good Practice was adopted for the translation purpose for this study [27] (Fig. 1).

Translation and Cultural Adaptation of the Questionnaire

First part: Preparation

The English version of BMQ was developed by Horne et al. [12], and written permission was obtained from the developer for the translation and validation purpose. During the preparation, a holistic literature review, including the development and evaluation of BMQ for assessing the cognitive representation of medication, patients' belief in influence of medication adherence and concordance, was conducted to further understand and strengthen the concept of BMQ and to avoid misinterpretation [12,14,16,18,28]. Furthermore, the researchers from this study comprised a professor, two doctorate researchers, and a PhD postgraduate student who had a vast experience in translation and validation of questionnaires in previous studies, including the Malaysian-version Morisky Medication Adherence Scale and Malaysian version of Diabetes Quality of Life-Brief Clinical Inventory [29–31].

Second part: Forward translation

Forward translation of the original questionnaire from the source language (English) to the target language (Malay) was carried out by two independent professional translators with native speakers of the Malay language and fluent in English. Before the translation, the forward translators were briefed about the basic concept of this study so that the colloquial translations could be easily understood by the general layperson.

Third part: Reconciliation

The reconciliation process was carried out to resolve discrepancies between the two translated versions. The two translated versions were compared and reviewed with the original English version before an agreement was reached on the first Malay-version BMQ.