



ORIGINAL ARTICLE

The Short Form 36 English and Chinese versions were equivalent in a multiethnic Asian population

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Abstract

Objective: The primary aim of this article was to evaluate measurement equivalence of the English and Chinese versions of the Short Form 36 version 2 (SF-36v2) and Short Form 6D (SF-6D).

Study Design and Setting: In this cross-sectional study, health-related quality of life (HRQoL) was measured from 4,973 ethnic Chinese subjects using the SF-36v2 questionnaire. Measurement equivalence of domain and utility scores for the English- and Chinese-language SF-36v2 and SF-6D were assessed by examining the score differences between the two languages using linear regression models, with and without adjustment for known determinants of HRQoL. Equivalence was achieved if the 90% confidence interval (CI) of the differences in scores, due to language, fell within a predefined equivalence margin.

Results: Compared with English-speaking Chinese, Chinese-speaking Chinese were significantly older (47.6 vs. 55.5 years). All SF-36v2 domains were equivalent after adjusting for known HRQoL. SF-6D utility/items had the 90% CI either fully or partially overlap their predefined equivalence margin.

Conclusion: The English- and Chinese-language versions of the SF-36v2 and SF-6D demonstrated equivalence. © 2013 Elsevier Inc. All rights reserved.

Keywords: Health-related quality of life; Equivalence; Psychometrics; Singapore; Medical; Economics

1. Introduction

Health-related quality of life (HRQoL) has been increasingly accepted as an outcome measure in medical interventions and health surveys as it represents an individual's assessment of his or her own well-being and ability to perform certain roles [1]. The Short Form 36 (SF-36) questionnaire is a well-established HRQoL instrument which has been used in nearly 4,000 publications [2] and has been translated for use in more than 40 countries as part of the International Quality of Life Assessment Project [3].

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Psychometric analyses have shown that the translated versions of the SF-36 are reliable and valid in many populations [3,4].

In multiethnic countries, where different language versions of the SF-36 are used by different ethnic groups, assessing HRQoL becomes challenging as culture and language may affect respondents' interpretation of and answers to HRQoL instruments [5–7]. Several frameworks for equivalence of cross-cultural adaptation have been proposed, including that by Herdman et al. [8], which conceptualize equivalence as conceptual, item, semantic, operational, measurement, and functional. In 2001, Thumboo et al. [9] had validated the use of the English and Chinese SF-36 version 1 (SF-36v1) for use in Singapore. The SF-36 version 2 (SF-36v2) is a modification of the SF-36v1, and the modifications may be summarized as follows: (1) simpler instructions and questionnaire items and improved layout for questions and answers to improve clarity, (2)

What is new?

Key findings

- The English- and Chinese-language versions of the Short Form 36 version 2 (SF-36v2) and Short Form 6D (SF-6D) are equivalent. The results show that it may be better to compare scores at the scale and utility level rather than at item level for the SF-36v2 and SF-6D, respectively.

What this adds to what was known?

- Studies had reported that there was language equivalence between the English and Chinese languages of the Short Form 36 version 1 (SF-36v1) health survey. None was done for the SF-36 version 2 (SF-36v2) despite the following changes made to the instrument: (1) simpler instructions and questionnaire items and improved layout for questions and answers to improve clarity, (2) phrasing to provide greater comparability with translations and cultural adaptations widely used in the United States and other countries, and (3) revision of response options from dichotomous to five-level response choices in selected items to improve sensitivity and from six-level to five-level response choices in selected items for simplification. These changes had been reported to enhance the responsiveness of the SF-36v1. Our study had showed measurement equivalence in both the SF-36v2 and SF-6D to (1) ensure that different languages measure the same construct, (2) allow the pooling of data to increase the power and allow results to be generalized to English- and Chinese-speaking Asian population as a whole, and (3) allow the continued use of the SF-6D in valuing health of the Asian populations based on the revised SF-36v2.

What is the implication and what should change now?

- For Asian countries with English- and Chinese-speaking populations, if they were to use the same instrument (SF-36v2) as validated in Singapore, there is no need for them to analyze SF-36v2 or SF-6D separately for different ethnic groups (specifically between those who completed the English-language version compared with the Chinese-language version) because the two languages measure the same construct. The results can be pooled together and conclusions can be made to both the language-speaking group as a whole.

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Measurement equivalence of the language versions of the SF-36 is particularly germane in multiethnic countries for several reasons. First, with globalization, almost all countries have their fair share of immigrants. To generalize results from HRQoL studies to the population as a whole, it is important to not leave these groups of immigrants out of such studies. Having immigrants or locals with preference for different languages requires that measurement equivalence to be done to ensure that the different languages measure the same construct. Second, different language versions of the SF-36 are often used to cater to the different language needs of respondents. Hence, demonstrating the measurement equivalence (along with other aspects of equivalence) is necessary to allow pooling of data to increase the power and generalizability of the findings to the population as a whole. Third, studies have shown that the prevalence and severity of chronic medical conditions may differ among various ethnic groups [12–15]. If equivalence of HRQoL instruments has not been established, then observed ethnic differences in HRQoL need to be interpreted with caution as they may reflect real differences in HRQoL (e.g., related to differences in the prevalence of disease or other factors that affect HRQoL or simply different ways of thinking about health) or may reflect the lack of one or more aspects of equivalence [16].

The Short Form 6D (SF-6D) was derived from the SF-36 by Brazier et al. [17,18] to allow data collected using the SF-36 to be used in economic evaluations [19,20]. Such development had increased the usefulness of the SF-36 instrument because it now can be used in cost-utility analysis of health technologies and services and can provide information on the trade-off between various health states [17,18]. Our previous work on the SF-36v1 had demonstrated item, measurement, and functional equivalence between the English- and Chinese-language versions of the SF-6D, allowing the instrument to be used to value health in Asian populations [21].

Singapore is a multiethnic population, primarily made up of Chinese, Malay, and Indians. Although English had become the main language of commerce and education since its independence, there still remains a substantial proportion of the population who are more comfortable with Chinese (Mandarin), Malay, or Tamil as the language of

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