Original Research

The 8-item Morisky Medication Adherence Scale: Validation of a Brazilian–Portuguese version in hypertensive adults

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Abstract

Background: The Morisky Medication Adherence Scale (MMAS-8) remains one of the most widely used mechanisms to assess patient adherence. Its translation and testing on languages in addition to English would be very useful in research and in practice.

Objective: To translate and examine the psychometric properties of the Portuguese version of the structured self-report eight-item Morisky Medication Adherence Scale among patients with hypertension.

Methods: The study was designed as a cross-sectional survey conducted in six Family Health Units of the Brazilian Unified Health System, in Maceió, between March 2011 and April 2012. After a standard "forward–backward" procedure to translate MMAS-8 into Portuguese, the questionnaire was applied to 937 patients with hypertension. Reliability was tested using a measure of internal consistency (Cronbach's alpha), and test–retest reliability. Validity was confirmed using known groups validity. Three levels of adherence were considered based on the following scores: 0 to <6 (low); 6 to <8 (medium); 8 (high).

Results: The mean age of respondents was 57.1 years (SD = 12.7 years), and 71.5% were female. The mean number of prescribed antihypertensives per patient was 1.62 (SD = 0.67). The mean score for the medication adherence scale was 5.78 (SD = 1.88). Moderate internal consistency was found (Cronbach's alpha = 0.682), and test–retest reliability was satisfactory (Spearman's $r = 0.928$; $P < 0.001$). A significant relationship between MMAS-8 levels of adherence and BP control (chi-square, 8.281; $P = 0.016$) was found. 46.0%, 33.6%, and 20.4% of patients had low, medium, and high adherence, respectively. The

self-report measure sensitivity, specificity, positive and negative predictive values were 86.1%, 31.2%, 57.4% and 68.3% respectively.

Conclusions: Psychometric evaluation of the Portuguese version of the MMAS-8 indicates that it is a reliable and valid measure to detect patients at risk of non-adherence. The MMAS-8 could still be used in routine care to support communication about the medication-taking behavior in hypertensive patients.
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Introduction

Hypertension is a major risk factor in the development of cardiovascular disease and one of the most important public health problems in developed countries, affecting >25% of adults.[1] In Brazil, the prevalence of hypertension seems to have diminished 6% in the last three decades, but it still is approximately 30%, while cardiovascular disease represents the most frequent cause of death, at 32%.[2,3] Given the linear relationship between level of blood pressure (BP) and risk for cardiovascular events,[4] it becomes clear why hypertension control to systolic BP (less than 140 mm Hg) and diastolic BP (less than 90 mm Hg) approximates only 20% among treated and untreated Brazilian adults.[5,6] Even among treated patients (67.3%), hypertension control rates remain suboptimal at about 26%.[7]

A significant but often unrecognized cardiovascular risk factor universal to all patient populations is medication nonadherence,[8] which can be defined as the extent to which a person's behavior – taking medication, following a diet, and/or executing lifestyle changes – corresponds with agreed recommendations from a healthcare provider.[9] According to the World Health Organization, in developed countries, such as the United States, only 51% of the patients treated for hypertension adhere to the prescribed treatment, while in China only 43% of patients with hypertension adhere to their antihypertensive medication regimen.[10] In Brazil, previous studies have shown a prevalence of medication adherence varying from 22% to 40%.[11,12] This is a growing concern to clinicians and healthcare systems because of mounting evidence that non-adherence is prevalent and associated with adverse outcomes and higher costs of care.[13–15] Thus, poor medication adherence must be addressed in any intervention aimed to improve BP control.[16,17]

Several methods are available for the assessment of adherence, however accurate measurement continues to be difficult, and each available method has its own advantages and disadvantages.[18,19] Methods for assessing adherence to medications are categorized as either direct or indirect.[3] Direct methods include measurement of the level of target drug or metabolite in blood, measurement of a biological marker in blood and directly observed therapy. Although direct methods are considered to be more robust than indirect methods, they also have limitations, once knowledge of the "true" adherence of a patient is ultimately based on assumptions that depend on the health professional's empathy and intuition and the patient's beliefs and frankness.[10] Indirect methods of adherence assessment – which are prone to underestimation of non-adherence – include patient self-reports, pill counts, rate of prescription refills, electronic medication monitors, assessment of the patient's clinical response, measurement of physiological markers and patient diaries.[11,12] The most commonly used indirect methods include patient self-report, pill counts, and pharmacy refills. One of the most widely used patient self-report instruments is the validated four-item Morisky, Green, and Levine Self-Reported Medication Taking Scale,[15] later revised as Morisky Medication Adherence Scale (MMAS-4),[16,17] which measures non-adherence using 4 items and identifies 2 types of non-adherence behavior – unintentional and intentional.[14,18,19,23–25] The Morisky Medication Adherence Scale (MMAS-8) is an 8-item self-report scale for measuring medication-taking behavior developed from the previously validated 4-item scale[20–22] and supplemented with additional items to better capture barriers surrounding adherence behavior. To date, a validated Portuguese version of the MMAS-8 has not been available. The aims of our study were to translate the MMAS-8, to analyze psychometric properties