Research paper

Cross-cultural validation of the Drug Regimen Unassisted Grading Scale (DRUGS) to assess community-dwelling elderly's ability to manage medication

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A B S T R A C T

Purpose of the research: Evaluation of the elderly's ability to manage their own medication can be a significant step in identifying inabilities and potential needs. The aim of this study was to perform the linguistic and cultural adaptation of DRUGS to Portugal and determine its psychometric properties.
Material and methods: The adaptation was started with the translation/back translation cycle completed by four independent bilingual experts (two Portuguese/two English). The cultural component was accomplished through an external experts meeting and a longitudinal screening of concepts and construct. The pilot study was carried out in a sample of 50 Portuguese community-dwelling elders. Descriptive data, correlations, internal reliability, response consistency and exploratory factor analysis was conducted using SPSS Statistics, IBM (v.22).
Principal results: Of the 50 participants, 41 (82%) were women, and the mean age was 78.74, ± 7.03 years. The sample took a mean of 6.74, ± 2.76 medicines per day. The DRUGS-PT (Portuguese version of DRUGS) mean score was 80.63, ± 26.36 (range of 2.78 to 100; median of 91.67) in tests and 78.44, ± 25.59 (range of 0 to 100; median of 87.5) in retests. Cronbach's = 0.81. KMO = 0.7 and a Bartlett's test (2 = 117.81 [dF = 6]; $P < 0.001$). The response consistency between test and retest was verified.
Major conclusions: We have obtained the European Portuguese version of the DRUGS instrument with acceptable psychometric properties, which can now be used in the elderly in clinical and research contexts.

1. Introduction

Globally, the population aged 60 or more is growing faster than that of younger adults and children [1–3]. Moreover, in European countries, the proportion of elderly population, defined as individuals aged 65 and over, is significant. For example, in Portugal over the last 10 years, this proportion has changed from 16.6 to 19.9% [2].

Ageing involves a continuum of changes in biological, functional, psychological and social processes of life. Ageing is also synonymous with chronic diseases. The prevalence of diseases in the elderly population generally increases over time [4].

Comorbidity, which refers to one or more additional diseases among people, occurs frequently in elderly populations. In the majority of OECD (Organisation for Economic Co-Operation and Development) countries, sufferers from multiple chronic conditions represent more than 50% of total disease [5]. Major consequences of comorbidity in the elderly are disability and functional decline, poor quality of life and the need for integrated and continuous care [6–8].

Disability, which rises significantly with age, refers to loss of health, conceptualized in terms of functioning capacity in a set of health domains such as mobility, cognition, hearing and vision.

According to the World Health Organization, the prevalence of moderate and severe disability in adults aged 60 years and older is 46% [9].

As a result of comorbidity, the elderly are often prescribed several drugs. Older people have the highest consumption of medication, which increases the risk of drug-related harm and the risk of not using the drugs as prescribed, both of which can result in poorer health outcomes, more complex clinical management and increased healthcare costs [10–12].

Non-adherence to medication is also a common problem among the elderly with chronic conditions. Several studies have investigated the reasons for non-adherence and identified potential factors that might lead to intentional or unintentional deviation from the physician's instructions [13–15]. Difficulty with medication adherence is one of the major causes of frail older adults being placed in nursing homes [16].

The correct use of medication is a pillar of successful ageing; functional and instrumental activities have an important role in achieving this goal. Medication management capacity can be defined as the cognitive and functional ability to self-administer a medication regimen as it has been prescribed. It is a measure of ability to comply with a medication regimen, when the individual's wish or desire is to follow the regimen as prescribed [17]. Additionally, an important dimension to the process of compliance is consideration of patients' cognitive and physical ability to manage the medication [18,19].

To ascertain the medication management capacity of older people is an essential first step in tailoring interventions. To our knowledge, there are no measurement instruments validated for assessing the medication management ability in the community-dwelling elderly population in Portugal.

The aim of this study was to perform a linguistic and cultural adaptation of the Drug Regimen Unassisted Grading Scale (DRUGS) to the Portuguese elderly population and determine the psychometric properties, including test-retest reliability of the Portuguese version of DRUGS (DRUGS-PT) for use with Portuguese community-dwelling elders, by healthcare providers and researchers.

2. Materials and methods

2.1. Instrument

DRUGS was developed to assess the ability of elders to manage their own medication [20,21]. This tool is based on the development of four tasks for each individual medicine presented in the real medication regimen that the elderly person was taking at the time of assessment. The tasks must be performed by the elderly, however, the form must be fulfilled by the interviewer. It is comprised of two appendices: Appendix A investigates the daily habits and hours of meals in relation to the medication-taking schedule while Appendix B covers answers for each task related with medication: 1) Identification; 2) Access; 3) Dosage; and 4) Timing. Answers options are either able (1 point) or unable (0 points). The instrument is intended for elders who manage their own medication. The maximum possible score and the summary score are calculated using the follow formulae:

$$Maximum\ score = \#Medications\ of\ reference\ list \times 4$$

$$Summary\ score\,(\%) = \frac{\sum(Able;\ Unable)}{Maximum\ score} \times 100$$

We obtained authorization from the original author (Professor Jeanne Y. Wei) to perform adaptation and validation.

2.2. Study design and data collection

The adaptation of DRUGS started with the linguistic component, through a translation and back translation cycle by four independent bilingual experts (two Portuguese natives and two English natives). The linguistic screening and the cultural adaptation were performed by one-way expert analysis and an external experts meeting to check the operational, conceptual and cultural specifications. All the experts involved in the process have more than 15 years of professional experience [22,23].

Cultural pre-test was performed with ten older adults to detect and modify words or expressions that were difficult to understand. An overview of the adaptation and validation process is provided in Fig. 1.

The pilot study and full psychometric analysis (cognitive and functional status) were based on a pre-final version of the Portuguese DRUGS (DRUGS-PT) and carried out in community-based elderly day centres, in Évora (Alentejo Region), Portugal. Test and retest data (with at least a 15-day interval) were collected from September 23, 2014 through March 27, 2015. On the day of the test, each participant would bring their medication list, containers or therapeutic guide.

This study was approved by the Scientific Committee of the Faculty of Pharmacy of the University of Lisbon and by the Ethics Committee of the University of Évora (Approval document number: 14009). All participants were informed about the study aim and gave their informed consent for participation.

2.3. Sampling

Purposive sampling was adopted. Eligibility criteria included age of 65 years or older, taking at least one medication and absence of visible signals of dementia. In order to maximize the sensitivity
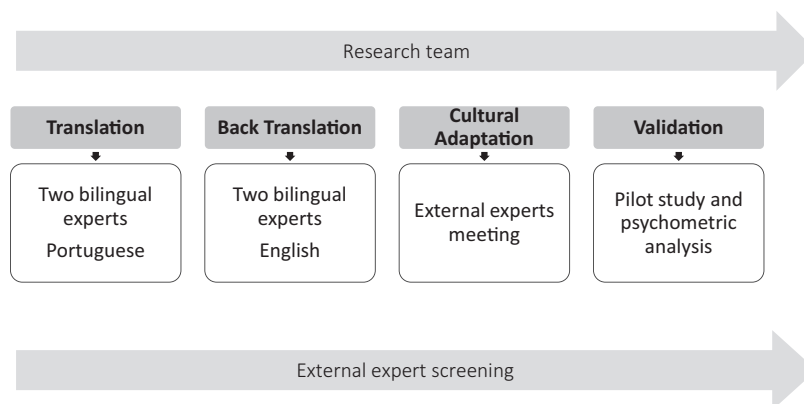

Fig. 1. Overview of the adaptation and validation process.