

Research Paper

# Pain intensity is associated with both performance-based disability and self-reported disability in a sample of older adults attending primary health care centers

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## Abstract

**Background:** Older adults' function level can be used as a predictor of future detrimental events, such as disability, reliance on others, risk of institutionalization and likelihood of death. The assessment of function at the primary health care centers using self-reported and/or performance based measures is of prime importance.

**Objective:** To determine whether personal factors, pain, depression and physical activity are associated with self-reported and performance based disability for older adults aged  $\geq 60$  years attending primary health care centers, as measured by the WHO Disability Assessment Schedule 2.0 (WHODAS 2.0) and Short Physical Performance Battery (SPPB), respectively.

**Methods:** Participants (196 females and 55 males; mean age  $\pm$  SD = 70.87  $\pm$  7.76) had their pain, self-reported disability, performance, physical activity levels and depressive symptoms assessed. Regression analyses were performed with self-reported and performance-based disability as the dependent variable and age, sex, education, chronic conditions, depression, physical activity and pain characteristics as dependent variables.

**Results:** Mean (SD) results for SPPB were 8.45 (2.86) and 20.06 (8.21) for WHODAS. Pain intensity, depression, pain frequency, number of chronic conditions and level of physical activity explained 44% of the self-reported disability variance. Pain intensity, age, level of physical activity, years of formal education and chronic conditions explained 37% of the performance variance. Pain intensity alone explained 27% and 18% of the self-reported and performance based disability, respectively.

**Conclusion:** Findings indicate that primary health care interventions should target pain intensity, depressive symptoms and physical activity as a means to preventing or decreasing both self-reported and performance based disability. © 2014 Elsevier Inc. All rights reserved.

*Keywords:* Pain intensity; Performance-based disability; Self-reported disability; Determinants

Quantifying the functional consequences of disease is of prime importance when assessing older adults' health condition as a decrease in function has been shown to be a predictor of greater disability, more reliance on others, higher risk of institutionalization and an increased likelihood of death.<sup>1–4</sup> Functional assessment can be performed using self-reported measures and/or performance based measures. The first instruments capture the individuals' perception of their ability/inability to perform a range of activities in their

day-to-day life. The latter instruments capture how well people can perform a task and usually involve the completion or timing of basic strength, balance, or mobility tasks.<sup>5</sup> Therefore, they seem to measure different but complementary constructs. In light of the International Classification of Functioning, Disability and Health (ICF),<sup>6</sup> self-reported disability instruments are related to the individual's participation while performance based disability instruments are more related to activities. Participation is defined as the person's involvement in a life situation, while activities refer to the execution of a task or action.<sup>6</sup>

Previous studies have shown that several physiological and psychosocial factors, such as age, strength, physical activity, falls efficacy, aspects of pain or depressive symptoms are related to performance based and/or self-reported based disability for older adults with mobility limitation,<sup>7</sup> patients

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with musculoskeletal pain<sup>8</sup> and patients with low back pain.<sup>9</sup> However, it is unclear whether self-reported and performance based functional status are associated with different individual's characteristics, in particular pain characteristics, as different studies use different instruments. In addition, we were unable to find any study exploring the underlying predictors of performance based and self-reported disability for older adults at primary health care centers. This is of major relevance as it would inform which aspects need to be targeted by primary health care interventions in order to prevent further degradation of function.

In this study we used the 12 item World Health Organization Disability Assessment Schedule (WHODAS 2.0) as a measure of self-reported disability and the Short Physical Performance Battery (SPPB) as a measure of performance-based disability. The WHODAS 2.0 is a generic, valid and reliable instrument that has a longer version with 36 items that takes up to 45 min to complete rendering it difficult to use in a clinical context and a shorter version of 12 items that explains up to 80% of the longer version variance and takes 10 min to complete rendering it easier to use in the primary health care context.<sup>10</sup> The SPPB is one of the most used performance based instruments both in research and clinical practice and is easy to administer without the use of specialized equipment.<sup>3,11</sup> Furthermore, it has been shown to be reliable and valid among several elderly populations that differ in terms of culture, language and education<sup>5,12</sup> and to be an important predictor of several adverse events such as disability, hospitalization and death.<sup>13,14</sup> Both SPPB and WHODAS 2.0 are simple and easy to use instruments that can be used in primary health care to characterize patients' functional status and screen for individuals at risk of developing greater disability. However, the association between these two instruments has not been investigated.

The aim of this study is to determine whether personal factors, pain aspects, depression and physical activity are associated with self-reported and performance based disability for older adults attending primary health care centers as measured by the WHODAS 2.0 and SPPB, respectively.

## Methods

### *Participants*

Participants were older adults comprising a convenience sample and were recruited through primary health care practices, either by referral from health care practitioners or direct invitation by researchers, among those attending health services on the days of data collection. Subjects could be enrolled in the study if they were  $\geq 60$  years old and were able to give written informed consent. This was ascertained by asking participants to explain on their own words what the study involved.

The study received Ethical approval from the Regional Health Administration Commission, Coimbra, Portugal. All participants signed an informed consent prior to their participation.

### *Procedures*

All participants were interviewed once by a researcher at the primary health care center that the participant usually attended. Demographic and health characteristics, aspects of pain, depressive symptoms and physical activity were assessed as these have previously been identified as predictors of disability.<sup>7,8,15</sup> The specific procedures and instruments used are specified below:

#### *Demographic and health characteristics*

Demographic and health characteristics included age, sex, years of formal education, occupation, marital status and presence of chronic disorders. The presence of the latest was ascertained by asking participants whether they had any of the following conditions: i) hypertension, ii) diabetes, iii) cardiovascular disorders, iv) respiratory disorders, v) cancer, vi) osteoarthritis (back, hip or knee), vii) other known medical condition or viii) any medical condition for which the nature/medical diagnosis was not known. The total number of reported chronic conditions was counted. The categorization of comorbidities based on number of comorbidities has been used in previous studies.<sup>8,16</sup>

#### *Self-reported disability*

Self-reported disability was assessed using the Portuguese version of the 12-item interview administered version of WHODAS 2.0, which is valid and reliable.<sup>17</sup> The WHODAS 2.0 is a disability assessment instrument based on the conceptual framework of the ICF with a recall period of 30 days and provides a global measure of disability.<sup>10</sup> WHODAS 2.0 scores were computed according to the simple scoring method as indicated in the manual.<sup>10</sup> This included summing the scores assigned to each of the 12 items – “none” (1), “mild” (2), moderate (3), severe (4) and extreme (5). The sum score for global disability therefore ranged from 0 (no disability) to 60 (complete disability), with higher scores indicating higher levels of disability. Missing data were also handled as suggested in the WHODAS 2.0 manual: when one item was missing a value, the mean of the other items was calculated and used to assign a score to the missing item.<sup>10</sup>

#### *Performance-based disability*

Performance-based disability was assessed using the SPPB.<sup>2</sup> SPPB total score is a composite score based on the individual scores of three timed tasks: the ability to stand with the feet side by side/semitemdem/tandem for 10 s (balance), usual walking speed (calculated over 3 m), and the ability to rise from a chair as quickly as

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