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Original article

French adaptation and validation of the Osteoarthritis Quality of Life scale

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ABSTRACT

Objective: The Osteoarthritis Quality of Life scale (OAQoL) is an osteoarthritis-specific measure developed in the United Kingdom by a needs-based approach. This study describes the adaptation and validation of this English scale into French.

Methods: The OAQoL was translated into French by a dual-panel technique followed by cognitive debriefing interviews. Internal consistency was assessed by the Cronbach α. Construct validity was tested by exploratory and confirmatory factor analyses and by convergent and divergent correlations with other patient-reported outcome measures by the Spearman rho (ρ). Reliability was explored by Spearman rho as well as the Bland and Altman method for the total score and Cohen's kappa for each item score.

Results: Cognitive debriefing revealed the French OAQoL to be clear, relevant and comprehensive. The Cronbach α was 0.91. Exploratory factor analysis extracted 4 groups of items. After eliminating 4 items, confirmatory factor analysis of the remaining 18 items confirmed higher intra-factor than inter-factor correlations. The expected convergent and divergent correlations were observed. Test-retest reliability was good (ρ 0.93) and was confirmed by Bland and Altman analysis; most items (12/18) had kappa values from 0.61 to 0.80.

Conclusion: The French OAQoL is an easy-to-use 18-item questionnaire with good content and construct validity to assess the impact of osteoarthritis on quality of life for French-speaking patients.

1. Introduction

Osteoarthritis (OA) is a frequent disease worldwide with an important impact on patient disability and quality of life (QOL) [1–3]. It is the most frequent musculoskeletal disease [4,5] and affects 10% of the global population older than 60 years old [6]. OA has been ranked the 11th cause of years lived with disability in the 2010 World Health Organization (WHO) global burden of diseases study [7].

QOL encompasses social, psychological and spiritual well-being of the person and how these aspects interact with the person's environment. The WHO researchers define QOL as "the perception of the individual of their position in life in the context of the culture and value systems in which they live in relation to their goals, expectations, standards and concerns." Consequences of disease and its treatments on QoL are represented by health-related quality of life. QoL is also affected by personality, economic status, education level, environment, liberty, social integration, and demographics [8] (Fig. 1).

Several patient-reported outcome measures are available for OA assessment. The most frequently ones focusing on pain and disability are the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) [9], the Lequesne index [10,11] and the Cochin index [12]. These tools are joint-specific but do not assess QoL. In many OA cohorts and trials, QoL is assessed by generic instruments such as the Medical Outcomes Study 36-Item Short Form [13,14] or the Nottingham Health Profile (NHP) [15,16], but generic instruments are less sensitive to change than specific measures [17,18].

We lack qualitative interview studies with patients for selecting items for patient-reported outcomes most frequently used in OA. Consequently, there is a gap between what clinicians and patients deem important. Frequently, clinicians ignore socioeconomic and psychological issues [19]. For example, they judge the success of treatment in terms of disability or progression of disease and

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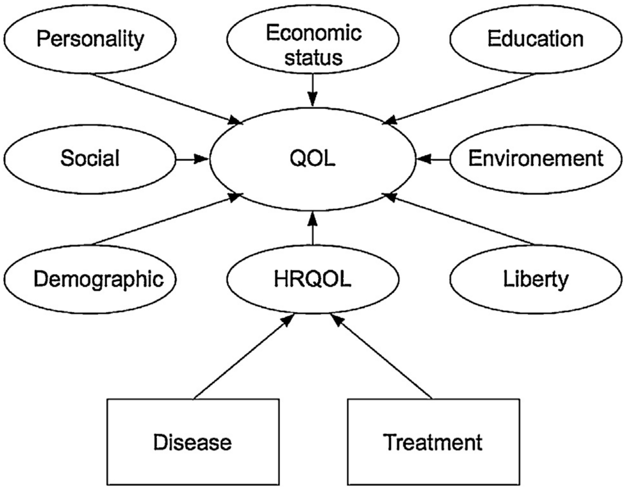

Fig. 1. Factors affecting quality of life.

implicitly estimate the well-being of patients. This judgement does not necessarily reflect patients' perception of their QoL [20,21].

The needs-based approach was developed to devise QoL tools based on the holistic approach rather than treatments and disease; one such tool isthe OA knee and hip QoL questionnaire (OAQKQOL) [22], developed for knee and hip based on the classification of functioning disability and health [23]. Needs-based measures include only items that are generated directly from patients. These items are collected during interviews and are not defined by the medical disability model [24,25]. Needs-based QoL instruments have been found useful in determining the benefits of interventions (from the patient perspective) in clinical trials. In plain language, this method is based on a validated development technique involving in-depth qualitative interviews with relevant patients. The focus of this approach is to derive an outcome measure based on issues that are important to the person with the disease and not defined by the medical disability model, which is the focus of health-related QoL instruments. A few needs-based QoL tools were developed in medicine (dermatology, psychiatry, neurology) [26]. Recently, the OA Quality of Life scale (OAQoL) [27] was developed in the United Kingdom by the approach and validated for use in upper limb, lower limb and multiple-site OA. The English OAQoL is a simple 22-item one-dimensional questionnaire with good psychometric properties. It gives a simple summary score for the overall impact of OA on the ability of patients to meet their needs and is clearly differentiated from health status.

The aim of this study was to translate the English OAQoL into French and test the validity and reliability of the French version.

2. Patients and methods

The initial development of the OAQoL determined protocols for adaptation, validation and analysis of the instrument in 6 different European languages (French, German, Hungarian, Italian, Spanish and Turkish). This study focused on the adaptation and validation of the OAQoL in the French language.

3. Translation of questionnaire

A conceptual translation rather than a literal translation was used, and the final version had to be easy to understand. The methodology was the dual-panel technique and included the following steps [28–30].

First, a bilingual panel, composed of 5 members born in France and speaking fluent English produced a first version of OAQoL in French. Then, a second panel, managed by the same moderator and composed of 5 members of French nationality, worked with the French version only. This user panel discussed every item, made modifications and selected the appropriate bilingual panel's proposition for each item. A second version of French OAQoL was produced. Then, an expert committee meeting was organized to select a pre-final translated version.

The pre-final translated version was tested during a cognitive debriefing exercise with 20 OA patients. Inclusion criteria were patients with hip, hand, knee and foot OA. Diagnosis of hip, hand and knee OA was based on the American College of Rheumatology criteria [31,32]. For foot OA, in the absence of any OA diagnostic criteria, patients were included if they had symptomatic, clinically diagnosed OA confirmed by radiography. Patients were excluded if they did not speak and read French fluently, had significant comorbidity or had surgery for joint prosthesis in the last 6 months. Each patient completed the questionnaire and then was interviewed by an expert about the relevance, acceptability, understanding and clarity of the questionnaire in general and asked about specific items that the interviewer had identified as potentially problematic. After analysis of international cognitive debriefing results, the expert committee met to finalize the French version of the OAQoL.

4. Validation of questionnaire

The French version of OAQoL was tested in a cohort of OA patients to verify its validity and reliability. Inclusion and exclusion criteria were the same as for the debriefing interview steps.

A survey package was mailed to patients in primary and secondary care. Consensus is lacking on the sample size for this kind of study [33,34]. The package included questions on demographic and disease items (age, sex, education level, site of OA, duration of OA symptoms) as well as several questionnaires. The questionnaires included the OAQoL, a numeric scale for pain (0 to 10), a Likert scale of OA severity (self-assessment by patients in 3 classes), the NHP questionnaire (to measure perceived well-being), the Cochin scale (to assess disability for hand OA) and the WOMAC (to assess pain and disability for lower limb OA). Baseline OAQoL was used to assess internal construct validity. The first 80 patients completed the questionnaires again 2 weeks after baseline, and these data were used for test-retest reliability.

5. Statistical analysis

We used descriptive statistics to examine the response distribution of each item.

Internal consistency of the instrument was assessed by the Cronbach α to examine the degree to which items in a scale measured the same concept [35]; a Cronbach $\alpha > 0.70$ was considered acceptable, 0.71–0.80 respectable and > 0.80 very good [36].

Construct validity was assessed by exploratory and confirmatory factor analysis and divergent and convergent correlations [37]. Exploratory factor analysis with unweighted least-squares factor analysis (ULS) was used to identify complex interrelationships among items and group items that are part of unified concepts. We extracted factors (groups of items) generated by ULS with corresponding eigenvalues > 1 according to Kaiser's rule (attesting to the significance of the ULS). In the case of multiple loading of an item on several factors, the item was included in the factor with a better conceptual relationship. Confirmatory factor analysis (with linear equation method) tested the hypothesis that items were associated with specific factors and to confirm exploratory factor analyses. A model was retained if the following