Patient-Rated Wrist Evaluation: Spanish Version and Evaluation of Its Psychometric Properties in Patients with Acute Distal Radius Fracture

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Abstract

Purpose The purpose of this paper is to validate a Spanish version of patient-rated wrist evaluation (PRWE) and evaluate its psychometric attributes in a population of patients with distal radius fracture.

Material and Methods A translation and cross-cultural adaptation of the PRWE to Spanish (PRWE-S) was performed according to standardized guidelines. A total of 50 patients with a distal radius fracture were included during the different steps of the study. The reliability of the new instrument was assessed in terms of construct validity with the Quick DASH (Disability of the Arm, Shoulder, and Hand). Internal consistency and test-retest stability were also examined.

Results The Spearman's correlation test for analysis of the criterion validity (0.75) indicates a strong positive correlation between the PRWE-S and the Quick DASH. The internal consistency according to Cronbach's α was 0.96, and the intraclass correlation coefficient was moderate (0.46).

Conclusion A Spanish version of the PRWE indicated good validity and reliability in distal radius fracture patients. This valuable tool can be used in Spanish-speaking countries to evaluate various aspects as pain and function in patients with injuries of the wrist.

Keywords

- PRWE
- translation
- Spanish version
- validity
- reliability
- distal radius fracture

Patient-rated assessment methods are well-established tools used to evaluate clinical outcomes based on the patient's perception of health status. Moreover, when combined with a comprehensive definition of health, patient perspective regarding limitations or subjective outcomes provides stronger results.^{1,2} Previously, the only measurement instrument for hand and wrist status is the DASH (Disability of the Arm, Shoulder and Hand) questionnaire, which is a global ques-

tionnaire that evaluates the symptoms and functional capacity of the entire upper extremity.³ In an effort to achieve a more specific measurement instrument for pathologies around the wrist, MacDermid developed and validated the patient-rated wrist evaluation (PRWE). The PRWE was written and evaluated in English.⁴ It is a 15-item questionnaire designed to measure wrist pain and disability; there are subscales for pain, and difficulty with specific activities and

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usual activities. This instrument has demonstrated good reliability, validity, and responsiveness in the status of the injuries around the wrist.^{5,6}

Recently, the Patient-Reported Outcomes Measurement Information System (PROMIS) included the PRWE as a valid instrument for achieving a unified approach in assessment for distal radius fractures,^{7,8} which has been translated and culturally adapted in several languages; however, a validated Spanish version is not available in the literature.^{9–26} The aim of this study is to translate the PRWE and make a cultural adaptation from English to Spanish and then to validate it.

Material and Methods

The five steps procedure described by Guillemin et al for the process of cross-cultural adaptation of self-report measures were used to create the PRWE, Spanish version (PRWE-S).²⁷ A translation committee consisting of four translators, eight researchers, and two methodologists was created. The approval of the Ethics Committee of Investigation Protocols of the Hospital Italiano de Buenos Aires in Argentina was obtained.

The first stage was the translation of the original instrument to Spanish by two bilingual translators, one a native English speaker (T1) and the other a native Spanish speaker (T2). The translations (T1 and T2) were compared and the discrepancies were highlighted. The second stage was the synthesis of these two documents arriving to a T1–T2 version of the instrument. This synthesis was made by the committee and the translators. The third phase was a “back-translation” of the T1–T2 document by two native English-speaking translators to create new versions termed B1 and B2. These two interpreters were blinded to the concepts and to the original versions of PRWE. At this point, the expert convened to consolidate all of the versions of the questionnaire, considered the “prefinal” version of the PRWE-S, which was ready for testing. This final step involved administering the prefinal version to 10 adult patients with distal radius fractures at least 10 days without cast or orthosis. All of these participants were native adult Spanish speakers without mental disability. Finally, modifications based upon these first 10 participants lead to minor changes resulting in the “modified prefinal” version. This new version was again tested with an additional 10 native Spanish-speaking patients.

Testing of Psychometric Properties

Psychometric properties of the PRWE-S were tested in 30 adults, who were native Spanish-speaking patients with distal radius fracture without cast or orthosis for at least 10 days treated in our hand therapy clinic. Patients were invited to participate, and after the consent was obtained, each participant was assigned a correlative number. No patient identifiers were used beyond this point to assure anonymity for the participant and to prevent bias from the researchers analyzing the data.

The PRWE-S and a Quick DASH were administered to the patient simultaneously. The aim of this was to assess the

criterion validity between the novel Spanish version of the PRWE and the gold standard instrument (Quick DASH). We hypothesized that the value of the PRWE-S would be similar to the Quick DASH, with an expected correlation value equal to or greater than 0.7 using a nonparametric Spearman's correlation test. We decided to use the Quick DASH instead of the full-length DASH as it was faster and shorter than the latter. The PRWE-S was readministered 7 to 14 days later to test the test–retest reliability for its feasibility.

Statistical Analysis

Construct validity between PRWE-S and Quick DASH was measured with the Spearman's correlation test for nonparametric data. Intraclass correlation coefficient (ICC) was used to assess test–retest reliability (0 implies no correlation and 1 implies higher correlation), and Cronbach's α was used as a measurement of internal consistency. It ranges from 0 to 1, where 1 implies the greater value for interrelatedness between items.²⁸

Results

Through the process of translation and cross-cultural adaptation, we were able to create a final version of PRWE-S with minor modifications. Examples of specific changes include modifying the item “carry a 10 lb object in the affected hand” to be in kilograms as we use the metric system. Further, 8 of 10 patients expressed comprehensive difficulties with “when the pain is at its worst.” In Spanish, this was translated to “momento de mayor dolor” and had to be changed. After these minor modifications, subsequent patients did not have comprehension difficulties, and the consolidated version of PRWE-S was established.

Psychometric Property Testing

None of the patients had difficulty in completing the PRWE-S questionnaire and no item was left unanswered.

The Spearman's correlation test for analysis of the criterion validity was 0.75. According to the Dancey classification system, there was a strong positive correlation between the PRWE-S and the Quick DASH.²⁹ As a parameter of internal consistency (degree of interrelationship between the items of an instrument), Cronbach's α was 0.96. The optimal degree is between 0.70 and 0.95.²⁸

All patients completed the PRWE-S two times, and the average period between first and second test was 10 days (7–14 days). The test–retest reliability measured by means of ICC was moderate according to the Fleiss scale (ICC = 0.46).

Discussion

The PRWE was developed in 1996 to assess pain in the wrist joint and functional difficulties in activities of daily living resulting from diseases in the wrist joint area.⁴ It is shorter, more sensitive to wrist area impairment, and easier to complete compared with DASH, with excellent reliability, validity, and responsiveness.^{5,6} Similar to other patient-reported outcomes tools initially developed in English, it

needs cultural adaptation and translation before validating and using in patients whose principal language is not English.²⁷ That process has been completed for several languages, but there is not a validated Spanish version available.

More than 400 million people are Spanish speakers in the world, and many non-Hispanic countries have Spanish-speaking citizens.³⁰ Therefore, there is a clinical need for a Spanish version of the PRWE. While our research was performed in Argentina, where we could have subtle differences in relation to cultural and language aspects with respect to other Hispanic countries, the PRWE-S is remarkably similar in grammatical and semantic aspects in the written language compared with other Hispanic nations. Moreover, other non-Argentine-Spanish researchers could perform minor modifications with minimal effort to adapt the PRWE-S to other Spanish versions. Relatively small cultural adaptations were necessary (e.g., conversion of pounds to kilograms). Similar modifications were reported in other non-English versions, suggesting that some predictable cultural changes can be expected when converting patient questionnaires.¹⁷

We predicted a direct correlation between PRWE-S and the Quick DASH and expected a Spearman coefficient of at least 0.7. The PRWE-S achieved a coefficient of 0.75, which demonstrates good criterion validity. Internal consistency is a concept that measures the extent to which items in a questionnaire are homogenous; a consistent examination will measure the same concept with similar results using multiple items. Our Cronbach's α of 0.96 demonstrated that PRWE-S achieved a good correlation between items in a scale, and our finding was correspondent with other studies^{11–16,18–23,26} particularly when compared with MacDermid's reported value for the original (English) PRWE of 0.98.³¹

Test-retest reliability was moderate, likely indicating that patients had changes in their status during the period between examinations, despite a short interval averaging only 10 days. We chose a period between 7 and 14 days to minimize the memory effect and to ensure a stable condition, similar to other authors.³² The inherent status of a recovery after distal radius fracture could explain these results. Similar values were reported by Schønnemann et al during the translation and validation of the Danish version of PRWE in patients with wrist fractures.¹⁹

Our study had limitations. The sample size was small. The existing literature does not note a consistent minimum number of patients required for cross-cultural adaptations. Because of this, generalizability to other studies with distal radius fracture may be difficult.

PRWE-S can be used in a large population of patients. It has good measurement properties, similar to other non-English versions, and can be used as a simple, brief, reliable, and valid clinical tool for injuries around the wrist in Spanish-speaking countries.

Conflict of Interest
None.

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