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Concurrent validity of the brazilian version of SRS-22r with Br-SF-36

Validade concorrente da versão brasileira do SRS-22r com o Br-SF-36

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Abstract

Background: An important parameter in cross-cultural adaptations, and concurrent validity are the relationships between the performance of an instrument of interest and the performance of a similar instrument with known validity. **Objective:** To determine the concurrent validity of the Brazilian version of the revised questionnaire of the Scoliosis Research Society (Br-SRS-22r) and the Brazilian version of the Short-Form-36 questionnaire (SF-36). **Methods:** Fifty-four patients with idiopathic scoliosis were selected. The mean age was 19.9 yrs. (±7.7) and the mean Cobb angle of curvature was 31.6° (±20.5°), ranging from 10° to 92°. The results from each questionnaire were converted into scores and, in the statistical analyses, the relationships between the concurrent domains were analyzed using Spearman's correlation coefficient. **Results:** The best correlations were found between the function and pain domains: function in the Br-SRS-22r and physical function in the Br-SF-36 (r=0.83); pain in the Br-SRS-22r and pain in the Br-SF-36 (r=0.86). However, the domains of self-image and satisfaction with treatment with the Br-SRS-22r showed moderate and poor correlations with their corresponding domains in the Br-SF-36. There were moderate correlations between the questionnaires, with the best correlations showing greater similarity in the evaluated parameters between the respective instruments. Unlike the function and pain domains, the mental health domains did not have a good correlations, possibly because of difficulties in interpreting of the questions in the Br-SF-36. For the self-image and satisfaction domains, the correlations were moderate and poor because these topics were not specifically covered by the SF-36. **Conclusions:** The Brazilian version of the SRS-22r demonstrated moderate concurrent validity results in relation to the Br-SF-36, and this version adapted for the Brazilian culture was deemed valid.

Key words: scoliosis; questionnaire; quality of life; validity.

Resumo

Contextualização: A validade concorrente, relevante na adaptação transcultural, refere-se à relação entre o desempenho do instrumento de interesse e o desempenho de instrumento semelhante com validade conhecida. **Objetivo:** Realizar a validação concorrente da versão brasileira do questionário revisado da Scoliosis Research Society (Br-SRS-22r) com a versão brasileira do Short Form-36 (Br-SF-36). **Métodos:** Foram selecionados 54 pacientes com escoliose idiopática com média de 19,9 anos (±7,7) e curvaturas com média de 31,6° (±20,5° graus) Cobb, variando entre 10° e 92°. Os questionários tiveram seus resultados convertidos em escores, e a análise estatística correlacionou os domínios concorrentes utilizando o cálculo de coeficiente de Spearman. **Resultados:** Os domínios de melhor correlação foram função do Br-SRS-22r com função física do Br-SF-36 (r=0,83) e dor do Br-SRS-22r com dor do Br-SF-36 (r=0,86). Entretanto, os domínios autoimagem e satisfação com o tratamento do Br-SRS-22r apresentaram baixa correlação com seus domínios concorrentes do Br-SF-36. **Discussão:** Houve uma correlação satisfatória entre os questionários, sendo que as melhores correlações indicam maior semelhança nos parâmetros avaliados entre os respectivos instrumentos. As melhores correlações foram as dos domínios função e dor, não ocorrendo em saúde mental, possivelmente devido às dificuldades de interpretação de suas questões no Br-SF-36. Para os domínios autoimagem e satisfação com o tratamento do Br-SRS-22r, a correlação é pouco satisfatória por não serem especificamente abordados pelo SF-36. **Conclusão:** A versão brasileira do SRS-22r apresentou resultados satisfatórios para a validação concorrente com o Br-SF-36, sendo considerada válida para a versão adaptada à cultura brasileira.

Palavras-chave: escoliose; questionário; qualidade de vida; validade.

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Introduction

Scoliosis is a pathological condition of the spine defined as a curved deformity in the frontal plane, which has a Cobb angle greater than 10º and is associated with vertebral rotation[1]. From two to four % of individuals who are between 10 and 16 yrs. old have idiopathic scoliosis[1,2], and the majority of them are women[4]. In addition, the progression of the scoliotic curvature is greater in women who haven not yet achieved sexual maturity and have a curvature angle larger than 30º.

Scoliosis and its treatment have a great impact in the quality of life of patients, although there are cultural differences in the perception of its importance[5,6]. This pathological condition might bring about physical and psychosocial dysfunctions, which interfere in the patient's health perceptions and satisfaction with the treatment[9].

The psychological disorders affect the quality of life of the patient[5] and are associated with risk factors. Some examples of these factors are: gender, age, type of treatment and socioeconomic status. Women who have been treated with braces after the age of 16 represent the most affected group of individuals[10]. Studies show that women are more affected in their self-image, especially adolescents[10-12], even considering healthy population[3]. On the other hand, men who have scoliosis have worse perception of their health[10] and a greater index of dissatisfaction with treatments[13,14]. The satisfaction with the treatments reported by patients has been more effective in the evaluation of the efficiency of the chosen method than the angle of curvature[9,8,15].

The definition criteria that quantify these subjective perceptions can guide the interventions of health professionals, based upon the patient's profile. It may also help in the indication of which approach the patients should undergo, to maintain adherence to the treatment and their psychosocial welfare. Instruments which quantify these perceptions have been developed by observing the clinical importance of the evaluations of the condition by each patient.

The adaptation of a questionnaire which evaluates the quality of life in a multicultural manner, involves the translation to other languages and also adaptations to each culture. The efficiency of such questionnaires is determined by their psychometric indices. These indexes are the result of the application of measures or psychometric parameters that fundamentally refer to the reliability and the validity of the instruments[18,23,24].

The validity of a questionnaire refers to the capacity of an instrument to measure what is intended. During the process of transcultural validation of a questionnaire, concurrent validity is frequently used. This type of validity is carried out by comparing corresponding domains between a validated and a not yet validated questionnaire[18]. As the *Short-Form-36* (SF-36) is a non-specific questionnaire for a certain conditions, it has been the questionnaire most often used as a comparison parameter for concurrent validation of several other specific-condition or general questionnaires[18,25].

The *Revised Scoliosis Research Society-22* (SRS-22r) is a specific questionnaire for spine conditions. It is applied to patients with idiopathic scoliosis[26-28], whose conditions and treatments have a great impact on their quality of life[29]. The SRS-22r was created and revised with the purpose of evaluating this impact from the patient's point of view[28]. The reviewed version contains 22 questions distributed into five domains: function/activity (FA), pain (P), self-image/appearance (SA), mental health (MH) and satisfaction with treatment (ST). The scores vary from 1 to 5, in which 5 is the best health condition[18,25,28]. This questionnaire has been submitted to the validation process from the original version[18] and also the into the Turkish[30], Spanish[27], Japanese[31] and Chinese[20] versions.

The SF-36 is a non-specific questionnaire, used on patients with conditions such as diabetes[32], pulmonary arterial hipertension[33] and lumbar pain[34]. It contains 36 items, distributed into eight domains: physical functions (PF), physical aspects (PA), pain index (PI), general health perceptions (PGH), vitality (V), social functions (SF), emotional aspects (EA) and a mental health index (MI). The scores are normalized from 0 to 100, in which 100 is the best health condition[18,25].

In the study of Asher et al.[18] about the concurrent validation of the SRS-22, the authors concluded that the SF-36 may not be capable of assessing domains which are more specific and relevant to the perception of the quality of life of patients with scoliosis. In addition, the complete version of the SF-36 is very long, has complex questions, does not have a domain correspondent to self-image, and is relativity more complex to obtain total scoring.

The SRS-22r is a questionnaire appropriate for the evaluation of the impact of the quality of life of a person with idiopathic scoliosis and has been used in the scientific literature. The main goal of this study was to perform a concurrent validation of the Brazilian version of the SRS-22r (Br-SRS-22r) with the Brazilian version of the SF-36 (Br-SF-36)[35]. This procedure would allow the conclusion of another stage of the validation of the version of the Br-SRS-22r, which was adapted to the Brazilian culture.

Methods

Fifty-four patients were selected from an orthopedic sector of the public health service at the tertiary level and from a health care insurance service at a secondary level. Among these patients, 47 were women and seven were men, with mean age

of 19.9 (±7.7) yrs.[36] and medical diagnosis of idiopathic scoliosis. They exhibited average curvature values of 31.6 (±20.5) degrees Cobb, varied from 10º to 92º[37].

Different scoliosis levels were included to compose a sample capable of establishing the questionnaire's validity for patients as distinct as the ones accompanied only by the conservative treatments and the ones during the late post-surgery period. There were also volunteers with non-stabilized curves. Illiterate individuals, people who had neurological diseases or that did not demonstrate idiopathic scoliosis were excluded from the study.

To participate in the study, all subjects or their guardians, were infirmed about the study's procedures and signed a term of free and clarified consent. The terms were elaborated according to resolution 196 of October 10th of 1996 of the Conselho Nacional da Saúde. It was also approved by the Ethics in Research Involving Human Beings Committee of the HC-FMRP, process HCRP nº 9853/2005.

Procedures

The questionnaires Br-SRS-22r and Br-SF-36[35] were shown and explained to the patients. They were instructed to respond to them without help, according to their original versions[18,28,35], as they were both self-administrated.

After filling out the questionnaires, the subjects were questioned about difficulties that they might have found in completing the questionnaires by themselves. Five volunteers (9.26%) were excluded from the study due to their companion's influence over them.

Data analyses and statistics

The domains of each questionnaire used were correlated and reported in Table 1. To enable these comparisons, the Br-SRS-22r scores were normalized according to the Br-SF-36's score. Spearman's rank Correlation Coefficient analyses were applied to evaluate the concurrent validity of the domains with a significance level of 95%. The correlations were considered excellent for values from 0.75 to 1.00; good for values from 0.50 to 0.75; moderate for values from 0.25 to 0.50 and low for values from 0 to 0.25[38].

Results

The concurrent validity was determined based on Spearman's Coefficient and by the comparisons between the relevant domains of the Br-SRS-22r and the brief form of the Br-SF-36, as demonstrated in Table 2. The domains that had the best correlation were functions of the Br-SRS-22r with physical functions of the Br-SF-36 (r=0.83) and pain of the Br-SRS-22r with pain of the Br-SF-36 (r=0.86). The mental health domain of the Br-SRS-22r had moderate correlations when compared to the vitality (r=0.57) and mental health (r=0.57) domains of the Br-SF-36. However, the self-image and satisfaction with treatment domains of the Br-SRS-22r demonstrated low correlations with their correspondent domains of the Br-SF-36.

Discussion

The results of this study demonstrated the concurrent validity of the Brazilian version of the SRS-22r with the Br-SF-36. The highest correlations indicated greater equivalence between the respective instruments for the evaluated parameters. The domains that illustrated these correlations were functions, varying from moderate to excellent, and pain, varying from good to excellent. Similar results were found in other studies, such as by Asher et al.[18], Cheung et al.[20], Alanay et al.[30] and Hashimoto et al.[31]. However, the mental health domain showed the lowest correlation values with their correspondent domains in the Br-SF-36 (social functions). This may be due to the fact that, during the data collection, many patients had found difficulties in the interpretation of the questions that referred to this domain in the Br-SF-36[18].

The associations between the self-image domain of the Br-SRS-22r and the other correspondent domains of the Br-SF-36 (general health perceptions, social and physical functions)

Table 1. Dimensions of the Br-SRS-22r domains and the relevant Br-SF-36 domains.

Br-SRS-22r Domain	Br-SF-36 Domain
Function/activity	Physical roles
	Physical functioning
	Pain index
	General health perceptions
Pain	Pain index
	Physical roles
	Physical functioning
Self-image/ appearance	General health perception
	Social functioning
	Physical functioning
Mental health	Mental health index
	Social functioning
	Vitality
Satisfaction with management	Physical functioning
	Role-physical
	Pain index
	General health perception

Table 2. Spearman correlation coefficients between the Br-SRS-22r domains and the Br-SF-36, with *p* valuees of.05.

Br-SRS-22r Domain	Br-SF-36 Domain	Spearman coef.	*p* values	Correlation
Function/activity	Physical roles	0.83	<0.001	Excelent
	Physical functioning	0.64	<0.001	Good to fair
	Pain index	0.72	<0.001	Good to fair
	General health perception	0.49	<0.001	Moderate
Pain	Pain index	0.86	<0.001	Excelent
	Physical roles	0.74	<0.001	Good to fair
	Physical functioning	0.69	<0.001	Good to fair
Self-image/appearance	General health perceptions	0.40	0.003	Moderate
	Social functioning	0.34	0.012	Moderate
	Physical functioning	0.39	0.005	Moderate
Mental health	Mental health index	0.57	<0.001	Good to fair
	Social functioning	0.39	0.004	Moderate
	Vitality	0.57	<0.001	Good to fair
Satisfaction with management	Physical functioning	0.27	0.073	Moderate
	Role-physical	0.09	0.528	Poor
	Pain index	0.28	0.060	Moderate
	General health perceptions	0.07	0.597	Poor

were not satisfactory. This also happened in the original English version, validated by Asher et al.[18]. According to the authors, the low correlations occurred because the SF-36 did not address this subject, as it was not a specific questionnaire for conditions that affected body aesthetics, even though this aspect was relevant for the impact on the quality of life of people who have scoliosis. This relatively low levels of correlations also occurred in the satisfaction with the treatment domains, which did not have a correspondent domain in the Br-SF-36. This indicated a poor intrinsic association between the domains[20,30].

In spite of the attempt to include a large variety of individuals for the validation procedures, some factors such as age and the Cobb angle of the curvature may have influenced the results. These influences were probably due to, respectively, the difficulty in comprehension of the instruments[36] and the physical and psychosocial dysfunctions entailed by scoliosis[8].

In the post- interview and the analysis of the questionnaires, the presence of 11.11% of the Br-SF-36 questionnaires with incomplete data was observed, which revealed difficulties in the self-administrated filling out of the instrument. This may have indicated an important advantage of the Br-SRS-22r over the Br-SF-36 related to the comprehension of the instrument and collection of data from patients with idiopathic scoliosis, as was previously reported by Berven et al.[39].

The questions number 5, 8 and 11 of the Br-SRS-22r caused difficulties in interpretation by 1.85% of the subjects. However, Ciconelli et al.[35] suggested that such difficulties should only be considered as reasons to modify or reformulate the questions when the amount of missing data, or incomplete responses, exceed 15% of the total number of subjects in the study. Thus, these results may have randomly occurred in the present study.

Although the questionnaire had been concurrently validated for an urban population in the public and private service, the subjects were all from a specific region of the country. Considering the cultural diversity of Brazil, the applicability of this questionnaire in other regions is unknown and could be tested again, as suggested for other versions of the questionnaire, such as the Chinese and the original English version[18,20].

Conclusions

The Brazilian version of the SRS-22r had satisfactory results for concurrent validity with the Br-SF-36. Considering the statistical analyses, which tested the associations of the instruments and the importance of the use of the Br-SRS-22r on subjects with scoliosis, the Brazilian version of the SRS-22r could be considered valid and adapted to the Brazilian culture, especially of the Southeast part of the country.

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