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ISYQOL: a Rasch-consistent questionnaire for measuring health-related quality of life in adolescents with spinal deformities.

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Abstract

BACKGROUND CONTEXT: Spinal deformities are commonly associated with poor health-related quality of life (HRQOL). Several questionnaires (eg, Scoliosis Research Society-24 [SRS-24] and Scoliosis Research Society-22 [SRS-22]) have been developed to evaluate HRQOL in these conditions. In adults as well as during growth, the HRQOL is considered one of the most relevant outcomes of both conservative and surgical treatments. Rasch analysis is a powerful statistical technique for developing high-quality and valid questionnaires. The SRS-24 and SRS-22 have been evaluated using the Rasch analysis but showed poor measurement properties. Thus, a proper measure of HRQOL in people with a spine condition is still missing.

PURPOSE: This study aimed to develop a new questionnaire that is totally Rasch consistent for measuring the HRQOL in young people with a spine condition.

STUDY DESIGN: This is a cross-sectional study for developing a new HRQOL measure.

PATIENT SAMPLE: A total of 402 participants with adolescent idiopathic scoliosis or Scheuermann juvenile kyphosis were included in the study.

OUTCOME MEASURE: The outcome measure used was the Italian Spine Youth Quality of Life (ISYQOL) questionnaire.

MATERIALS AND METHODS: The study consisted of different stages: a conventional approach content analysis, an opinion poll among clinicians trained in spine deformities, and the Rasch analysis (partial credit model).

RESULTS: The Rasch analysis showed that all items of the ISYQOL questionnaire had ordered thresholds and a good fit to the model. Differential item functioning was present for Item 1, with bracing only, and was solved with a conventional items splitting procedure. The ISYQOL item map spans an adequate range of HRQOL. The principal component analysis for Rasch residuals showed, in practical terms, the ISYQOL unidimensionality. The reliability of ISYQOL was high enough so that approximately three significantly different levels of HRQOL could be discerned. Two questionnaire versions were provided for patients with and without the brace, respectively.

CONCLUSIONS: ISYQOL is the first HRQOL questionnaire developed according to the Rasch analysis. It was developed in a conservative treatment setting for all types of spinal deformities, including also patients with surgical curves. Validation in many languages is already under way.

KEYWORDS: Adolescent idiopathic scoliosis; Brace; Content analysis; Health-related quality of life; Interval measurement; Ordinal measurement; Psychometrics; Rasch analysis; Scheuermann juvenile kyphosis; Spinal deformities

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