Reviewer's report

Title: Reliability and validity of a novel quality of life questionnaire for female patients with adolescent idiopathic scoliosis: Scoliosis Japanese Questionnaire-27: A multicenter, crosssectional study

Version: 0 Date: 15 Dec 2017

Reviewer: Doug L. Hill

Reviewer's report:
The development of the Scoliosis Japanese (SJ-27), a culturally sensitive health related quality of life instrument, is an important body of work. The SRS22r has limitations when applied broadly across different age groups and cultures. This work provides the fundamental steps in developing an improved HRQOL questionnaire but raises several issues.

Comments:
1. There is not enough information provided to support the statement "These results indicated that there were no floor and ceiling effects associated with the SJ-27." (line 200). The floor and ceiling properties relate to the proportion of the responses that are either at the highest or lowest rating. I would like to see the distribution of the scores for each of the subscales to determine the true floor and ceiling effects. A histogram and the reported floor and ceiling rates will be helpful.
2. The SJ-27 was developed by an expert committee. Was there consideration for including representation on the committee with young women with AIS who are the target audience?
3. The SJ-27 is based on recall over the past month. Why was this time period chosen? Comment on potential source of error based on recall rather than the time of survey completion.
4. Males were excluded from the study so the title and also throughout the manuscript the term should be changed from " … patients with Adolescent Idiopathic Scoliosis …" to " … females with Adolescent Idiopathic Scoliosis …"
5. Provide support for the statement "Proper HRQOL evaluations in patients with AIS help physicians identify the patients who need treatment, including surgery, if necessary" (line 84) or remove the statement.

6. Describe the number of responses from each of the 26 participating centers. Comment on the standardization among the centers in terms of instructing the participants and timing of the questionnaires.

7. Were the questionnaires completed prior to or after the clinical examination? This may impact the responses especially if the clinic visit resulted in either a better or worse than expected prognosis. Was the timing consistent?

8. Were the participants instructed on how much guidance the parents were permitted to provide in completion of the questionnaires? This may be especially important with the younger participants.

9. Were the questionnaires paper based or electronic based? If it were paper based, how were imperfect responses (ie. multiple or ambiguous responses or unanswered questions) handled? Specify the completion rate for each question.

10. The subjects: Why was 10 years chosen as the lower limit of age? How was the sample size determined? Were all eligible participants approached? Over what time period? What was the proportion of eligible participants who successfully completed both questionnaires? Was there potential selection bias?

11. The scoring of "the higher the score, the worse the quality of life" (line 149) is opposite to the SRS-22r. Why?

12. All the questions are stated so the "no impact" or optimal response is on the left hand side. The SRS-22r has a mixture of questions framed in the positive and negative tone to avoid this potential left to right bias. How was potential response bias minimized?

13. In terms of construct validity, how was it determined that the questionnaire actually measured what it claims?

14. Reliability can be assessed by repeated measures such as 1 week apart with no intervention. Some questions (10, 13 and 17) have potential double barreled responses and may be problematic. For instance in question 10, the responder may wear lighter clothing at times other than in warmer weather.
15. There are minimal results presented to judge the validity of the SJ-27 questionnaire. Some questions come to mind - Is there an age effect? Is there a severity effect? How well are the questions completed?

16. There is insufficient data presented to support the conclusion "The results suggest that the SJ-27 is sufficiently valid and reliable to evaluate outcomes in patients with AIS in Japan". For instance there is no measure of sensitivity to change nor test-re-test reliability.

**Are the methods appropriate and well described?**

If not, please specify what is required in your comments to the authors.

Yes

**Does the work include the necessary controls?**

If not, please specify which controls are required in your comments to the authors.

Unable to assess

**Are the conclusions drawn adequately supported by the data shown?**

If not, please explain in your comments to the authors.

No

**Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?**

If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I am able to assess the statistics

**Quality of written English**

Please indicate the quality of language in the manuscript:

Acceptable

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