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Interpretation of Skindex-29 scores: cutoffs for mild, moderate, and severe impairment of health-related quality of life

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TO THE EDITOR

Health-related quality of life (HRQoL) is commonly assessed by means of standardized questionnaires and expressed in domain and overall HRQoL scores. An important challenge is to interpret these scores correctly. What does a given score really mean? Although there is no standard approach, several methods exist to facilitate the interpretation of HRQoL scores. In a recently published study, we identified clinically meaningful domain and overall cutoff scores for the Skindex-29 by using an anchor-based method. We related patient responses on the Skindex-29 to anchor questions, and we established cutoff scores by using receiver-operating characteristic analysis. As a result, we were able to determine cutoffs for severely impaired HRQoL (Table 1).

In a commentary on the interpretation of HRQoL scores, Chren (2010) stressed the relevance of Skindex-29 cutoff scores for mild and moderate degrees of effect in addition to the scores we presented for a severe degree of effect. In this letter, we will provide these additional cutoff scores.

We analyzed the data of our sample of 322 patients to identify optimal cutoff scores. Again, the Skindex-29 domain scores, and the overall score, were related to three types of patient-based anchors: (i) four global questions on the impact of disease on HRQoL; (ii) a question on disease severity as perceived by the patient; and (iii) the results on the 12-item General Health Questionnaire, a standardized instrument to measure psychiatric morbidity. For complete methods, we refer to the original article.

The four global questions relating to the impact of disease on HRQoL showed the highest correlation with the domain and overall scores of the Skindex-29 (range 0.54-0.79). Cutoff scores associated with these anchors also showed the highest accuracy, as measured by the area under the curve receiver-operating characteristic statistic for mildly impaired HRQoL (range 0.76-0.91) as well as for moderately impaired HRQoL (range 0.75-0.91). On the basis of the results of these analyses, the optimal and most accurate Skindex-29 cutoff scores for mildly and moderately impaired HRQoL could be determined (Table 1).

Table 1. Skindex-29 cutoff scores for mildly, moderately, and severely impaired HRQoL.

<table>
<thead>
<tr>
<th>Impact of disease on HRQoL for Skindex-29 domain and overall scores</th>
<th>Correlation</th>
<th>Skindex-29 cutoff scores</th>
<th>AUC³</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mild</td>
<td>Moderate</td>
<td>Severe⁴</td>
</tr>
<tr>
<td>Symptoms ( (r = 0.54) )</td>
<td>39</td>
<td>42</td>
<td>52</td>
</tr>
<tr>
<td>Emotions ( (r = 0.73) )</td>
<td>24</td>
<td>35</td>
<td>39</td>
</tr>
<tr>
<td>Functioning ( (r = 0.79) )</td>
<td>21</td>
<td>32</td>
<td>37</td>
</tr>
<tr>
<td>Overall ( (r = 0.75) )</td>
<td>25</td>
<td>32</td>
<td>44</td>
</tr>
</tbody>
</table>

Abbreviations: AUC, area under the curve; HRQoL, health-related quality of life.

¹The domain scores and the overall score are expressed on a 100-point scale, with higher scores indicating a lower level of quality of life.

²The number of patients in each severity category varies, as it largely depends on the required number of responses to the Skindex-29 domains. The number of patients with mildly impaired HRQoL ranged from 144-195, the number of patients with moderately impaired HRQoL ranged from 73-104, and the number of patients with severely impaired HRQoL ranged from 49-74.

³AUC: 0.50 indicates chance categorization and 1.00 indicates perfect categorization of a given Skindex-29 score to correctly classify mild, moderate, or severe impairment of HRQoL.

⁴Cutoff scores and AUC coefficients for severely impaired health-related quality of life as presented in the original article.
The relatively similar cutoffs of ≥39 and ≥42 points for mildly and moderately impaired HRQoL, respectively, on the symptom domain, result from the lower correlation of that particular anchor question with the corresponding Skindex-29 domain score ($r=0.54$). This is also visible in the lower accuracy of the symptom domain and, thereby, the lower discriminating capacity between patients who perceive mildly or moderately impaired HRQoL (area under the curve = 0.76 and 0.75, respectively). From an analytical point of view, there is no apparent explanation for this lower correlation. We assume that the patients experienced a difference between the meanings of “symptoms” as worded in the anchor question and “symptoms” as worded in the seven questions representing the symptoms domain of the Skindex-29.

The presented Skindex-29 cutoff scores for mildly, moderately, and severely impaired HRQoL are generally higher than those presented in a study by Nijsten et al. (2009), who used a distribution-based method. In our anchor-based study, the Skindex-29 cutoff scores were determined by patients’ assessments on their HRQoL, whereas Nijsten et al. (2009) capitalized on the distribution of HRQoL levels in the sample. Cutoff scores established by anchor-based methods depend on the particular anchor questions and their wording, but they are less dependent on the distribution of HRQoL levels in the sample. As patients are grouped by their scores on anchor questions (i.e., mild, moderate, and severe impairment), the obtained cutoff scores are likely to show invariance across samples. This is one of the reasons for the popularity of anchor-based methods in HRQoL research, particularly in determining minimal important differences and/or change in scores on a HRQoL instrument.

By providing these additional cutoff scores, we hope to contribute to a meaningful interpretation of HRQoL scores. To facilitate the application of the identified cutoff scores in clinical practice, it might be helpful, as a rule of thumb or memory aid, to round off the cutoffs for mild, moderate, and severe impairment to ≥20, ≥30, and ≥40 points, respectively, for the domain and overall scores, with the exception of the symptoms domain.

As expressed in our original study, we recommend further research on the generalizability and, thereby, on the robustness of the cutoff scores of the Skindex-29.

ACKNOWLEDGEMENTS

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REFERENCES