SHORT COMMUNICATION

Assessment of Quality of Life in Chronic Pruritus: Relationship Between ItchyQoL and Dermatological Life Quality Index in 1,150 Patients

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Chronic pruritus (CP) (1) is a bothersome symptom of many diseases (2), and can profoundly reduce quality of life (QoL) (3, 4). In order to evaluate the impact of reduction in QoL in patients with CP independently of their underlying disease, the ItchyQoL questionnaire was developed in 2008 by Desai et al. (5) and translated into German by Krause et al. (6) in 2013 (GerItchyQoL). ItchyQoL is a 22-item questionnaire containing 3 domains: symptoms, functions and emotions. The Dermatological Life Quality Index (DLQI) (7) is currently often used in dermatological patients in general (8), but also in patients with CP (9). ItchyQoL has been developed and validated for all types of CP, while DLQI appears to be valid only in conditions with visible lesions, such as dermatoses or excoriations. Despite the fact that many studies have used DLQI in CP and several studies have used ItchyQoL, the 2 instruments have never been compared.

We hypothesized that ItchyQoL (in its German version) more specifically detects symptoms in patients with CP, while the detection of function and emotion might be more similar to DLQI. To examine this hypothesis, we analysed the responses of a large cohort of patients in whom both questionnaires have been applied.

MATERIALS AND METHODS

A data sample of 2,360 ItchyQoL and 2,343 DLQI scores that were completed by 1,150 patients with CP were examined. The patients (mean age 58.9 ± 17.1 years, 511 (44.4%) males) completed both questionnaires on the same day on a tablet computer or with a paper and pencil version. The questionnaires were used during daily routine; therefore the patients completed the questionnaires several times. A total of 1,150 ItchyQoL questionnaires and 1,142 DLQI questionnaires were completed during the first visit, 635 ItchyQoL questionnaires and 631 DLQI questionnaires during the second visit, 347 ItchyQoL questionnaires and 343 DLQI questionnaires during the 3rd visit, 145 ItchyQoL questionnaires and DLQI each during the 4th visit, and 45 ItchyQoL questionnaires and DLQI each during the 5th visit. A total of 38 ItchyQoL and 37 DLQI questionnaires were completed during the 6th visit. Furthermore, patients were asked about their mean itch intensity during the past 24 h ("current") and during the past 4 weeks ("4 weeks") on a visual analogue scale (VAS).

DLQI (7) consists of 10 items, each with a score of 0–3 points (total score range 0–30 points) for a recall period of 7 days. ItchyQoL contains 22 items with a score of 1–5 points also for the past 7 days. The total score of ItchyQoL and GerItchyQoL used in this study is calculated as the mean scores of the patient's responses to all 22 items. Questions were classified according to 3 dimensions: symptom, function and emotion (6). Scores range from 1 to 5. To compare single "identical" items between the 2 questionnaires, those with the same objectives were matched (see Table SI[1]).

For the statistical tests the total of the 2,360 ItchyQoL and 2,343 DLQI scores were used. Internal consistency of the tests was assessed by calculating the Cronbach's α coefficient for each domain of the GerItchyQol (6), the mean total score of the GerItchyQol and the mean total score of the DLQI. Values between 0.8 and 0.9 reflect excellent internal consistency, values >0.9 are related to excessive consistency, pointing hereby to item redundancy (6).

Pearson's correlation analyses between the total scores of both instruments were performed, as well as non-parametric Spearman rho correlations for comparison of single items. Furthermore, the VAS were divided into 4 bands (1: VAS 0 to <3; 2: VAS ≥ 3 to <7; 3: VAS ≥ 7 to <9; 4: ≥ 9) (10). Non-parametric Kruskal–Wallis tests for independent samples were used to examine the differences between ItchyQoL and DLQI scores in each of these 4 bands. Statistical analyses were performed with SPSS (IPM SPSS Statistics Version 24).

RESULTS

The mean total scores of the DLQI and the ItchyQol presented a high internal consistency with a Cronbach's α coefficient of 0.884 and 0.940, respectively. Similarly, the ItchyQol dimensions emotion, symptom and function depicted a high internal consistency with a Cronbach's α coefficient of 0.893, 0.814 and 0.893, respectively.

Pearson's correlation analysis revealed a strong correlation between the total scores of the DLQI and the ItchyQoL ($r=0.745$, $p<0.0001$; Fig. S1[1]). Correlation analysis of the scores of a subset of single items showed significant moderate to strong correlations, as shown in Table SI[1].

Furthermore, the overall DLQI score correlated moderately, but significantly, with the 3 subscores of ItchyQoL (ItchyQoL score emotion 0.709, $p<0.001$, ItchyQoL score function 0.766, $p<0.001$ and ItchyQoL score symptom 0.591, $p<0.001$).

We found significantly increasing ItchyQoL and DLQI scores in association with the 4 VAS bands for all 4 subtests (Fig. S2[1]). The pairwise comparisons of all 4 bands were significant ($p\leq 0.0001$). No significant differences were found between the scores for the 1st and 5th visits.

DISCUSSION

The DLQI questionnaire, assessing reduction in QoL due to skin diseases, and the ItchyQoL, a pruritus-specific QoL

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measure in patients with CP, presented a high internal consistency with Cronbach's α coefficients, comparable to those published in other studies for the ItchyQol and its dimensions (6) and DLQI (11). The Cronbach's α of >0.90 for the ItchyQol total score (22 items) indicates item redundancy.

The present study reveals a relationship between DLQI and ItchyQol, and both instruments correlate well with increasing VAS scores, with higher scores and thus greater reduction in QoL. These results are corroborated by published studies (3, 12, 13) that used the DLQI, as well as the study of Carr et al. (14) in which ItchyQoL was applied, demonstrating that higher pruritus intensity scores were associated with a greater reduction in QoL.

Our finding that the highest correlation between the DLQI and the ItchyQoL was in the functional subscale of the ItchyQoL ($r=0.766$), even higher than the correlation of the total scores of both instruments ($r=0.745$), was surprising, but may be explained by the fact that the DLQI focuses primarily on the functional impact of skin diseases. It might be speculated that the function items of the DLQI reflect the impairment in QoL in patients with CP and thus can be used in this population. The moderately high correlation between overall DLQI and the ItchyQol emotion subscore ($r=0.709$) is interesting. It might reflect that the "embarrassed" and "self-conscious" constructs (as used in the DLQI) dominate the emotional impact in patients with CP. Further study is warranted. The correlation between the ItchyQoL symptom subscore ($r=0.591$, $p<0.001$) and the total DLQI score was only moderate. This could also be explained by the fact that the DLQI focusses on the impact on functionality and not on the associated symptoms of pruritus (e.g. bleeds) themselves.

In addition, we found high to moderate effect sizes in the single item analysis concerning limitations in clothing and psychological impact. Only the item concerning skin status had moderate to small effect sizes, which may be due to the fact that this item is double barrelled in the DLQI; some people are embarrassed, but not self-conscious, and vice versa. These results are well in line with the analysis of the subscores. The limitation in clothes belongs to the subscore of function, psychological impact belongs to the emotional subscore, while skin status is part of the symptom subscore. Thus, there are consistent results for the comparison of single items as well as for the subscore analysis.

Thus far, we can conclude that the overall DLQI score seems to be a suitable instrument to measure the reduction in QoL in CP, but also to obtain an impression of a possible emotional impact due to CP. However, beyond "embarrassed" or "self-conscious", the DLQI would not be able to discern the elements of the emotional impact that the ItchyQoL does (i.e. frustrated, angry, depressed). Similarly, the DLQI would not be able to provide a detailed understanding of the symptoms associated with CP.

In conclusion, the DLQI is a questionnaire that can be used for different skin diseases, in contrast to the ItchyQoL which is specific to patients with CP. Because of the high consistency between the questionnaires, both instruments may be useful to quantify the impact of QoL in patients with CP, but for different purposes. The DLQI may be sufficient as an overall impression, especially regarding the functional impact of QoL in affected patients, while the ItchyQoL provides a more detailed understanding of the overall impact on QoL in patients with CP. Whether the 2 instruments are comparable in measuring responsiveness of CP to treatment is a subject for further research.

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