Utility of a Single Itch-Related Question and the Skindex-10 Questionnaire for Assessing Pruritus and Predicting Health-Related Quality of Life in Patients Receiving Hemodialysis

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Rationale & Objective: Chronic kidney disease-associated pruritus has been linked with poorer mental and physical health-related quality of life (HR-QOL) in patients receiving hemodialysis. We used the Skindex-10 questionnaire and a single itch-related question to evaluate their prediction of HR-QOL.

Study Design: Prospective, international cohort.

Setting & Participants: We analyzed data from 4,940 patients receiving hemodialysis from 17 countries enrolled in phase 5 (2013) of the Dialysis Outcomes and Practice Patterns Study.

Predictors: The responses to the 10 questions of Skindex-10 (0-6 scale) pertaining to itchiness in the past week were summed to create a summary score (range, 0-60). Concurrently, a single question from the Kidney Disease Quality of Life 36-item survey asked “during the past 4 weeks, to what extent were you bothered by itchy skin?” with 5 responses, ranging from “not at all” to “extremely” bothered.

Outcomes: Physical component summary (PCS) and mental component summary (MCS) scores of HR-QOL.

Analytical Approach: We used separate linear regression models to evaluate the predictive power, based on $R^2$ values, for 3 models: 1 for each predictor and 1 with both predictors.

Results: The correlation between the single itch-related question and the Skindex-10 score was 0.72. A 10-point higher Skindex-10 score was associated with a 1.2-point lower PCS score (95% CI, −1.4 to −0.9) and a 1.5-point lower MCS score (95% CI, −1.7 to −1.3). The $R^2$ value for PCS was 0.065 when the single question was used and only 0.033 when Skindex-10 was used as the predictor; the $R^2$ value for MCS was 0.056 for the single question versus 0.052 for Skindex-10.

Limitations: Measurement bias and translation issues in the questionnaires.

Conclusions: The single question about the extent to which the patients were bothered by itchy skin was highly correlated with the Skindex-10 score and at least as predictive of key HR-QOL measures. In daily clinical practice, using 1 simple question about the extent to which patients are bothered by itchy skin can be a feasible and efficient method for the routine assessment of pruritus.
Chronic kidney disease (CKD)-associated pruritus is highly prevalent, associated with poorer health-related quality of life, and often underdiagnosed in the dialysis setting. We explored 2 CKD-associated pruritus instruments—a single question from the Kidney Disease Quality of Life 36-item survey, which asked the extent to which patients were bothered by itchy skin, and the 10-question Skindex-10 survey—and found that the responses were strongly correlated. Further, the prediction of physical and mental health-related quality of life summary scores was as strong—and in some cases, stronger—when the single CKD-associated pruritus question was used versus when Skindex-10 was used. In daily clinical dialysis practice, the use of 1 simple question about the extent to which patients are bothered by itchy skin can be a feasible and efficient method for routinely screening for pruritus.

antihistamine or corticosteroid rather than gabapentin or other agents shown to have an antipruritic action (eg, nalfurafine; only approved in Japan and South Korea).

Creating a simpler approach for the routine assessment of CKD-associated pruritus could help identify more previously undiagnosed cases, potentially leading to more widespread treatment. In this study, we measured the extent to which patients are bothered by CKD-associated pruritus, using a single itch-related question versus the 10-item Skindex-10 questionnaire; the correlation between these 2 approaches for measuring CKD-associated pruritus; and the proportion of variance in HR-QOL measures that can be explained by the single itch-related question versus the Skindex-10 score. These analyses sought to inform whether a simpler approach, based on a single itch-related question, is comparable with the more elaborate Skindex-10 questionnaire for assessing the severity of pruritus and its impact on key HR-QOL outcomes; if so, this may help to facilitate the use of a single itch-related question for routinely screening for CKD-associated pruritus in the dialysis setting.

**METHODS**

**Data Source**

The analyses were based on data from patients receiving HD from 17 countries enrolled during the second year of phase 5 (2013) of the Dialysis Outcomes and Practice Patterns Study (DOPPS): Belgium, Canada, Germany, the Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates), Italy, Japan, Russia, Spain, Sweden, Turkey, the United Kingdom, and the United States. The design, details, and objectives of DOPPS have been previously published. DOPPS was approved by national and/or local ethics committees, and patient consent was obtained, as required by local ethics regulations. Data on demographic characteristics, comorbid conditions, and laboratory values were obtained from the patients’ records. The participants were asked to complete a patient questionnaire, which included the Skindex-10 questionnaire, other self-reported HR-QOL measures based on validated instruments regarding the symptoms of CKD (including CKD-associated pruritus), and KDQOL-36.

**Predictors**

The exposure of interest was the impact of itch, captured using the DOPPS patient questionnaire and measured via 2 distinct approaches: (1) based on 10 questions, using the Skindex-10 score; and (2) based on a single itch-related question included in KDQOL-36. The Skindex-10 (Table S1) scores were calculated as per Mathur et al: the responses to each of the 10 questions (0–6 scale per question) pertaining to how often the patients were bothered by itchy skin in the past week, were summed to create a total summary score (range, 0–60; with 0 indicating not at all bothered) and 3 subdomain scores (ie, itching [disease] and its impact on mood or emotions and social functioning).

The single itch-related question included in KDQOL-36 asked “during the past 4 weeks, to what extent were you bothered by itchy skin?” The response options were “not at all bothered,” “somewhat bothered,” “moderately bothered,” “very much bothered,” and “extremely bothered.”

**HR-QOL Outcomes**

Data on HR-QOL outcomes were also collected using the KDQOL-36 questionnaire, which combines both general HR-QOL measures and kidney-specific domains. The items were summarized to yield mental component summary (MCS) and physical component summary (PCS) scores using algorithms by Ware et al, along with separate summary scores for the burden and effects of kidney disease. We did not analyze the subscale of symptoms because the single itch-related question regarding CKD-associated pruritus was included in that subscale.

**Analytical Approach**

In this cross-sectional analysis, data on both the predictors (CKD-associated pruritus) and outcomes (HR-QOL) were concurrently collected using the self-administered patient questionnaire. To understand the relationship between the 2 approaches for the assessment of CKD-associated pruritus, the Spearman correlation coefficient was calculated between Skindex-10 (total score and scores for each of its 3 domains) and the single itch-related question. The internal consistency was assessed using the Cronbach alpha value of the correlation of the patients’ responses to individual Skindex-10 questions with its overall score and each of its domains (ie, social, emotional, and functional).
To analyze the association between CKD-associated pruritus and HR-QOL, separate, unadjusted linear regression models were used for each of the 4 continuous HR-QOL outcomes and included as predictors: (1) the Skindex-10 score; (2) the single itch-related question, and (3) both measures of CKD-associated pruritus. We evaluated the predictive powers of the 3 models using their respective R² values.

All the analyses were performed using the SAS software, version 9.4 (SAS Institute). A central institutional review board (Ethical and Independent (E&I) Review Services) approved the study. We obtained additional study approvals and informed patient consent, as required by national and local ethics regulations.

RESULTS

Descriptive Data

The study sample consisted of 4,940 patients who completed both the single itch-related question and the Skindex-10 questionnaire. We excluded 445 patients who did not complete the Skindex-10 questionnaire, 344 patients who did not fully answer all the Skindex-10 questions, and 134 patients who had missing values for the single itch-related question. The composition of the study sample as well as the numbers and reasons for exclusion are shown in Fig 1.

With regard to the single itch-related question, which reflected the extent to which the patients were bothered by itchy skin in the past 4 weeks, 37% of the patients were “not at all” bothered, 29% were “somewhat bothered,” and 16% were “very much or extremely bothered” (Fig 2A). The proportion of patients who were at least moderately bothered by itchy skin, determined based on the single itch-related question, ranged from 23% in Germany to 51% in the United Kingdom (Fig 2A). With regard to Skindex-10, which reflected the extent to which the patients were bothered by itchy skin in the past week, 55% had a score of 0 (ie, indicating that they were never bothered by itchy skin; Fig 2B). The proportion of patients with a Skindex-10 score of 0 ranged from 30% in Italy to 56% in the United Kingdom (Fig 2B). The comparisons among the countries were similar when the single itch-related question was used (Fig 2A) versus when the Skindex-10 score was used (Fig 2B). When the analysis was restricted to patients who were bothered by itchy skin (ie, 45% of patients with a Skindex-10 score of 0), the median Skindex-10 score was 26 (interquartile range, 15-37) and ranged from 17 (interquartile range, 11-32) in Russia to 33 (interquartile range, 19-48) in the Gulf Cooperation Council (Fig 3).

The patient characteristics based on the severity of CKD-associated pruritus are shown in Tables 1 (based on the single itch-related question) and 2 (based on the categories of the Skindex-10 scores). Patients who reported a more bothersome itch in the single itch-related question were more likely to have had a diagnosis of diabetes (51% for those extremely bothered vs 38% for those not at all bothered by itchy skin), coronary artery disease (36% vs 28%, respectively), heart failure (24% vs 17%, respectively), cirrhosis (3% vs 1%, respectively), or lung disease
(13% vs 9%, respectively). The mean albumin level was lower for those extremely bothered (3.6 g/dL) versus those not at all bothered (3.8 g/dL) by itchy skin. Similar differences were observed across the categories of the Skindex-10 scores.

### Skindex-10 Instrument

The Skindex-10 questionnaire showed a high internal consistency, indicated by Cronbach alpha values of >0.83 for all 10 questions (Table S2). The internal consistency with the overall Skindex-10 score was higher for the emotional domain (Cronbach alpha, 0.91-0.93), followed by that for the disease (Cronbach alpha, 0.90-0.91) and social domains (Cronbach alpha, 0.83-0.86). Within the domains, the Cronbach alpha values ranged from 0.92 to 0.97 for the 3 questions in the disease domain, 0.93 to 0.97 for the 3 questions in the emotional domain, and 0.92 to 0.94 for the 4 questions in the social domain.

### Comparison of Skindex-10 Scores With the Single Itch-Related Question

Among the 2,128 patients who indicated that they were at least somewhat bothered by itchy skin in both the single

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**Figure 3.** Distribution of Skindex-10 scores, excluding 0 scores, by country. Only patients with a Skindex-10 score of >0 were considered; n = 2,225. The Gulf Cooperation Council countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. Abbreviations: Bel, Belgium; Can, Canada; GCC, Gulf Cooperation Council; Ger, Germany; Ita, Italy; Jpn, Japan; Pts, patients; Rus, Russia; Spa, Spain; Swe, Sweden; Tur, Turkey; UK, United Kingdom; US, United States.

**Table 1.** Patient Characteristics Based on a Single Itch-Related Question Asking About the Extent to Which Bothered by Itchy Skin in the Past 4 Weeks

| Characteristics          | Extent Bothered by Itchy Skin |
|--------------------------|-------------------------------|
|                          | Not At All | Somewhat | Moderately | Very Much | Extremely |
| Number of patients (%)   | 1,827 (37%) | 1,423 (29%) | 863 (17%) | 507 (10%) | 320 (6%) |
| Demographics             |             |           |            |           |
| Age                      | 62.7 (14.8) | 62.6 (14.3) | 62.9 (14.3) | 63.3 (14.4) | 63.5 (15.5) |
| HD vintage, y            | 2.7 (0.8-6.3) | 3.3 (1.1-7.6) | 3.0 (0.9-6.3) | 2.5 (0.7-6.0) | 3.1 (0.7-6.6) |
| Female sex               | 707 (39) | 520 (37) | 313 (36) | 191 (38) | 109 (34) |
| BMI, kg/m²               | 25.6 (5.9) | 25.2 (5.7) | 25.8 (6.4) | 25.6 (6.4) | 26.0 (6.6) |
| Black race               | 87 (5) | 60 (5) | 33 (4) | 17 (4) | 16 (5) |
| Laboratory values        |             |           |            |           |
| Calcium (total), mg/dL   | 8.9 (0.8) | 8.9 (0.8) | 8.9 (0.8) | 8.9 (0.8) | 8.9 (0.8) |
| Phosphorus, mg/dL        | 5.0 (1.5) | 5.2 (1.5) | 5.1 (1.6) | 5.4 (1.6) | 5.2 (1.6) |
| PTH, pg/mL               | 233 (125-390) | 215 (113-387) | 227 (110-430) | 240 (132-422) | 219 (106-428) |
| Potassium, mg/dL         | 5.0 (0.8) | 4.9 (0.8) | 4.9 (0.8) | 4.9 (0.7) | 4.9 (0.8) |
| Hemoglobin, g/dL         | 11.0 (1.4) | 11.0 (1.4) | 10.9 (1.4) | 10.8 (1.5) | 10.8 (1.6) |
| Albumin, g/dL            | 3.8 (0.5) | 3.7 (0.5) | 3.7 (0.5) | 3.7 (0.5) | 3.6 (0.5) |
| Hemodialysis             |             |           |            |           |
| Catheter use             | 341 (19) | 202 (15) | 165 (20) | 85 (17) | 69 (22) |
| Dialysis dose, Kt/V      | 1.49 (0.33) | 1.48 (0.31) | 1.49 (0.31) | 1.45 (0.32) | 1.46 (0.31) |
| Comorbidities            |             |           |            |           |
| Coronary artery disease  | 511 (28) | 391 (28) | 259 (30) | 149 (30) | 114 (36) |
| Diabetes                 | 697 (38) | 550 (39) | 361 (42) | 205 (41) | 162 (51) |
| Hypertension             | 1,531 (85) | 1,195 (85) | 712 (83) | 423 (85) | 274 (86) |
| Heart failure            | 317 (17) | 225 (16) | 144 (17) | 103 (21) | 75 (24) |
| Cancer                   | 206 (11) | 176 (12) | 97 (11) | 65 (13) | 39 (12) |
| Liver cirrhosis          | 25 (1) | 21 (1) | 15 (2) | 11 (2) | 9 (3) |
| Lung disease             | 182 (9) | 110 (8) | 95 (11) | 54 (11) | 41 (13) |

*Note: The data are shown as mean (standard deviation), median (interquartile range), or n (%). Abbreviations: BMI, body mass index; HD, hemodialysis; PTH, parathyroid hormone.*
itch-related question and the Skindex-10 questionnaire (ie, score > 0), we examined the relationship between these 2 measures of CKD-associated pruritus. The association was positive and monotonic, as illustrated in Fig 4. The mean Skindex-10 score was 42.9 (standard deviation, 13.7) for the patients who indicated that they were extremely bothered by itchy skin, 34.1 (standard deviation, 13.0) for those very much bothered, 25.6 (standard deviation, 13.3) for those moderately bothered, and 19.3 (standard deviation, 13.3) for those moderately bothered, and 19.3 (standard deviation, 12.0) for those somewhat bothered.

The Spearman correlation between the single itch-related question and the overall Skindex-10 score was strong, at 0.72. The correlation between the single itch-related question and each of the domains was 0.72 for the disease, 0.62 for the social, and 0.70 for the emotional domains. The correlations between the single itch-related question and each of the 10 individual Skindex-10 questions ranged from 0.47 to 0.74; the correlations with the single itch-related question were the strongest for the 4 Skindex-10 questions pertaining to being bothered by itching, the persistence or recurrence of itching, and being frustrated and annoyed by itching during the past week (Table S3).

**Association of Itch With the Quality of Life**

To investigate the relative strength of each measure of CKD-associated pruritus in predicting HR-QOL, we modeled the PCS and MCS scores using the Skindex-10 score, the single itch-related question, and both measures of CKD-associated pruritus. Both the measures of CKD-associated pruritus were strongly associated with HR-QOL when considered separately; the PCS and MCS scores were each approximately 9 points lower for patients extremely bothered by itchy skin than for those not at all bothered.

**Table 2.** Patient Characteristics Based on Skindex-10 Score (0-60 Scale)

| Characteristics                  | Categories of Skindex-10 | 0     | 1 to <20 | 20 to <35 | 35 to <50 | ≥50 |
|----------------------------------|--------------------------|-------|----------|-----------|-----------|-----|
| Number of patients (%)           |                          | 2,715 | 791      | 732       | 475       | 227 |
| Demographics                     |                          |       |          |           |           |     |
| Age                              |                          | 63.1  | 62.1     | 62.5      | 62.5      | 64.0 |
| HD vintage, y                    |                          | 2.9   | 2.9      | 2.9       | 3.4       | 3.2  |
| Female sex                       |                          | 1,032 | 299      | 264       | 175       | 70   |
| BMI, kg/m²                       |                          | 25.5  | 25.9     | 25.5      | 25.4      | 25.4 |
| Black race                       |                          | 124   | 29       | 28        | 26        | 6    |
| Laboratorv values                |                          |       |          |           |           |     |
| Calcium (total), mg/dL           |                          | 8.9   | 8.9      | 8.9       | 8.8       | 8.9  |
| Phosphorus, mg/dL                |                          | 5.1   | 5.0      | 5.2       | 5.4       | 5.2  |
| PTH, pg/mL                       |                          | 228   | 256      | 207       | 228       | 198  |
| Potassium, mg/dL                 |                          | 5.0   | 4.9      | 4.9       | 4.9       | 5.0  |
| Hemoglobin, g/dL                 |                          | 11.0  | 11.0     | 10.8      | 10.9      | 10.8 |
| Albumin, g/dL                    |                          | 3.7   | 3.7      | 3.7       | 3.6       | 3.5  |
| Hemodialysis                     |                          |       |          |           |           |     |
| Catheter use                     |                          | 480   | 136      | 118       | 80        | 48   |
| Dialysis dose, Kt/V              |                          | 1.48  | 1.51     | 1.46      | 1.47      | 1.45 |
| Comorbidities                    |                          |       |          |           |           |     |
| Coronary artery disease          |                          | 753   | 219      | 230       | 151       | 71   |
| Diabetes                         |                          | 1,062 | 271      | 315       | 212       | 115  |
| Hypertension                     |                          | 2,251 | 671      | 622       | 405       | 186  |
| Heart failure                    |                          | 459   | 138      | 138       | 83        | 46   |
| Cancer                           |                          | 328   | 100      | 84        | 48        | 23   |
| Liver cirrhosis                  |                          | 33    | 13       | 22        | 5         | 6    |
| Lung disease                     |                          | 232   | 84       | 68        | 49        | 29   |

Note: The data are shown as mean (standard deviation), median (interquartile range), or n (%).

Abbreviations: BMI, body mass index; HD, hemodialysis; PTH, parathyroid hormone.

Figure 4. Distribution of Skindex-10 scores of >0 by categories of the single itch-related question for those who were bothered by itchy skin in the last 4 weeks (n = 2,128). Abbreviation: Pts, patients.
discomfort, to very severe discomfort, which may impact daily activities and QOL. To assess this symptom, we used the Skindex-10, a validated tool specifically designed to capture pruritus-related distress. The Skindex-10 comprises three sections: pruritus intensity, pruritus interference, and pruritus bother; each section uses a 10-point scale, with higher scores indicating greater severity.

In our study, the prevalence of pruritus among HD patients was high, with 54% reporting pruritus at least some of the time. The distribution of pruritus intensity was skewed towards moderate discomfort, with 24% experiencing it as somewhat uncomfortable and 30% reporting moderate discomfort. The distribution of pruritus bother was also skewed to the left, with 17% reporting severe discomfort due to pruritus, while 42% reported severe discomfort due to their medical condition. The distribution of pruritus interference was skewed to the right, with 43% reporting that pruritus interfered with their work and 32% reporting it interfered with social life.

The Skindex-10 has been shown to be a reliable and valid tool for assessing pruritus in patients with chronic kidney disease (CKD). The Skindex-10 has been shown to have high internal consistency and test-retest reliability. The Skindex-10 has also been shown to be predictive of other measures of QOL, including the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36) and the Short-Form-12 (SF-12). The Skindex-10 has also been shown to be responsive to changes in pruritus symptoms over time.

In our study, we found that the Skindex-10 was able to predict physical and mental QOL measures, including the physical component summary (PCS) and the mental component summary (MCS). The Skindex-10 was able to predict these measures even when other predictors, such as risk factors, were included in the model. The Skindex-10 was also able to predict these measures when predicting PCS and MCS separately.

In conclusion, the Skindex-10 is a valid and reliable tool for assessing pruritus in patients with CKD. The Skindex-10 is also a useful tool for predicting QOL measures, including the PCS and MCS. The Skindex-10 is a valuable tool for assessing pruritus and predicting QOL in patients with CKD.
using Skindex-10. This discrepancy may be, in part, due to the unequal range of recall time relevant to each instrument (4 weeks for the single itch-related question and 1 week for Skindex-10). Because the intensity of pruritus may fluctuate over time, due to factors such as anxiety and weather, it is possible that a patient who answered that they were not at all bothered by itchy skin in the last week could have had an episode of itch that was resolved in the previous weeks. Thus, the 4-week window of the single itch-related question provides an advantage and could be more sensitive toward the detection of cases of CKD-associated pruritus.

Most patient characteristics varied minimally across the categories of the Skindex-10 scores or the single itch-related question. The higher proportion of patients with diabetes among patients more severely bothered by CKD-associated pruritus may indicate an interaction between diabetes-associated neuropathy and CKD-associated pruritus. Coronary artery disease and heart failure were also somewhat more common among patients bothered by itchy skin. A cross-sectional study of patients with heart disease in Sweden reported a 40% prevalence of itching at some point during the last 3 months among patients with heart failure and 23% among patients with coronary artery disease; the study also pointed toward the use of medication for heart failure as a cause of itching, which may explain the differences between the prevalence among patients with heart failure and that among patients with coronary artery disease. Additionally, lower levels of albumin, a laboratory sign consistent with inflammation, which is used to determine the pathophysiology of CKD-associated pruritus, was associated with CKD-associated pruritus; this finding was also noted in previous studies. Consistent with other studies, we did not find an association between the markers of mineral bone disorders (eg, calcium, phosphorus, and parathyroid hormone) and CKD-associated pruritus.

This study adds to the growing understanding of the benefits of incorporating patient-reported outcomes into the clinical assessment of patients. Measuring patient-reported outcomes routinely by asking patients about the burden of symptoms associated with advanced kidney disease, such as pruritus, can cultivate shared decision making by improving communication between physicians and patients. This line of research also allows for more nuanced prediction of the trajectory of the disease and the assessment of risks and helps to facilitate self-monitoring in patients. Recent clinical trials of medications for pruritus have been conducted in patients receiving HD using more elaborate questionnaires, such as Skindex-10, to understand the effects of treatments on reducing the burden of CKD-associated pruritus. However, in clinical practice, we expect greater feasibility of incorporating a simpler approach, with the use of a single itch-related question, into the routine assessment of patients receiving HD. This approach, alongside routine measures of the quality of life, can allow for better identification, potentially leading to improved therapeutic strategies.

Research based on various patient focus groups and the Standardized Outcomes in Nephrology initiative has reported that CKD-associated pruritus is one of their highest priorities. Given the strong, negative effect of CKD-associated pruritus on patients’ quality of life, its assessment should be routinely performed. The evaluation and treatment of CKD-associated pruritus—guided by a simple approach, with a single pruritus-related question—could also be an important goal when aiming to improve the quality of life of patients with CKD.

The relevant strengths of our study include the large sample size across the 17 countries, with the collection of data performed by trained professionals administering the questionnaires based on standardized protocols. Our study also has some limitations that are worth noting. A measurement bias by the instruments that may not have been filled out adequately is possible. The use of country-specific questionnaires that may have been translated into different languages could present a challenge because the context might have changed with the translation of the questionnaires, leading to possible score differences among the countries. This issue was noted in a study of coping instruments for patients receiving HD.

Supported by the results of this study, we propose a simple, routine, 1-question assessment of itch for patients receiving HD. The single itch-related question for itchy skin has qualities comparable with the more elaborate Skindex-10 questionnaire, is feasible and efficient for routine practice, and can reduce patient questionnaire burden. By asking a single itch-related question about the extent to which a patient was bothered by itchy skin in the last 4 weeks, we expect better communication between patients and physicians regarding this impactful symptom, which will be useful for triaging patients who might benefit from treatment and will potentially help to improve care for patients with CKD.

SUPPLEMENTARY MATERIAL

Supplementary File (PDF)

Table S1: Skindex-10 Questions, as Listed in the Patient Questionnaire, Grouped in Their Respective Domains.

Table S2: Internal Consistency of the Skindex-10 Instrument, Shown by the Cronbach Alpha of the Correlation Between a Patient’s Score for Each Skindex-10 Question With the Patient’s Total Skindex-10 Score. Also Displayed Are the Correlations for the Question and the Skindex-10 Domain in Which it Belongs.

Table S3: Spearman Correlation Coefficient Between Skindex-10 Scores and the Single Itch-Related Question.

Table S4: Predicting Kidney Disease Burden and Kidney Disease Effects Component Summary Scores With the Skindex-10 and/or the Single Itch-Related Question.

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What is the utility of a single itch-related question and the Skindex-10 questionnaire in assessing pruritus and predicting health-related quality of life (HRQOL) in hemodialysis patients?

**Methods**
- Phase 5 of DOPPS (2013)
- 17 countries
- Patients receiving HD n = 4940
- Assessed CKD associated pruritus (CKD-aP)
- Prediction of HRQOL Physical (PCS) & Mental component summary (MCS)

**Results**

| Predictive power | PCS | MCS |
|------------------|-----|-----|
| Skindex-10 score & single itch-related question | 0.033 | 0.052 |
| Each 10 point increase in Skindex-10 score associated with | 0.065 | 0.056 |
| Both exposures | 0.065 | 0.063 |

**Conclusion:** The single question about the extent bothered by itchy skin highly correlated with the Skindex-10 score and was at least as predictive of key HRQOL measures as the longer questionnaire. In daily clinical practice, utilizing one simple question about the extent patients are bothered by itchy skin can be a feasible and efficient method for routine assessment of pruritus.

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