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Original Article

Arabic Translation, Adaptation, and Validation of The Kidney Disease Quality of Life Short-Form 36

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ABSTRACT. The Kidney Disease Quality of Life Short Form 36 (KDQOL-36) is a self-reported measure of health for patients with chronic kidney disease. Our goal was to develop an Arabic version of KDQOL-36 that is linguistically and conceptually equivalent to the original English version. We translated KDQOL-36 into formal Arabic language using forward and backward translation. To assess conceptual equivalence, we administered the Arabic and English versions simultaneously to a group of 10 bilingual patients. To assess test–re-test reliability, we administered the instrument twice to a group of 10 hemodialysis (HD) patients. To assess internal reliability, convergent validity, and discriminate validity, we administered the instrument to 62 HD patients and 82 kidney transplant patients asking them to simultaneously fill the Depression, Anxiety and Stress Scale (DASS-21). The intraclass correlation coefficient (ICC) between the Arabic and English versions indicated excellent conceptual equivalence. The ICC between test and re-test scores revealed good reliability in the burden of kidney disease subscale and excellent reliability in the remaining four subscales. The translated version of KDQOL-36 had a Cronbach's alpha of 0.81, indicating good internal reliability. We found significant negative correlations between the five subscales of the instrument and DASS-21, indicating good convergent validity. Kidney transplant recipients had significantly better scores than HD patients in the five subscales of the instrument, indicating excellent discriminate validity. The current Arabic version of KDQOL-36 has excellent conceptual equivalence with the original English version. It is a reliable and valid instrument for Arab kidney disease patients.

Introduction

Measuring health-related quality of life (HR-QOL) is an integral part of the clinical evaluation of chronic illnesses. It is also an invaluable tool in determining the impact of different therapeutic interventions. The Kidney Disease Quality of Life Short Form (KDQOL-SF) instrument is a self-reported measure of health that particularly concerns individuals with chronic kidney disease (CKD).[1,2] The KDQOL-36 is a short version of KDQOL-SF

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that includes only 36 questions.[2] The survey can be administered in 3–5 min, which saves both time and resources in large-scale population surveys. Each subscale score ranges between 0 and 100, with increasing values equating to better health.

The first part of the KDQOL-36 (items 1–12) includes the medical outcomes study short form 12 health survey (SF-12) as a generic core. It includes questions about general health, activity limits, ability to accomplish desired tasks, depression and anxiety, energy level, and social activities. These 12 items make up the physical component summary (PCS) and mental component summary (MCS) scales. Some items contribute most to the PCS scale (items 1–5 and 8), whereas other items contribute most to the MCS scale (items 6, 7, and 9–12). The second part (items 13–16) constitutes burden of kidney disease subscale. It includes questions about how much kidney disease interferes with daily life, takes up time, causes frustration, or makes the respondent feel like a burden. The third part (items 17–28) covers symptoms and problem list subscale. It includes questions about how bothered a respondent feels by sore muscles, chest pain, cramps, itchy or dry skin, shortness of breath, faintness, lack of appetite, feeling washed out or drained, numbness in the hands or feet, nausea, or problems with dialysis access. The fourth part (items 29–36) covers the effect of kidney disease subscale. It includes questions about how bothered a respondent feels by fluid limits, dietary restrictions, ability to work around the house or travel, feeling dependent on doctors and other medical staff, stress or worries, sexual life, and personal appearance.

Our goal was to develop an Arabic version of KDQOL-36 that is linguistically and conceptually equivalent to the US English version. We used formal Arabic language in our translation because it is easily understood by the general public of different Arab nations. The translated version was then tested in the field and subjected to rigorous reliability analysis. In this report, we describe the translation steps in detail and present the results of reliability and validity testing.

Methods

Translation steps

Translation was performed according to the recommendations of the KDQOL working group.[2] The instructions, items, and response choices of the US English version of the KDQOL-36 were independently translated by two bilingual translators who are native Arabic speakers. The translators then compared their translations and reconciled discrepancies. Two different translators independently rated the quality of the reconciled forward translation and rated each response scale for conceptual equivalence to the English version using a 0–100 scale, with 100 indicating exact equivalence; 12 items were given an average score of 100, 20 items were given average scores of 90–99, and three items were given average scores of 80–89 (items 2, 7, and 10).

The Thurstone and Chave method of equal-appearing intervals was employed to test the equivalence of response options.[3] A group of twenty raters were asked to rate the position of intermediate response choices using a 10-cm line anchored by the extreme response choices. This resulted in changes to the response options of items 1–3 and 12. The most important change resulting from this evaluation affected item-1. During evaluation, 63% of raters considered the literal translation of "good" to indicate a better than intermediate response. Accordingly, we adopted a different word for the intermediate response that literally means "acceptable" in English language. Other response options for item-1 were changed in order to accommodate for this adaptation (Table 1).

Finally, the translation was reviewed by two nephrologists, a member of the Arabic Language Academy, and two bilingual CKD patients. The forward trans-lation was then finalized based on their feedback. The final forward translation was back translated into English by two other translators and the reconciled back translation was then compared against the original English version and rated for equivalence on a 0–100 scale, with 100 indicating exact equivalence. All items and

Table 1. Adaptations of the literal translation that were adopted by the review panel during forward translation of the original U.S. English version of kidney Disease Quality of Life Short Form-36.

Item	Original term	Literal translation	Adapted translation	Reason for change
1	Very good	جيدة جداً	جيدة	Equally appearing interval of response options
1	Good	جيدة	مقبولة	Equally appearing interval of response options
1	Fair	لا بأس بها	سيئة	Equally appearing interval of response options
1	Poor	سيئة	سيئة جداً	Equally appearing interval of response options
2, 3	Limited	تعوقني، تحدني	تمنعني	More commonly used
2, 3	A little	قليلاً	أحياناً	Equally appearing interval of response options
6, 7	Emotional	عاطفية	نفسية	More commonly used
9	Peaceful	الطمأنينة	السكينة	More suitable in this context
12	Some of the time	بعض الأوقات	أحياناً	Equally appearing interval of response options
13–16	Don't know	لا أعرف	لا أقدر أن أحدد	More suitable in this context

response scales were rated 90–100 except for items 1–3, 6, and 7, which were rated 75%. The literal translation of these items was intentionally adjusted by the review panel during forward translation. A summary of changes and adaptations to the literal translation during the translation process is presented in Table 1.

Validation methods

To calculate scores, individual responses to the 36 items of KDQOL were entered into a Microsoft Excel 97 spreadsheet program that computed the subscale scores of the PCS, MCS, burden of kidney disease, symptom/problem list, and effect of kidney disease.[2] Further analysis was performed using the IBM SPSS Statistics software version 19.0 (IBM Corp., Armonk, NY, USA).

To compare parallel scores during repeat testing, we calculated intraclass correlation coefficient (ICC) assuming a two-way mixed-effects model and using an absolute agreement definition. ICC values of 0.75–1.00 and 0.60–0.74 were considered to indicate excellent and good reliability, respectively.

During field testing, we administered the Arabic version of KDQOL-36 to 144 adult Sudanese CKD patients who were native Arabic speakers, including 62 hemodialysis (HD) patients and 82 kidney transplant recipients, asking them to simultaneously fill the Arabic version of Depression, Anxiety and Stress Scale 21 (DASS-21).[4] To assess internal reliability, we calculated Cronbach's alpha and ceiling and floor effects for each section of the translated instrument. The ceiling and floor effects were defined by the percentage of respondents who scored at the top and the bottom of a scale, respectively. Cronbach's alpha values of 0.90–1.00, 0.80–0.89, 0.70–0.79, and 0.60–0.69 were considered to indicate excellent, good, acceptable, and questionable reliability, respectively. Ceiling and floor effects <20% were considered desirable. To assess convergent validity, we correlated KDQOL-36 scores and DASS-21 scores using Pearson's correlation coefficient. To assess discriminate validity, we compared the mean scores of HD patients and kidney transplant recipients using Student's *t*-test. P <0.05 was considered statistically significant.

Results

The final version of the Arabic translation is

presented in Appendix 1.

In order to assess conceptual equivalence, we asked a group of ten bilingual CKD patients to simultaneously fill the Arabic and English versions of the instrument and compared the five subscale scores. Conceptual equivalence was confirmed by demonstrating excellent reliability in the five subscales of KDQOL-36 (Table 2).

To assess test–re-test reliability, we asked another group of ten HD patients to fill the Arabic version of the instrument twice, one week apart. When we compared the five subscale scores, we found excellent reliability in the PCS, the MCS, symptoms/problem list, and effect of kidney disease subscales, while the burden of kidney disease subscale had good reliability (Table 3).

During field testing, the instrument had good internal reliability with a Cronbach's alpha of 0.81. We observed statistically significant inter-item correlation between the five subscales of the instrument (Table 4). Regarding individual subscales, all subscales had acceptable to good

Appendix 1. Arabic translation.

صحتك و عافيتك

أمراض الكلى و نوعية الحياة

يهدف هذا الاستبيان لمعرفة رأيك حول صحتك، ستساعد هذه المعلومات على معرفة شعورك
ومدى قدرتك على أداء نشاطاتك المعتادة بشكل جيد

شكرا لإجابتك على جميع الأسئلة!

هذا الاستبيان هو نسخة مترجمة ومعدلة من النص الإنجليزي لاستبيان أمراض الكلى ونوعية الحياة

Continuation of Appendix 1.

دراسة

نوعية حياة مرضى الفشل الكلوي

ما هو الغرض من هذه الدراسة؟

تُجرى هذه الدراسة بالتعاون بين الأطباء و مرضاهم، والغرض منها تقييم نوعية حياة المصابين بأمراض الكلى.

ما المطلوب مني؟

من أجل هذه الدراسة، نريدك أن تكمل خلال هذا اليوم استبياناً حول صحتك وشعورك وخلفيتك العامة

سرية المعلومات

لا نطلب معرفة اسمك. سوف تدمج إجاباتك مع إجابات المشتركين الآخرين عند تقديم نتائج الدراسة. أي معلومة تسمح بالتعرف عليك سوف تعتبر في غاية السرية. بالإضافة إلى ذلك فإن كل المعلومات التي نجمعها ستستعمل لهذه الدراسة فقط، ولن يتم كشفها أو الإفصاح عنها لأي غرض بدون موافقتك المسبقة.

بماذا تفيدني المشاركة؟

ستخبرنا المعلومات التي تقدمها عن شعورك تجاه الرعاية التي تتلقاها وتنمي فهمنا لتأثير الرعاية الطبية على صحة المرضى. ستساعد هذه المعلومات على تقييم الرعاية المقدمة.

هل تجب علي المشاركة؟

لست ملزماً بملء الاستبيان، و يمكنك رفض الإجابة على أي سؤال.
قرارك بالمشاركة لن يؤثر علي فرصتك في الحصول على الرعاية الطبية.

صحتك

يحتوي هذا الاستبيان على أسئلة متنوعة عن صحتك وحياتك. نحن مهتمون بمعرفة شعورك تجاه كل من المواضيع التالية:

١. **بصورة عامة، يمكنك أن تقول أن صحتك: (ضع علامة ☒ في المربع الذي يصف إجابتك بشكل أفضل)**

ممتازة	جيدة	مقبولة	سيئة	سيئة جداً
☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥

الفقرات التالية تتعلق بأنشطة من الممكن أن تمارسها خلال يوم عادي. هل تمنعك صحتك الآن عن ممارسة هذه الأنشطة؟ وإذا كانت تمنعك، فإلى أي درجة؟ (ضع علامة ☒ في مربع واحد من كل سطر).

	نعم تمنعني كثيراً	نعم تمنعني أحياناً	لا، لا تمنعني
٢. الأنشطة المعتدلة، مثل: تحريك الأثاث، ومسح الغبار، والحركة داخل المنزل	☐ ١	☐ ٢	☐ ٣
٣. الصعود على السلم لعدد من الطوابق	☐ ١	☐ ٢	☐ ٣

Continuation of Appendix 1.

خلال الأسابيع الأربعة الماضية، هل واجهتك أي من المشاكل التالية عند أدائك لعملك أو أنشطتك اليومية نتيجة لصحتك الجسدية ؟

	نعم	لا
٤. أنجزت أقل مما كنت تريد	١	٢
٥. كنت مقيداً في نوع العمل أو النشاط الذي تؤديه	١	٢

خلال الأسابيع الأربعة الماضية، هل واجهتك أي من المشاكل التالية عند أدائك لعملك أو أنشطتك اليومية نتيجة لأي مشكلة نفسية (كالشعور بالاكتئاب أو القلق)؟

	نعم	لا
٦. أنجزت أقل مما كنت تريد	١	٢
٧. لم تقم بعملك أو نشاطاتك اليومية بالجودة المعتادة	١	٢

٨. خلال الأسابيع الأربعة الماضية، إلى أي مدى أثر الألم في أدائك لأعمالك العادية (بما يشمل العمل خارج المنزل والأعمال المنزلية)؟

لم يؤثر	تأثير قليل	تأثير متوسط	تأثير كبير	تأثير كبير جداً
١	٢	٣	٤	٥

تدور الأسئلة التالية حول شعورك وكيف كانت أحوالك خلال الأسابيع الأربعة الماضية. لكل سؤال، من فضلك أعط الاجابة الأقرب إلى الطريقة التي كنت تشعر بها.

كم من الزمن خلال الأسابيع الأربعة الماضية ...

	طول الوقت	معظم الوقت	في كثير من الأوقات	في بعض الأوقات	في قليل من الأوقات	لم يحدث أبداً
٩. شعرت بالهدوء والسكينة ؟	١	٢	٣	٤	٥	٦
١٠. كنت ملياً بالطاقة ؟	١	٢	٣	٤	٥	٦
١١. شعرت بالحزن والكآبة ؟	١	٢	٣	٤	٥	٦

١٢. خلال الأسابيع الأربعة الماضية، كم من الوقت أثرت صحتك الجسدية أو مشاكلك النفسية على أنشطتك الاجتماعية (مثل زيارة الأصدقاء والأقارب....إلخ) ؟

طول الوقت	معظم الوقت	أثرت أحياناً	في قليل من الأوقات	لم يحدث أبداً
١	٢	٣	٤	٥

Continuation of Appendix 1.

مرضك الكلوي

ما مقدار صحة أو خطأ كل من العبارات التالية بالنسبة لك ؟

	صحيحة تماماً	صحيحة في الغالب	لا أقدر أن أحدد	خاطئة في الغالب	خاطئة تماماً
١٣. يؤثر مرضي الكلوي على حياتي أكثر من اللازم	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
١٤. أقضي الكثير جداً من وقتي في التعامل مع مرضي الكلوي	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
١٥. يشعرني التعامل مع مرضي الكلوي بالإحباط	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
١٦. أشعر بأني عبء على أسرتي	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥

خلال الأسابيع الأربعة الماضية ، إلى أي درجة ضايقك كل مما يلي ؟

	لم يضايقني	ضيق قليل	ضيق متوسط	ضيق كبير	ضيق كبير جداً
١٧. ألم في العضلات ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
١٨. ألم في الصدر؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
١٩. تشنج في العضلات ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٠. حكة في الجلد ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢١. جفاف في الجلد ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٢. ضيق التنفس؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٣. الدوار أو الدوخة ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٤. فقدان الشهية ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٥. الإرهاق والفتور ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٦. خدر في الأيدي أو الأرجل؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٧. غثيان أو اضطراب في المعدة ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٨. أ. خاص بمرضى الاستصفاء الدموي "الغسيل الدموي" مشاكل في مكان التوصيل "الفستولا أو القسطرة" ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥
٢٨ . ب. خاص بمرضى الديلزة الصفاقية "الغسيل البريتوني" مشاكل في مخرج القسطرة ؟	☐ ١	☐ ٢	☐ ٣	☐ ٤	☐ ٥

Continuation of Appendix 1.

تأثير المرض الكلوي على حياتك اليومية

يتضايق بعض الناس من تأثير المرض الكلوي على حياتهم اليومية في حين لا يتضايق البعض الآخر. إلى أي مدى يضايقك المرض الكلوي في كل من النواحي التالية؟

	لم يضايقني	ضيق قليل	ضيق متوسط	ضيق كبير	ضيق كبير جداً
٢٩. التقليل من السوائل؟	☐	☐	☐	☐	☐
٣٠. القيود على الأكل؟	☐	☐	☐	☐	☐
٣١. قدرتك على أداء أعمالك المنزلية؟	☐	☐	☐	☐	☐
٣٢. قدرتك على السفر؟	☐	☐	☐	☐	☐
٣٣. اعتمادك على الأطباء وبقية أفراد الطاقم الطبي؟	☐	☐	☐	☐	☐
٣٤. الإجهاد أو القلق الذي تسببه أمراض الكلى ؟	☐	☐	☐	☐	☐
٣٥. حياتك الجنسية ؟	☐	☐	☐	☐	☐
٣٦. مظهرك الشخصي؟	☐	☐	☐	☐	☐

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internal validity except for the MCS which had a Cronbach's alpha value of 0.66, indicating questionable internal reliability. There were mild ceiling effects in the burden of kidney disease and effect of kidney disease subscales. This ceiling effect was caused by kidney transplant recipients, 36.6% of whom scored 100% in the burden of kidney disease subscale compared to 4.8% of HD patients and 39% of whom scored 100% in the effect of kidney disease subscale compared to 1.6% of HD patients (Table 5).

When we correlated the five subscales of the Arabic KDQOL-36 instrument to the depression, anxiety, and stress scores of DASS-21, we found a significant negative correlation between the two groups of scores. This confirmed the convergent validity of the Arabic DKQOL-36 instrument (Table 6). When we compared the scores of HD patients and kidney transplant recipients, we found significant differences in the mean scores of the five subscales of KDQOL-36, indicating excellent discriminate validity of the instrument (Table 7).

Table 2. Estimates of intraclass correlation coefficient after simultaneous administration of the Arabic and English versions of kidney Disease Quality of Life Short Form-36 (*n*=10).

Domain	ICC	Lower bound	Upper bound	*P*
PCS	1.00	0.97	1.00	≤0.001
MCS	0.96	0.79	0.99	≤0.001
Symptom/problem list	0.99	0.95	1.00	≤0.001
Effect of kidney disease	0.98	0.90	1.00	≤0.001
Burden of kidney disease	0.98	0.90	0.99	≤0.001

ICC: Intraclass correlation coefficient, PCS: Physical component summary, MCS: Mental component summary.

Table 3. Estimates of intraclass correlation coefficient after test–re-test administration of the Arabic versions of kidney Disease Quality of Life Short Form-36 (*n*=10).

Domain	ICC	Lower bound	Upper bound	*P*
PCS	0.97	0.84	1.00	≤0.001
MCS	0.96	0.74	0.99	≤0.001
Burden of kidney disease	0.74	−0.27	0.94	0.046
Symptom/problem list	0.93	0.69	0.99	≤0.001
Effect of kidney disease	0.98	0.92	1.00	≤0.001

ICC: Intraclass correlation coefficient, PCS: Physical component summary, MCS: Mental component summary.

Table 4. Interitem correlation matrix between the five subscales of the Arabic Kidney Disease Quality of Life Short Form-36 (*n*=144).

Subscale	PCS	MCS	Burden of kidney disease	Symptoms of kidney disease	Effect of kidney disease
PCS	-	0.26	0.59	0.57	0.61
MCS	0.26	-	0.43	0.37	0.52
Burden of kidney disease	0.59	0.43	-	0.62	0.71
Symptom/problem list	0.57	0.37	0.62	-	0.62
Effect of kidney disease	0.61	0.52	0.71	0.62	-

P<0.01 for all parameters. PCS: Physical component summary, MCS: Mental component summary.

Table 5. Internal reliability of the five subscales of the Arabic Kidney Disease Quality of Life Short Form-36 (*n*=144).

Section	Items	Ceiling (%)	Floor (%)	Cronbach's Alpha
PCS	1–5 and 8	0.0	0.0	0.85
MCS	6, 7, and 9–12	0.0	0.0	0.66
Burden of kidney disease	13–16	22.9	2.1	0.77
Symptoms/problem list	17–28	14.6	0.0	0.86
Effect of kidney disease	29–36	22.9	0.7	0.83

PCS: Physical component summary, MCS: Mental component summary.

Table 6. Pearson's correlation coefficients between the five subscale scores of the Arabic version of KDQOL-36 and the depression, anxiety, and stress scores of Depression, Anxiety and Stress Scale-21 (*n*=144).

Subscale	Depression score	Anxiety score	Stress score
PCS	−0.36	−0.38	−0.33
MCS	−0.39	−0.39	−0.36
Burden of kidney disease	−0.51	−0.56	−0.51
Symptom/problem list	−0.46	−0.55	−0.52
Effect of kidney disease	−0.41	−0.51	−0.50

P value ≤0.001for all parameters.
PCS: Physical Component Summary, MCS: Mental Component Summary.

Table 7. Comparison between the mean subscale in the five subscales of the Arabic version of Kidney Disease Quality of Life Short Form-36 among hemodialysis (*n*=62) and kidney transplant (*n*=82) patients.

Subscale	HD	Kidney transplant	*P*
PCS	36.8±9.8	49.7±8.5	≤0.001
MCS	44.1±9.8	49.5±7.6	≤0.001
Burden of kidney disease	49.6±24	82.3±20	≤0.001
Symptom/problem list	74.5±16	89.6±12	≤0.001
Effect of kidney disease	62.7±23	91.5±10	≤0.001

PCS: Physical Component Summary, MCS: Mental Component Summary, HD: Hemodialysis.

Discussion

To the best of our knowledge, this is the first translation of KDQOL-36 into formal Arabic language that underwent adequate reliability and validity testing. Some authors translated and used the KDQOL instruments into Arabic language without describing any validation procedure.[5-7] Other authors performed reliability analysis to confirm the internal reliability of their translated instrument, but did not perform appropriate tests for conceptual equivalence and convergent or discriminate validity.[8,9]

During the translation and adaptation process, we deviated from the literal translation of certain response options. However, we were able to confirm conceptual equivalence between the translated and original versions of KDQOL-36 by simultaneous administration to a group of bilingual CKD patients. The ICC was above 0.95 in all the subscales of KDQOL-36.

During repeat administration of the instrument, the burden of kidney disease subscale had acceptable test–re-test reliability, while the remaining four sections had excellent reproducibility. This difference may reflect the great variability of disease burden over short periods of time. During field testing, the instrument had good internal reliability with a Cronbach's alpha of 0.81 and significant inter-item correlation between the five subscales of the instrument. The correlation coefficient was high between the PCS, burden of kidney disease, symptoms of kidney disease, and effect of kidney disease subscales. MCS had a relatively weak, albeit significant, correlation with the other subscales. The MCS subscale also had the lowest Cronbach's alpha value among other subscales. This may be due to the cultural background of the participants who often consider it inappropriate to display "impatience" or "intolerance" to illness.

To further confirm the validity of the instrument, we compared KDQOL-36 scores with the depression, anxiety, and stress scores of the Arabic version of DASS-21 and found statistically significant negative correlation. According to the recommendations of the KDQOL working group, we compared HD patients with kidney transplant recipients to

test the instrument's ability to discriminate between the two groups. Kidney transplant recipients achieved significantly better scores in all the subscales. The difference between the two groups was half the standard deviation in MCS and approximately one standard deviation in the remaining four subscales.

In this translation, we have intentionally used formal rather than colloquial Arabic words. Although the translation was validated in a group of Sudanese patients, we believe that it is equally applicable to patients from other Arab countries. In addition, the first 12 items of KDQOL-36 represent the SF-12 instrument for generic health surveys. It can be used in isolation to measure HR-QOL that is not related to a particular disease.

Conclusion

The current Arabic translation of the KDQOL-36 instruments has excellent conceptual equivalence with the original U.S. English version. It has good internal reliability and reproducibility. It also showed good convergent validity with DASS-21 and excellent discriminate validity between HD and kidney transplant patients.

Conflict of interest: None declared.

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