ORIGINAL ARTICLE

Validation of the Arabic linguistic version of the Ureteral Stent Symptoms Questionnaire

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Abstract **Objective:** To validate the Arabic version of the Ureteral Stent Symptoms Questionnaire (USSQ).

Patients and methods: The English version of the USSQ was translated into Arabic using a multi-step process by three urologists and two independent translators. The Arabic version was validated by asking 37 patients with temporary unilateral ureteric stents to complete the questionnaire at 2 weeks after stent insertion. The second group included 53 healthy individuals who agreed to complete the Arabic version of the questionnaire. The reliability of the Arabic version was evaluated for internal consistency using Cronbach's α test. Domain structures were examined by interdomain (section) associations using Spearman's correlation coefficient (r). The discrimination validity was evaluated by comparing the scores of patients with those of healthy individuals, using the Mann–Whitney test.

Results: Internal consistency was high for the sexual index and intermediate for urinary, pain and general health indices. There were good correlations of urinary symptoms with body pain ($r = 0.596$) and general health ($r = 0.690$). There was also

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a good correlation between body pain and general health ($r = 0.681$). For discrimination validity, there were significant changes in all domain scores when comparing patients with ureteric stents and healthy individuals ($P < 0.001$).

Conclusion: The Arabic version of the USSQ is a reliable and valid instrument that can be used to evaluate symptoms and health-related quality of life in Arabic patients with ureteric stents.

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Introduction

The placing of self-retaining ureteric stents is one of the most common urological procedures in current endourology [1]. However, it is associated with patient discomfort and a negative effect on quality of life (QoL) [2,3]. To decrease stent-related discomfort several trials have been conducted to study the effect of pharmacological agents on stent-related symptoms [4,5]. The use of a valid objective tool to evaluate stent-related symptoms and their effect on QoL became available after the development of the Ureteral Stent Symptoms Questionnaire (USSQ) [6]. This questionnaire was used to objectively compare different treatment groups. Validated versions of the USSQ have been published in the Italian, Korean and Spanish languages [7–9]. Arabic is one of the most popular languages in the world because it is spoken by as many as 420 million people (native and non-native) in the Arab world. It is one of six official languages of the United Nations [10].

The present study was conducted to provide a validated version of the USSQ in Arabic. The validation of the Arabic version of this questionnaire will allow its use in future research in all Arab-speaking countries.

Patients and methods

The Arabic linguistic translation of the USSQ was produced using a multi-step process following the guidelines for cross-cultural adaptation of health-related QoL measures [11]. The questionnaire was initially translated from English to Arabic in parallel by two urologists and one independent, native Arabic-speaking professional translator who had English as the first foreign language. Simple language was used to be understandable even by individuals with lower education levels. Any differences between the versions were resolved through a consensus meeting between the translator and the urologists. This Arabic version was back-translated by an independent English-speaking professional with Arabic as the first foreign language. Another back-translation was done by a native English-speaking urologist who has Arabic as the first foreign language. The original USSQ and back-translated version were compared and differences were resolved in a second consensus meeting. This revised version (definitive version) was used for the study.

A pilot test was used to assess whether the questionnaire was clear and appropriate, by interviews with five male and five female patients who had indwelling ureteric stents. No difficulties were reported in completing it, so no further changes were made.

Subjects

The study included two groups; the first comprised patients with unilateral temporary JJ stents placed for acute benign ureteric obstruction or after ureteroscopic procedures for ureteric or renal calculi. The same type of 6-F double-pigtail ureteric stent (Percuflex®, Boston Scientific, Natick, MA, USA) of suitable length according to patient height was inserted in all cases. Patients with chronic ureteric obstruction, obstruction due to malignancy, chronic pelvic pain syndrome or those who were receiving medications that affected lower urinary tract function, were excluded from the study. We also excluded patients who had had major complications (such as haematuria, sepsis or stent migration) because the clinical course was significantly affected by those complications.

The second (control group) comprised healthy individuals who agreed to complete the Arabic version of the questionnaire. The Arabic version of the USSQ was answered in all cases at 2 weeks after placing the stent, and controls answered the questionnaires once.

Statistical analysis

The power of the study was calculated using the G*Power program (University of Düsseldorf, Düsseldorf, Germany) using the post hoc test with accuracy-mode calculation and an effect size convention of 0.6 for the two-tailed t-test, with an α error protection of 0.05.

The reliability of the Arabic USSQ was evaluated for internal consistency using Cronbach's α for each domain (section). Domain structures were examined by inter–domain associations using Spearman's correlation coefficient (r). The correlation was considered as good when $r > 0.5$. The discrimination validity was evaluated by

Table 1 The baseline characteristics of the study population.

Variable, n (%)	Patients (37)	Controls (53)	P*
N subjects	37	53	
Gender:			0.598
Male	23 (62)	30 (57)	
Female	14 (38)	23 (43)	
Educational level			0.348
None	11 (30)	9 (17)	
School	15 (41)	24 (45)	
University	11 (30)	20 (38)	
Employment status			0.372
Unemployed or student	16 (43)	18 (34)	
Employed	21 (57)	35 (66)	

* Chi-squared test.

Table 2 Internal consistency of the USSQ domains.

Index	Cronbach's α
Sexual matters	0.92
Body pain	0.74
Urinary symptoms	0.72
General health	0.72
Work performance	0.54

comparing the scores of cases with those of controls, using the Mann–Whitney test. In all tests, $P < 0.05$ was considered to indicate significance.

Results

The study included 37 patients with JJ stents (mean age 41 years, SD 9.7) and 53 healthy individuals (mean age 32.6 years, SD 9.4). The demographics of the study population are shown in Table 1. A doctor assisted any illiterate individuals in reading the questionnaire.

The power of the study was 79%. The internal consistency was high for the sexual index, intermediate for urinary, pain and general health indices, and low for the work index, as shown by Cronbach's α test (Table 2). The interdomain correlations are shown in Table 3. There were good correlations of urinary symptoms with body pain ($r = 0.596$) and general health ($r = 0.690$). There was another good correlation between body pain and general health ($r = 0.681$). The discrimination validity results are shown in Table 4. There were statistically significant changes in all domain scores when

comparing patients (with ureteric stents) and controls (with no stents).

Discussion

In 2003 Joshi et al. [6] developed the USSQ, which is a valid measure to evaluate the impact of ureteric stents on patients' symptoms and QoL. It consists of six domains, three of them being concerned with stent-specific matters (urinary symptoms, pain, and additional problems) and the other three assessing general matters (general health, work performance, and sexual matters). The USSQ has been considered a reliable outcome measure in several trials [12–14].

The reliability of the Arabic version was confirmed by the high and intermediate internal consistency and good interdomain correlations (Tables 2 and 3), whilst the discrimination validity was obvious by the significant difference in all domain scores between patients with ureteric stents and healthy individuals (Table 4). Similar results were reported for the Italian, Korean and Spanish linguistic validation studies [7–9]. This agreement can be attributed to two reasons. First, the high discriminatory power and good psychometric properties of the original English questionnaire [6], and second, the multi-step approach in the translation process, consisting of forward and backward translations, and consensus meetings between researchers and professional translators. This method is now considered the standard for the linguistic validation of patient-reported outcomes [15].

We did not compare the Arabic version of USSQ with other health-related QoL scores, such as the IPSS. Giannarini et al. [7] reported disappointing results when comparing the Italian version of the USSQ with the IPSS. They attributed this to the fact that ureteric stents not only had a negative impact on urinary symptoms, but also on other health-related QoL, such as general health, body pain and work performance. This is unlikely to correlate completely with the IPSS, which evaluates urinary symptoms alone [6]. Other more robust QoL questionnaires were not compared with the Arabic version of the USSQ because a considerable proportion of our patients are not educated or had low levels of education that could affect their ability to answer such questionnaires. Even when answering the Arabic version of USSQ many patients needed assistance to read the questions, unlike European patients, who can answer

Table 3 Inter-domain correlations of the USSQ.

r (P) for domain	Sexual matters	Urinary symptoms	Body pain	General health
Urinary symptoms	0.135 (0.40)			
Body pain	0.226 (0.15)	0.596 (<0.001)		
General health	0.203 (0.20)	0.690 (<0.001)	0.681 (<0.001)	
Work performance	0.203 (0.19)	−0.105 (0.6)	0.049 (0.6)	0.011 (0.8)

Table 4 The discrimination properties of the Arabic USSQ between patients with ureteric stents and controls.

Median (range) USSQ scores	Patients (37)	Controls (53)	P
Total	83 (55–114)	33 (26–49)	< 0.001
Sexual	4 (0–19)	3 (0–5)	< 0.001
Urinary	33 (18–41)	13 (9–23)	< 0.001
Body pain	19 (9–33)	6 (6–10)	< 0.001
General health	18 (10–25)	9 (6–18)	< 0.001
Work performance	10 (5–15)	3 (0–5)	< 0.001

the questions unaided. Another limitation of this study was an inability to assess test–retest reliability, for the same reason of low educational levels in many patients, and the observation that some stent-related symptoms might improve with time [6].

In conclusion, the results of the present study show that the Arabic version of the USSQ is a reliable and valid tool for measuring symptoms associated with indwelling ureteric stents in both male and female patients.

Conflict of interest

None.

Source of funding

None.

Appendix A

A copy of the Arabic questionnaire is available from the corresponding author on request.

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