ORIGINAL ARTICLE

Assessment of the psychometric properties of the Spanish language version of questionnaire ICIQ-Male Lower Urinary Tract Symptoms (ICIQ-MLUTS)☆


a Servicio de Urología, Hospital Universitario de Canarias, Universidad de La Laguna, San Cristóbal de la Laguna, Tenerife, Spain
b Servicio de Urología, Hospital de Parapléjicos, Toledo, Spain
c Servicio de Urología, Hospital Clínico San Carlos, Madrid, Spain
d Servicio de Urología, Hospital Universitario Puerta del Hierro, Madrid, Spain
e Servicio de Urología, Hospital Germans Trias i Pujol, Badalona, Barcelona, Spain
f Unidad de Gestión Clínica de Urología, Hospital Virgen de la Victoria, Málaga, Spain
g Servicio de Urología, Hospital Universitario La Paz, Madrid, Spain
h Servicio de Urología, Hospital Río Hortega, Valladolid, Spain
i Servicio de Urología, Hospital de Basurto, Bilbao, Spain
j Servicio de Urología, Instituto Valenciano de Oncología (IVO), Valencia, Spain
k Servicio de Urología, Centro Médico Teknon, Barcelona, Spain
l Servicio de Urología, Hospital Virgen de la Macarena, Sevilla, Spain

Received 9 July 2013; accepted 17 July 2013
Available online 13 December 2013

KEYWORDS
Lower urinary tract symptoms; Self-assessment questionnaire; Quality of life

Abstract

Objectives: To evaluate the psychometric properties of the Spanish version of the ICIQ-Male Lower Urinary Tract Symptoms Questionnaire (ICIQ-MLUTS): feasibility (% of completion and ceiling/ground effects), reliability (test-retest), convergent validity (vs. Bladder Control Self-Assessment Questionnaire [BSAQ] and vs. International Prostate Symptom Score [I-PSS]) and criterion validity (according to presence or absence of symptoms).

Materials and methods: This was an observational, non-interventionist and multicenter study. 223 male patients with lower urinary tract symptoms (LUTS), predominantly storage symptoms and aged 18–65, took part in the study. Patients completed the ICIQ-MLUTS (test), I-PSS and BSAQ questionnaires and referred their urinary symptoms in a single visit, with the exception of a subgroup composed by 49 patients who completed the questionnaire again 15 days after


* Corresponding author.
E-mail address: davidcastro@teide.net (D.M. Castro-Díaz).

2173-5786/$ - see front matter © 2013 AEU. Published by Elsevier España, S.L. All rights reserved.
Introduction

Low urinary tract symptoms (LUTS) may result from a complex interplay of pathophysiological influences, including prostatic pathology and bladder dysfunction.\(^1\)

LUTS in men older than 40 years have, until recently, been assumed to arise from bladder outlet obstruction (BOO) caused by benign prostatic hyperplasia.\(^2\) Several findings explain the causal relationships between obstruction and the development of detrusor overactivity (DO). Secondary hypertrophy of the bladder wall due to overstrain caused by obstruction resulting in progressive denervation of the detrusor playing a key role in the filling symptoms and DO.\(^3\) LUTS in male can be classified in storage symptoms (increased diurnal frequency, nocturia, micturition urgency, stress urinary incontinence) voiding symptoms (intermittent, slow stream, straining, terminal dribble and hesitancy) and post-micturition symptoms (feeling of incomplete emptying, post-micturition dribble).\(^4\)\(^5\) In males, the evidence has demonstrated that, frequently, urinary storage symptoms persist despite proper management of the LUTS.\(^1\)

The Guidelines on the Management of Male Lower Urinary Tract Symptoms (LUTS) currently published by the European Association of Urology,\(^6\) targeted in the symptoms instead in the pathologies, highlight that not all bladder symptoms in older men are necessarily prostate-related. Thereby, sometimes LUTS can be related with bladder (DO, overactive bladder syndrome [OAB] or detrusor underactivity) or with kidney. This new perspective on the male LUTS is changing its clinical practice.

The International Consultation on Incontinence (ICI) recommends the use of specific, standardized and validated tests in order to ascertain the potential for the aetiologic role of the prostate enlargement and obstruction in the LUTS,\(^2\) as well as for the medical management of male patients with LUTS. In this frame, the International Consultation on Incontinence Modular Questionnaire (ICIQ) project\(^7\) is responsible for the review of numerous published
questionnaires for the assessment of urinary symptoms. Grades of recommendation regarding their use are applied. The grade A recommendation represents the highest recommendation. Two questionnaires have been incorporated into the ICIQ: ICIQ-Male Lower Urinary Tract Symptoms or ICIQ-MLUTS (before ICSmale SF)\(^9\),\(^{10}\) and ICIQ-MLUTS Long Form (before ICSmale).\(^{11}\)\(^{14}\)

ICIQ-MLUTS\(^2\) (modified version of ICSmaleSF) is a questionnaire for evaluating male LUTS and its impact on health related quality of life (HRQOL). It is a short and acocomplete tool, which possess robust psychometric properties and it is used in the research and in clinic practice all over the world. ICIQ-MLUTS, unlike ICSmaleSF, includes the impact of each urinary symptom in the HRQOL (see Appendix A: ICIQ-MLUTS Spanish version [Spain]).

This study is conducted in order to evaluate the psychometric properties of ICIQ-MLUTS in a sample of patients with LUTS attending a Functional Urology and Urodynamic Units. The ultimate objective is to recommend its use in routine clinical practice in our country.

Materials and methods

An observational, non-interventionist and multicenter study was performed. In the study 223 adult male patients with lower urinary tract symptoms (LUTS) were enrolled, predominantly storage symptoms, not suspect for prostate cancer, without neurologic pathology or any of the following urological history: recurrent urinary tract infections, bladder stones, urethral stenosis, interstitial cystitis, chronic prostatitis/chronic pelvic pain syndrome, prostatic or urethral or bladder surgery, prostate or bladder or urethral or rectal cancer, and/or pelvic radiotherapy.

Data were recorded by 50 specialists of Functional Urology and Urodynamic Units. All patients gave written informed consent before enrollment in the study. Clinical Research Ethics Committee of Hospital Virgen de la Salud (Toledo) approved the protocol of the study.

Data collection was carried out by specific electronic application over a period of 4 months in single visit. To assess the test-retest feasibility, 49 patients answered ICIQ-MLUTS 15 days after initial inclusion

Variables recorded were: date of birth, height, weight, origin of referral, intake of caffeine beverages, work activity, comorbidities and micturition symptoms reported by patient (storage, voiding and post-micturition symptoms).

Patients complete following questionnaires

ICIQ-MLUTS,\(^9\) 13 items 5 alternatives for Likert items. Each item assesses a single LUTS and its impact on HRQOL. Symptoms associated with each item are: (item 2) Hesitancy, (3) Straining, (4) Slow stream, (5) Intermittent stream, (6) Terminal dribble, (7) Urgency, (8) UUI, (9) SUI, (10) Mixed urinary incontinence, (11) Nocturnal enuresis, (12) Post-micturition dribble, (13) Frequency and (14) Nocturia. The impact of each one on HRQOL is measured by the question: “What kind of problem does this mean for you?” that is scored from 0 (“Does not affect me at all”) to 10 (“Affects me a lot”). ICIQ-MLUTS scoring\(^10\) is divided into 2 subscales: Voiding symptoms, items 2–6, score of 0–20 and Urgency and incontinence systems, items 7–12, score of 0–24. There are two more questions related with frequency (item 13) and Nocturia (item 14). The scales of discomfort associated are not taken into account in the final score.

Bladder Control Self-Assessment Questionnaire (b-saq)\(^15\) is a 8 items questionnaire assessing the symptoms of OAB: (item 1) Urgency, (2) Frequency, (3) Nocturia and (4) Incontinence; as well as discomfort associated to each symptom. A person will be considered with OAB when the score in any of two scales (symptom and/or discomfort) is greater than 6 points (range, 0–12).

Harmonized Spanish version of the International Prostate Symptom Score (I-PSS).\(^16\) This is a 7 items questionnaire assessing storage and voiding symptoms associated with BPH: emptying, intermittency, weak stream, frequency, hesitancy and nocturia. Furthermore, a eight item measures the impact of these symptoms with (HRQOL). The score is the sum of the seven items (range 0–35).

Statistical analysis

Software SPSS 14.0 was used. After quality of data were assessed, descriptive analysis of sociodemographic and clinic variables, included in the E-CDR, as well as the scores obtained with the questionnaires was carried out.

Regarding analysis of psychometric properties of ICIQ-MLUTS, the feasibility was analyzed by the evaluation of no-answer percentage of each item and of subject’s percentage that did not answer any item. Besides, ceiling effect (percentage of patients with the maximum possible score) and floor effect (percentage of patients with the minimum possible score) were assessed.

The feasibility was calculated by intraclass correlation coefficient (ICC) with each continuous item score (for the number of times in each symptom) of test and retest with the 49 patients who completed both questionnaire. Similarly, to calculate the concordance degree between items taken categorically (presence or absence of symptom) kappa was used.

Landis and Koch’s scale was used to classified kappa values: <0 no agreement; 0–0.2: slight agreement; 0.2–0.4: fair agreement; 0.4–0.6: moderate agreement; 0.6–0.8: substantial agreement and >0.8 near-perfect agreement.

Convergent validity between ICIQ-MLUTS and I-PSS and B-SAQ scores was evaluated by Spearman correlation coefficient (\(p<0.05\)).

Also, criteria validity was evaluated using nonparametric statistics (Mann–Whitney U, \(p<0.05\)) in order to compare the mean of two subscales (voiding and incontinence symptoms) with the groups of patients according to the presence or absence of each symptom in the study (storage symptoms, voiding symptoms and post-micturition symptoms).

Results

223 male patients with lower urinary tract symptoms (LUTS), took part in the study. The description of the sample is shown in Table 1.

Mean total score (SD) obtained in the ICIQ-MLUTS was: voiding symptom subscale 6.11 (3.92) points; incontinence
Table 1 Characteristics of the participant sample (n = 223).

<table>
<thead>
<tr>
<th>Item-Symptom (ICIQ-MLUTS)</th>
<th>n</th>
<th>Media (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;What kind of problem does this mean for you?&quot;*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item2: Hesitancy</td>
<td>220</td>
<td>3.37 (3.01)</td>
</tr>
<tr>
<td>Item3: Straining</td>
<td>220</td>
<td>3.09 (2.94)</td>
</tr>
<tr>
<td>Item4: Flow intensity</td>
<td>220</td>
<td>3.79 (3.10)</td>
</tr>
<tr>
<td>Item5: Intermittency</td>
<td>220</td>
<td>3.15 (2.92)</td>
</tr>
<tr>
<td>Item6: Incomplete emptying</td>
<td>220</td>
<td>3.80 (3.17)</td>
</tr>
<tr>
<td>Item7: Urgency</td>
<td>220</td>
<td>6.71 (2.71)</td>
</tr>
<tr>
<td>Item8: Urge urinary incontinence (UUI)</td>
<td>220</td>
<td>5.17 (3.93)</td>
</tr>
<tr>
<td>Item9: Stress urinary incontinence (SUI)</td>
<td>220</td>
<td>0.76 (2.06)</td>
</tr>
<tr>
<td>Item10: Mixed urinary incontinence (MUI)</td>
<td>220</td>
<td>1.93 (3.19)</td>
</tr>
<tr>
<td>Item11: Nocturnal enuresis</td>
<td>219</td>
<td>1.63 (3.03)</td>
</tr>
<tr>
<td>Item12: Post-micturition dribble</td>
<td>220</td>
<td>4.28 (3.52)</td>
</tr>
</tbody>
</table>

In bold appear the questionnaire items that scored higher (symptoms that affect HRQOL).

The scores of the impact of the urinary symptoms on HRQOL are shown in Table 2.

<table>
<thead>
<tr>
<th>Item-Symptom (ICIQ-MLUTS)</th>
<th>n</th>
<th>Media (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;What kind of problem does this mean for you?&quot;*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Item2: Hesitancy</td>
<td>220</td>
<td>3.37 (3.01)</td>
</tr>
<tr>
<td>Item3: Straining</td>
<td>220</td>
<td>3.09 (2.94)</td>
</tr>
<tr>
<td>Item4: Flow intensity</td>
<td>220</td>
<td>3.79 (3.10)</td>
</tr>
<tr>
<td>Item5: Intermittency</td>
<td>220</td>
<td>3.15 (2.92)</td>
</tr>
<tr>
<td>Item6: Incomplete emptying</td>
<td>220</td>
<td>3.80 (3.17)</td>
</tr>
<tr>
<td>Item7: Urgency</td>
<td>220</td>
<td>6.71 (2.71)</td>
</tr>
<tr>
<td>Item8: Urge urinary incontinence (UUI)</td>
<td>220</td>
<td>5.17 (3.93)</td>
</tr>
<tr>
<td>Item9: Stress urinary incontinence (SUI)</td>
<td>220</td>
<td>0.76 (2.06)</td>
</tr>
<tr>
<td>Item10: Mixed urinary incontinence (MUI)</td>
<td>220</td>
<td>1.93 (3.19)</td>
</tr>
<tr>
<td>Item11: Nocturnal enuresis</td>
<td>219</td>
<td>1.63 (3.03)</td>
</tr>
<tr>
<td>Item12: Post-micturition dribble</td>
<td>220</td>
<td>4.28 (3.52)</td>
</tr>
</tbody>
</table>

In bold appear the questionnaire items that scored higher (symptoms that affect HRQOL).

Figure 1 Reliability ICIQ-MLUTS questionnaire in Spanish. Test-retest. Continuous and categorical measures (95%).
### Table 3  Criteria validity table. Symptoms filling, emptying and post-mictional scores vs. ICIQ-MLUTS scores. *p* (Mann–Whitney).

<table>
<thead>
<tr>
<th>Symptoms reported by the patient</th>
<th>Score emptying symptoms ICIQ-MLUTS Mean (SD)</th>
<th>Score incontinence symptoms ICIQ-MLUTS Mean (SD)</th>
<th>Item13 ICIQ-MLUTS: Frequency Mean (SD)</th>
<th>Item14 ICIQ-MLUTS: Nocturia. Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Filling symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.06 (3.96)</td>
<td>5.34 (3.38)</td>
<td>6.67 (2.78)**</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>6.44 (3.64)</td>
<td>5.22 (4.11)</td>
<td>4.33 (2.84)</td>
<td>–</td>
</tr>
<tr>
<td>Nocturia</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.09 (3.85)</td>
<td>5.35 (3.53)</td>
<td>–</td>
<td>6.71 (2.76)**</td>
</tr>
<tr>
<td>No</td>
<td>6.36 (4.96)</td>
<td>4.86 (2.54)</td>
<td>–</td>
<td>2.14 (2.82)</td>
</tr>
<tr>
<td>Urgency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.09 (3.93)</td>
<td>5.46 (3.47)**</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>6.42 (3.99)</td>
<td>2.92 (2.68)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Incontinence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.23 (3.93)</td>
<td>6.45 (3.30)**</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>6.07 (3.96)</td>
<td>3.95 (3.17)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Voiding symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intermittency</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.93 (4.05)**</td>
<td>5.15 (3.18)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>4.92 (3.31)</td>
<td>5.45 (3.67)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Slow stream</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.24 (3.77)**</td>
<td>5.32 (3.45)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>4.53 (3.57)</td>
<td>5.33 (3.51)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Straining</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>8.00 (3.79)**</td>
<td>5.01 (3.09)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>5.29 (3.67)</td>
<td>5.46 (3.64)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Terminal dribble</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.07 (4.06)**</td>
<td>5.53 (3.41)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>4.7 (3.17)</td>
<td>5.00 (3.59)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Hesitancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.86 (4.02)**</td>
<td>5.20 (3.61)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>4.82 (3.32)</td>
<td>5.38 (3.35)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Post-micturition symptoms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feeling of incomplete emptying</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>7.71 (4.21)**</td>
<td>5.42 (3.20)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>5.04 (3.29)</td>
<td>5.30 (3.66)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Post-micturition dribble</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>6.89 (4.13)**</td>
<td>5.65 (3.35)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>No</td>
<td>5.07 (3.35)</td>
<td>4.91 (3.61)</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

* p < 0.01.  ** p < 0.001.

Overall scores test-retest was found (ICC) (CI 95%): 0.885 (0.771–0.999) for voiding symptoms and 0.695 (0.440–0.948) for incontinence symptoms. ICC for each item varies between 0.467 and 0.876, and kappa coefficient between 0.696 and 0.811.

**Convergent validity.** Correlation between ICIQ-MLUTS subscales and other questionnaires (B-SAQ symptoms subscale and discomfort subscale and total I-PSS) was statistically significant: ICIQ-MLUTS Voiding symptoms vs. B-SAQ Symptoms scale (*p* = 0.140, *p* = 0.038) vs. B-SAQ Discomfort scale (*p* = 0.133, *p* = 0.048) and vs. total I-PSS (*p* = 0.740, *p* < 0.01); ICIQ-MLUTS Incontinence symptoms vs. B-SAQ Symptoms scale (*p* = 0.661, *p* < 0.01) vs. B-SAQ Discomfort scale (*p* = 0.609, *p* < 0.01) and vs. total I-PSS (*p* = 0.423, *p* < 0.01).

**Criteria validity.** According with patients referring or not voiding symptoms, the results of convergent analysis between subscales scores of ICIQ-MLUTS are shown in Table 3. The differences are statistically significant (*p* < 0.05) for patients referring voiding symptoms.

**Discussion**

Spanish version of ICIQ-MLUTS shows adequate feasibility, reliability and convergent and criteria validity.

The percentage of patients answering all questionnaire items (98.64%) was very high, higher than that reported by the authors of the analysis of ICIQ-MLUTS long version (ICSmale) reporting that 94% of the overall sample...
(n = 1271) complete the long version of the questionnaire. Similarly, 94% of patients with LUTS who took part in the Ravindranath et al. study\textsuperscript{10} completed all questionnaire items.

Regarding our sample, ceiling and floor effects were very small or nonexistent, both Voiding symptoms and Incontinence symptoms scales. All this speaks in favor of the high feasibility of the Spanish version of ICIQ-MLUTS, what allows to recommend its use in the routine clinical practice for the assessment of LUTS in males.

The results of reliability assessed both continuous values (ICC) and categorical values (Cohen's kappa) were much more than satisfactory. Furthermore, using the most demanding criterion for the assessment of test-retest reliability, good agreement\textsuperscript{11} was observed between scores in the test and the retest (continuous measurements), in items related to urinary symptoms except for Hesitancy (ICC = 0.467), Mixed urinary incontinence (ICC = 0.676) and Frequency (ICC = 0.665), which showed a moderate agreement. Regarding the results of the kappa, in the categorical measurement of each item the agreement is good for all items except for item related with nocturia, which shows a moderate agreement (kappa = 0.518) similar to the resulting one in the long version original questionnaire validation (kappa = 0.57).\textsuperscript{12}

Similarly to validation study of original version of ICS-male SF,\textsuperscript{10} in which Cronbach’s $\alpha$ coefficients were 0.76 for ICSmaleVS (Voiding Symptoms) and 0.78 for ICSmaleIS (Incontinence Symptoms), in the present study a good reliability for scores of Voiding Symptoms (ICC = 0.885) and Incontinence symptoms (ICC = 0.697) has been shown. This is a good indicator of reliability, suggesting that the tool will be sensitive to the evaluation of the changes in the symptomatology of the patients.

Regarding convergent validity between questionnaire and the remaining measures of urinary symptoms, statistically significant correlation between ICIQ-MLUTS subscales scores and total scores of I-PSS were found. Furthermore, as expected, correlation was higher between I-PSS and Voiding symptoms scores, similar results to those obtained by Donovan et al.\textsuperscript{10} in the validation of original questionnaire in English, in which Pearson correlation coefficient ($p < 0.001$) between ICSmaleIS vs. I-PSS was lower ($r = 0.36$) than the correlation between ICSmaleVS vs. I-PSS ($r = 0.68$).

The correlation between the scores of ICIQ-MLUTS subscales and B-SAQ subscales was statistically significant and positive (the higher the score on the B-SAQ, the higher scores on the ICIQ-MLUTS, the higher presence of the symptom); finding higher correlation between Urgency and Incontinence subscores of ICIQ-MLUTS and both subscales of S-SAQ (Symptoms and Discomforts). This result was expected due to the evaluation in both measurements of specific symptoms “Urgency” and “Mixed incontinence”. Although there is positive and statistically significant correlation between Voiding symptoms subscale scores of ICIQ-MLUTS and both subscales of B-SAQ, this correlation is lower because in these subscales voiding LUTS is assessed.

Besides, and regarding criteria validity of the questionnaire, we found statistically significant differences in the questionnaire score between patients who had referred or not the various urinary symptoms in favor of those who had responded to have these symptoms. Thereby the Spanish version of ICIQ-MLUTS questionnaire is a tool that discriminates between groups of patients.

The present study proves that Spanish version of ICIQ-MLUTS properly meets the psychometric properties. Furthermore, the questionnaire gives information about the impact of each LUTS on the patients’ HSQOL.

**Funding**

This study has been funded by Astellas Pharma S.A.

**Conflict of interests**

Dr. Manuel Esteban is the national coordinator of the Research Group of Functional Urology and Urodynamic (IFU Group; Grupo de Investigación de Urología Funcional y Urodinámica) and the coordinator of the Female Urology, Functional and Urodynamic Group of the Spanish Association of Urology.

Dr. José E. Batista is researcher and lecturer for Astellas Pharma, S.A., and researcher for Dentsply/Lofric.

The remaining authors declare no conflict of interest.

**Acknowledgement**

The authors acknowledge the support and cooperation of all researchers from the IFU Group.

**Appendix A. Supplementary data**

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.acuroe.2013.11.006.

**References**