Psychometric Properties of the Spanish Version of the Changes in Sexual Functioning Questionnaire Short-Form (CSFQ-14) in Patients with Severe Mental Disorders

Maria Paz Garcia-Portilla, MD, PhD,* Pilar Alejandra Saiz, MD, PhD,* Eduardo Fonseca, Psych, PhD,† Susana Al-Halabi, Psych, PhD,‡ Maria Teresa Bobes-Bascaran, Psych,§ Manuel Arrojo, MD, PhD,¶ Antonio Benabarre, MD, PhD,** Jose Manuel Goikolea, MD, PhD,** Emilio Sanchez, MD, PhD,†† Fernando Sarramea, MD, PhD,‡‡ and Julio Bobes, MD, PhD*

*Department of Psychiatry, University of Oviedo, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Oviedo, Spain; †Department of Psychology, University of Oviedo, Spain; ‡Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Oviedo, Spain; §Department of Psychiatry, Hospital Clínico, Valencia. Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Valencia, Spain; ¶Department of Psychiatry, Complejo Hospitalario Universitario de Santiago de Compostela, Santiago de Compostela, Spain; **Department of Psychiatry, Hospital Clinic, Barcelona. Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Barcelona, Spain; ††Department of Psychiatry, Hospital General Universitario Gregorio Marañón, Madrid, Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Madrid, Spain; ‡‡Department of Psychiatry, Distrito Sanitario Jaén Norte, Servicio Andaluz de Salud. Jaén, Spain

DOI: 10.1111/j.1743-6109.2010.02043.x

ABSTRACT

Introduction. Sexual dysfunction in patients with severe mental disorders is often underestimated or overlooked by psychiatrists. A brief and valid self-report instrument for assessing sexual functioning may well contribute to changing this situation.

Aims. To validate the Short Form of the Changes in Sexual Functioning Questionnaire (CSFQ-14) in Spanish patients with severe mental disorders.

Methods. Naturalistic, cross-sectional, multicenter, validation study. Eighty-nine patients with schizophrenia and 82 with bipolar disorder were evaluated using the CSFQ-14, the Visual Analogue Scale for Sexual Functioning Satisfaction (VAS-SFS), and the Clinical Global Impression—Severity scales for mental disorders (CGI-S) and for Sexual Dysfunction (CGI-SSD).

Main Outcome Measures. The 14-item Changes in Sexual Functioning Questionnaire.

Results. Internal reliability (Cronbach’s alpha) = 0.90. Construct validity = 3 principal components, of which the first, arousal-orgasm, explained 46.4% of the total variance. Convergent validity: Pearson correlation coefficients between CSFQ-14 and VAS-SFS = 0.33 (P < 0.01) and between CSFQ-14 and CGI-SDS = −0.71 (P < 0.01). Discriminant validity: The CSFQ-14 was able to discriminate among patients with no, mild, moderate, and severe sexual dysfunction according to CGI-SDS scores, both in males (P < 0.001) and females (P < 0.001). In males, the area under the curve (AUC) was 0.833 and a cutoff point of 49 provided a sensitivity of 92.9% and a specificity of 59.5%. In females, the AUC was 0.834 and a cutoff point of 43 provided a sensitivity of 91.9% and a specificity of 62.5%.

Conclusion. The Spanish version of the CSFQ-14 is a reliable and valid instrument for assessing sexual functioning in patients with severe mental disorders. As a brief, self-rated instrument, the CSFQ-14 scale seems to be appropriate for use in everyday clinical practice as a means of identifying and monitoring changes in sexual functioning.

Key Words. CSFQ-14; Sexual Dysfunction; Schizophrenia; Bipolar Disorder; Sexual Dysfunction and Severe Mental Disorder
Introduction

Sexual dysfunction has long been recognized in patients with severe mental disorders, particularly in schizophrenia [1–6]. Several factors may be involved, ranging from age and gender [7], to the disease itself, the use of psychotropic medications, psychosocial issues, use of tobacco, alcohol, and other substances, physical health including the metabolic syndrome. Different studies have demonstrated that sexual dysfunction negatively impacts patients’ compliance with treatment [8,9] and quality of life, although results are controversial for the latter [4,5,10,11].

Although interest in the diagnosis and treatment of sexual dysfunction in patients with severe mental disorders is a growing area, the truth is that psychiatrists and other specialists significantly underestimate or even ignore the presence of sexual dysfunction in these patients [12–15]. Several factors may contribute to this including embarrassment about discussing sexual issues with patients, lack of time, viewing difficulties in this area as minor compared to psychotic symptoms, and therapeutic nihilism.

Providing clinicians with brief, validated, self-report instruments for accurately diagnosing and monitoring sexual functioning changes in patients with psychiatric disorders may contribute to overcoming the barriers in this area. Unfortunately, the instruments currently available in Spanish suffer from important limitations.

The Changes in Sexual Functioning Questionnaire (CSFQ) is a 36-item clinical and research instrument identifying five scales of sexual functioning previously validated in the Spanish language [16,17]. It is a semistructured interview, but if the patient feels uncomfortable with the interview, it can be self-administered. Although it demonstrates good psychometric properties, experience has shown that it is too long for use in daily clinical practice. The English version of the short form of the CSFQ, the CSFQ-14, is a self-report instrument that has been previously validated, demonstrating good construct validity and internal reliability [18]. Compared to the CSFQ, the CSFQ-14 is more amenable for use in daily clinical practice as it requires less time to be completed and scored, allowing clinicians more time for discussion with patients and for further assessment if necessary. The English version of the CSFQ-14 may be found in Keller et al. [18].

The Psychotropic-Related Sexual Dysfunction Questionnaire [19] is a clinician-rated instrument developed for assessing sexual dysfunction related to psychotropic drugs. As it focuses on sexual adverse events related to the use of psychopharmaceuticals, it neglects other possible causes that contribute to the “complex world” of sexual dysfunction in patients with severe mental disorders. Furthermore, it has been demonstrated that barriers to assessment of sexual dysfunction, including issues such as embarrassment, inadequate training, and sense of intrusiveness [20], typical of clinician-rated instruments, are common.

The present study aims to validate the CSFQ-14, a brief self-report instrument for assessing sexual dysfunction, in patients with severe mental disorders (i.e., schizophrenia and bipolar disorder). Spanish versions of the CSFQ-14 for females and males are included in Appendices 1 and 2.

Methods

Study Design

This is a naturalistic, cross-sectional, validation study conducted at six centers in Spain. It was approved by the Ethics Committee for Clinical Research of one of the centers (University of Oviedo) and is in accordance with 1975 Declaration of Helsinki, as revised in 1983. Written informed consent was obtained from all subjects prior to enrollment.

Subjects

Participants included 171 outpatients with severe mental disorders, 89 with schizophrenia, and 82 with bipolar disorder.

Patients were enrolled in the study from April to June 2009. Inclusion criteria were (i) age between 18 and 65 years; (ii) ICD-10 diagnosis of schizophrenia or bipolar disorder; (iii) on stable maintenance treatment (i.e., no changes in the previous 3 months); (iv) sexually active (defined as having experienced sexual intercourse, masturbation, or other sexual activity) at some time during the previous 3 months; (v) able to self-complete the CSFQ-14; and (vi) written informed consent to participate in the study.

Exclusion criteria were designed to be minimal, due to the nature of the study, and included the presence of physical illnesses and/or treatments that according to the clinician judgment interfere with sexual function (i.e., long-term diabetes, hormonal deficiencies, hyperprolactinemia, severe congestive cardiac failure, neurological conditions, antihypertensives, digoxin, hypolipidemics).
Measures
For all patients, the following instruments were completed at the enrollment visit: the Spanish version of the Changes in Sexual Functioning Questionnaire Short-Form (CSFQ-14), the Visual Analogue Scale for Sexual Functioning Satisfaction (VAS-SFS), the Clinical Global Impression—Severity scale (CGI-S), and the Clinical Global Impression—Severity scale for Sexual Dysfunction (CGI-SSD).

The CSFQ-14 [18] is a 14-item self-rating instrument that evaluates the behaviors and/or problems in the three phases of the sexual response cycle, i.e., desire (items 2–6), arousal (items 7–9), and orgasm (11–13). Items 10 and 14 are not specific to a phase of the sexual response cycle, and item 1 reflects pleasure and satisfaction. The 14 items were rated by the patient using 5-point Likert scales of frequency (1 = never to 5 = every day/always) or intensity (1 = nothing to 5 = very much), except for items 10 and 14 for which 1 = every day/always and 5 = never. For all items, higher scores reflect higher sexual functioning.

The CSFQ-14 provides a total score by summing the scores on the 14 items. The total CSFQ-14 score ranges from 14 to 70, the desire scale score ranges from 5 to 25, and the arousal and orgasm scale scores both range from 3 to 15. In all cases, higher scores reflect better sexual functioning. Total CSFQ-14 scores ≤ 47 for males and ≤ 41 for males suggest global sexual dysfunction [21]. In addition, the CSFQ-14 provides scores on the five subscales corresponding to the original form of the CSFQ [22].

The Spanish version of the CSFQ-14 was obtained by utilizing the appropriate items from the original interview version [16,17].

The VAS-SFS was developed to measure the patient’s degree of satisfaction with his/her sexual functioning. It was designed as a vertical line, 100 mm in length, anchored at each end with the words “very satisfied” and “very unsatisfied.” The patient marks the point on the line that he/she believes represents his/her current level of satisfaction. The VAS-SFS score is obtained by measuring the distance from the bottom end of the line to the point that the patient marks in millimeters.

The CGI [23] is one of the most widely used brief assessment instruments in psychiatry. The CGI is a 3-item observer-rated scale that measures illness severity (CGI-S), change (CGI-C), and efficacy index (CGI-EI). Clinicians rate patients using their past experience with other patients having the same diagnosis, with or without collateral information. Each of these three components is rated separately; the CGI does not provide a global score. In this study, we only used the CGI-S due to its cross-sectional design. The CGI-S is rated by the clinician using a 7-point Likert scale of intensity (1 = normal to 7 = among the most severely ill patients).

The CGI-SSD was developed from the CGI-S. It was also employed in the Spanish CSFQ validation study [16,17]. Clinicians are asked to rate the severity of the patients’ sexual dysfunction using a 7-point Likert scale of intensity (1 = normal to 7 = among the most severely ill patients).

Statistical Analysis
The statistical analysis was done using the SPSS 15 (SPSS Inc., Chicago, IL, USA). The two-tailed level of significance used was 0.05. Descriptive statistics were computed for the total sample and for males and females separately. Chi-square and Student’s t-tests were used to determine statistically significant differences according to gender.

Internal reliability was calculated for the total CSFQ-14 and its subscales using the Cronbach’s alpha coefficient.

For analyzing the dimensional structure of the CSFQ-14, we used the principal component analysis (PCA) with Oblimin rotation. The criteria employed to determine the number of components to extract were the Kaiser rule, the screen plot, and the interpretation of the components.

Convergent validity was calculated using the Pearson correlation coefficient between the CSFQ-14 total and subscale scores, and scores on the VAS-SFS, CGI-SDS, and CGI-S. A priori, we hypothesized inverse significant correlations with CGI-SDS and CGI-S. The Pearson coefficient would be greater in the case of CGI-SDS. With WAS-SFS, we expected a direct significant moderate correlation.

For analyzing the discriminant validity, patients were classified in four groups based on their CGI-SDS scores: no sexual dysfunction (CGI-SDS scores 1–2), mild (CGI-SDS score 3), moderate (CGI-SDS score 4), or severe sexual dysfunction (CGI-SDS scores 5–7). An analysis of variance test was used to identify statistically significant differences in the CSFQ-14 scores according to sexual dysfunction severity groups.

Finally, the diagnostic performance of the CSFQ-14 to discriminate between nonsexually dysfunctional subjects (CGI-SDS scores 1–3) and
sexually dysfunctional subjects (CGI-SDS scores 4–7) was analyzed using the receiver operating characteristic (ROC) curve analysis. The ROC curve is an effective method of evaluating the performance of a diagnostic test that is widely used in medicine. It depicts the tradeoffs between sensitivity and specificity. The plot shows the false-positive rate or 1-specificity on the X axis and the false-negative rate or 1-sensitivity on the Y axis. The area under the curve (AUC) is interpreted as the average sensitivity value for all possible specificity values and represents a measure of the overall performance of a diagnostic test. AUC values range from 0 to 1, and the higher the value, the better the overall performance of the test [24].

Results

Sample

Table 1 shows demographic and clinical characteristics for the total sample and for males and females separately. Mean age was 42.8 (standard deviation [SD] = 11.6) years, 56.5% were males, only 34.5% were married or cohabiting, 22.3% had completed university studies, and only 25.6% were working (18.5% full time, 3.0% part time, 1.2% students, 1.8% housewives, and 1.2% working for nonprofit organizations). Females were significantly older (45.1 years vs. 41.0 years, $t = -2.340, P = 0.02$), and a greater proportion were married or cohabiting (44.6% vs. 26.6%, chi-square $= 5.934, P = 0.01$) (Table 1) than single. With regard to physical comorbidities, 21.6% had registered one physical illness, 6.4% two, 1.2% three, and 0.6% five physical illnesses. The illness more frequently recorded was diabetes (3.6%) followed by dyslipidemia (3.0%) and hypothyroidism (2.4%). Mean body mass index (BMI) was 28.7 (5.4). Males had a significantly greater BMI than females (29.7 vs. 27.4 kg/m$^2$, $t = 2.746, P = 0.007$).

The mean scores on the CGI-S, CGI-SDS, and VAS-SFS were 3.6 (SD = 1.3), 3.7 (SD = 1.5), and 48.7 (SD = 29.0), respectively. There were no statistically significant differences in these scores according to gender (Table 1).

Psychometric Properties

Descriptive Statistics

Table 2 shows the means and SD of the items and scales of the CSFQ-14, both for the total sample and for males and females separately. The mean total CSFQ-14 score was 40.8 (SD = 10.4), with males scoring significantly higher than females (43.1 vs. 37.9, $t = 3.364, P < 0.001$). In addition, males scored significantly higher in desire (12.9 vs. 10.7, $P < 0.001$) and arousal (9.2 vs. 8.2, $P = 0.048$), but not in orgasm. Age negatively correlated with total CSFQ-14 score (Pearson $r = -0.260, P < 0.001$). When we split off the sample according to the diagnosis, statistically significant differences between patients with schizophrenia and bipolar disorder were found only for desire scores. Scores

Table 1  Demographic and clinical characteristics for the total sample and for males and females separately

<table>
<thead>
<tr>
<th></th>
<th>Total sample</th>
<th>Males</th>
<th>Females</th>
<th>Statistical test</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age (SD)</td>
<td>42.8 (11.6)</td>
<td>41.0 (12.2)</td>
<td>45.1 (10.4)</td>
<td>-2.340a</td>
<td>0.02</td>
</tr>
<tr>
<td>Gender, males [n (%)]</td>
<td>97 (56.5)</td>
<td>69 (73.4)</td>
<td>41 (55.4)</td>
<td>5.934b</td>
<td>0.015</td>
</tr>
<tr>
<td>Marital status [n (%)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single*</td>
<td>110 (65.5)</td>
<td>69 (73.4)</td>
<td>41 (55.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>58 (34.5)</td>
<td>25 (26.6)</td>
<td>33 (44.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Educational level [n (%)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>66 (39.8)</td>
<td>39 (41.9)</td>
<td>27 (37.0)</td>
<td>4.737b</td>
<td>0.094</td>
</tr>
<tr>
<td>Secondary school</td>
<td>63 (38.0)</td>
<td>39 (41.9)</td>
<td>24 (32.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>University</td>
<td>37 (22.3)</td>
<td>15 (16.1)</td>
<td>22 (30.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work status [n (%)]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Working</td>
<td>43 (25.6)</td>
<td>19 (20.0)</td>
<td>24 (32.9)</td>
<td>3.594b</td>
<td>0.058</td>
</tr>
<tr>
<td>Not working†</td>
<td>125 (74.4)</td>
<td>76 (80.0)</td>
<td>49 (67.1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical comorbidities‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean number (SD)</td>
<td>0.4 (0.7)</td>
<td>0.4 (0.7)</td>
<td>0.4 (0.8)</td>
<td>0.266a</td>
<td>0.791</td>
</tr>
<tr>
<td>Obesity (BMI ≥ 30 kg/m$^2$) [n (%)]</td>
<td>59 (36.6)</td>
<td>39 (42.9)</td>
<td>20 (28.6)</td>
<td>7.429b</td>
<td>0.024</td>
</tr>
<tr>
<td>Mean CGI-S score (SD)</td>
<td>3.6 (1.3)</td>
<td>3.7 (1.3)</td>
<td>3.4 (1.2)</td>
<td>1.532a</td>
<td>0.128</td>
</tr>
<tr>
<td>Mean CGI-SDS score (SD)</td>
<td>3.7 (1.5)</td>
<td>3.8 (1.5)</td>
<td>3.6 (1.6)</td>
<td>0.994a</td>
<td>0.322</td>
</tr>
<tr>
<td>Mean VAS-SFS score (SD)</td>
<td>48.7 (29.0)</td>
<td>46.0 (28.5)</td>
<td>52.4 (29.6)</td>
<td>-1.419a</td>
<td>0.158</td>
</tr>
</tbody>
</table>

*Single included the following marital status: never married, widowed, and separate/divorced.
†Not working included: permanent and temporary disability, retired, and unemployed.
‡Physical comorbidities do not include obesity.
a = Student’s $t$-test; b = Chi-square test; SD = standard deviation.
were significantly lower in patients with schizophrenia than patients with bipolar disorder, both in males (12.0 vs. 14.3, \( t = -2.493, P = 0.014 \)) and females (9.6 vs. 11.6, \( t = -2.570, P = 0.012 \)).

**Internal Reliability**

The CSFQ-14 scale had good internal consistency, with Cronbach’s alpha coefficients of 0.90 for the total sample, 0.91 for males, and 0.87 for females.

Cronbach’s alpha for the desire, arousal, and orgasm scales were 0.80, 0.85, and 0.87, respectively. These coefficients were 0.82, 0.90, and 0.85 for males, and 0.72, 0.78, and 0.88 for females.

**Construct Validity**

The analysis of the dimensional structure of the CSFQ-14, for the total sample and for males and females separately, was performed using the PCA with Oblimin rotation. Only variables with factor loadings >0.5 were considered.

For the total sample, the mean sampling adequacy (Bartlett’s-test) was 917.5 (\( P < 0.001 \)) and the KMO value was 0.87. The dimensional structure found was almost identical to that obtained for the total sample, although there was a reversal in the order between components II and III.

For females, the mean sampling adequacy (Bartlett’s-test) was 547.8 (\( P < 0.001 \)) and the KMO value was 0.86. In this case, only the first component, desire/frequency–arousal–orgasm, was replicated. The second and third components, desire/interest and loss of interest/pain, were split in two and combined. Item number 5 remained in the second component together with items number 9 and 14, while items 4 and 6 went to the third factor along with item number 10.

**Convergent Validity**

Correlations between CSFQ-14 scores and scores on the VAS-SFS, CGI-SDS, and CGI-S were calculated for males and females separately. The Pearson correlation coefficients are shown in Table 3. Correlations between scores on the CSFQ-14 and on the VAS-SFS were low to moderate, particularly for females. Correlations between scores on the CSFQ-14 and on the CGI-SDS were moderate.

**Discriminant Validity**

The CSFQ-14 demonstrates the ability to discriminate among patients with no, mild, moderate, and severe sexual dysfunction according to CGI-

---

**Table 2** Mean and standard deviation of CSFQ-14 items, scales, and total score for the total sample and for males and females separately

<table>
<thead>
<tr>
<th>Items</th>
<th>Total sample n = 171</th>
<th>Males n = 97</th>
<th>Females n = 74</th>
<th>Student’s t test</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>2.46</td>
<td>1.1</td>
<td>2.44</td>
<td>1.0</td>
<td>2.47</td>
</tr>
<tr>
<td>2</td>
<td>2.70</td>
<td>1.1</td>
<td>2.71</td>
<td>1.2</td>
<td>2.68</td>
</tr>
<tr>
<td>3</td>
<td>2.95</td>
<td>1.2</td>
<td>3.22</td>
<td>1.2</td>
<td>2.59</td>
</tr>
<tr>
<td>4</td>
<td>2.30</td>
<td>1.3</td>
<td>2.58</td>
<td>1.4</td>
<td>1.95</td>
</tr>
<tr>
<td>5</td>
<td>1.83</td>
<td>1.1</td>
<td>2.07</td>
<td>1.2</td>
<td>1.51</td>
</tr>
<tr>
<td>6</td>
<td>2.20</td>
<td>1.1</td>
<td>2.35</td>
<td>1.1</td>
<td>2.01</td>
</tr>
<tr>
<td>7</td>
<td>2.75</td>
<td>1.2</td>
<td>3.06</td>
<td>1.2</td>
<td>2.34</td>
</tr>
<tr>
<td>8</td>
<td>2.88</td>
<td>1.2</td>
<td>3.00</td>
<td>1.3</td>
<td>2.72</td>
</tr>
<tr>
<td>9</td>
<td>3.16</td>
<td>1.3</td>
<td>3.15</td>
<td>1.3</td>
<td>3.16</td>
</tr>
<tr>
<td>10</td>
<td>4.37</td>
<td>1.0</td>
<td>4.80</td>
<td>0.6</td>
<td>3.81</td>
</tr>
<tr>
<td>11</td>
<td>2.60</td>
<td>1.1</td>
<td>2.76</td>
<td>1.1</td>
<td>2.38</td>
</tr>
<tr>
<td>12</td>
<td>2.76</td>
<td>1.4</td>
<td>2.90</td>
<td>1.4</td>
<td>2.58</td>
</tr>
<tr>
<td>13</td>
<td>3.03</td>
<td>1.2</td>
<td>3.13</td>
<td>1.1</td>
<td>2.89</td>
</tr>
<tr>
<td>14</td>
<td>4.88</td>
<td>0.5</td>
<td>4.96</td>
<td>0.3</td>
<td>4.77</td>
</tr>
<tr>
<td>CSFQ-14 scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desire</td>
<td>11.98</td>
<td>4.3</td>
<td>12.91</td>
<td>4.6</td>
<td>10.74</td>
</tr>
<tr>
<td>Arousal</td>
<td>8.78</td>
<td>3.3</td>
<td>9.21</td>
<td>3.4</td>
<td>8.21</td>
</tr>
<tr>
<td>Orgasm</td>
<td>8.39</td>
<td>3.3</td>
<td>8.79</td>
<td>3.2</td>
<td>7.85</td>
</tr>
<tr>
<td>CSFQ-14 total score</td>
<td>40.85</td>
<td>10.4</td>
<td>43.13</td>
<td>10.6</td>
<td>37.86</td>
</tr>
</tbody>
</table>
Table 3 Pearson correlations between total CSFQ-14 score and scores on CSFQ-14 scales and scores on the VAS-SFS, CGI-SDS, and CGI-S

<table>
<thead>
<tr>
<th></th>
<th>Desire</th>
<th>Arousal</th>
<th>Orgasm</th>
<th>CSFQ-14 Total score</th>
<th>CGI-S</th>
<th>CGI-SDS</th>
<th>VAS-SFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Desire</td>
<td>0.65**</td>
<td>0.62**</td>
<td>-0.43**</td>
<td>-0.60**</td>
<td>0.35**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arousal</td>
<td>0.68**</td>
<td>0.84**</td>
<td>0.91**</td>
<td>-0.25**</td>
<td>-0.88**</td>
<td>0.62**</td>
<td></td>
</tr>
<tr>
<td>Orgasm</td>
<td>0.69**</td>
<td>0.59**</td>
<td>0.89**</td>
<td>-0.35**</td>
<td>-0.73**</td>
<td>0.60**</td>
<td></td>
</tr>
<tr>
<td>CSFQ-14 total score</td>
<td>0.86**</td>
<td>0.85**</td>
<td>0.85**</td>
<td>-0.39**</td>
<td>-0.74**</td>
<td>0.57**</td>
<td></td>
</tr>
<tr>
<td>CGI-S</td>
<td>-0.41**</td>
<td>-0.22</td>
<td>-0.47**</td>
<td>-0.43**</td>
<td>0.50**</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td>CGI-SDS</td>
<td>-0.59**</td>
<td>-0.56**</td>
<td>-0.68**</td>
<td>-0.71**</td>
<td>0.56**</td>
<td>-0.49**</td>
<td></td>
</tr>
<tr>
<td>VAS-SFS</td>
<td>0.34**</td>
<td>0.23**</td>
<td>0.23**</td>
<td>0.33**</td>
<td>-0.08</td>
<td>-0.12</td>
<td></td>
</tr>
</tbody>
</table>

*P < 0.05; **P < 0.01.
Right-upper triangle shows correlations for males. Left-lower triangle shows correlations for females.

SDS scores, both in males and females. Table 4 shows the mean CSFQ-14 scores for each sexual dysfunction severity group, both for males and females.

Finally, we examined the accuracy of the CSFQ-14 in discriminating nonsexually dysfunctional subjects (CGI-SDS scores 1–3) from sexually dysfunctional subjects (CGI-SDS scores 4–7). In males, the AUC was 0.833 (95% confidence interval (CI) = 0.749–0.917), indicating good accuracy of the test. A cutoff point of 49 provides good sensitivity (92.9%) but moderate specificity (59.5%) (see Figure 1). Predictive values were: positive 73.91% and negative 86.96%.

Discussion

The aim of this study was to validate the Spanish version of the CSFQ-14 in a sample of patients with severe mental disorders (schizophrenia or bipolar disorder) receiving maintenance treatment. We found good psychometric properties, which present the CSFQ-14 scale as a reliable and valid instrument for assessing sexual functioning in patients with schizophrenia or bipolar disorder in daily clinical practice.

Sexual functioning is a complex behavior that is influenced by several factors including demographic, cultural, physical and mental health status, treatments, and other factors. In our sample, we found that females were significantly older than males, which could influence in their sexual functioning. However, although this difference reached statistical significance, clinically it is not meaningful; both genders were in the same 5-year range (males 41 years and females 45 years). Males and females also differed in their marital status, with a greater proportion of females being married. Although this could have some impact on their sexual functioning, it represents reality for persons with severe mental illness. The earlier onset of the illness in males is responsible for their greater difficulties in almost all life areas including the ability to establish romantic relationships.

CSFQ-14 scores were very similar in both groups of patients for all scales other than desire. Both males and females with schizophrenia had less desire than patients with bipolar disorder. As desire is one of the sexual cycle response phases where psychological factors play an important role, this difference might be related to the defect that schizophrenia imposes on the persons who suffer from it.

Internal reliability for the total CSFQ-14 score and for the three subscale scores by far exceed 0.70, the lower limit widely used to indicate adequate reliability. Its good internal reliability demonstrates that the three “desire, arousal, and orgasm” subscale scores can aggregate to build an overall sexual functioning score. This result confirms the former findings in patients with depression [18] and strengthens the argument to use the CSFQ-14 in patients with mental disorders, even the severely mentally ill.

The PCA performed both in the total sample and for males and females separately confirms the existence of three components, although our components did not replicate the original structure. However, they were very close to those found by Keller et al. [18]. In the total sample (males and females), results were almost identical; items 1–4–6, 7–9, and 11–13 (desire/frequency and interest, arousal and orgasm) had loadings >0.5 for factor 1 in the Keller study, and all these items except items 4 and 6 (desire/interest) comprised the same factor in our study. Factor 2 included...
item 5 (desire/interest) in the Keller study and items 4 to 6 (desire/interest) in our study, and factor 3 was identical, including items 10 and 14 (loss of interest and pain) in both studies. In the case of males, the sole difference was found in factor 2, where Keller results included items 2–6 (desire/frequency and interest), while ours included only items 4–6 (desire/interest). Items 2–3 (desire/frequency) were included in factor 1. In the case of females, results were different. While in our study, females almost replicated factor 1 for the total sample and for males (items 1–3, 7–8, and 11–13), in the Keller study, those items corresponding to the orgasm phase (11–13) were segregated from this factor and constituted an independent factor, factor 2. In any event, in both studies, it would appear that factor 1 corresponds to a global sexual response scale, since items from the three phases were included in it, except for females in the Keller study. This is not surprising, since the concepts of desire, arousal, and orgasm are interrelated and may be considered together when subjects answer questions on them.

The correlation coefficients between the CSFQ-14 scores and the CGI-SDS scores were similar in males and females and ranged between 0.58 and 0.74, indicating that the two scales assess similar constructs as hypothesized. With respect to the CGI-SDS, the CSFQ-14 scale, with its total score plus the three dimension scores, has an advantage in content and specificity. Furthermore, the strength of the association with the CGI-SDS, a clinician-rated instrument, nullifies the assumption that self-rated scales yield less clinically valid information than clinician-rated scales. This may be due to the fact that, for this very sensitive topic, self-report questionnaires may be more acceptable to patients than a personal interview with the clinician [18].

The correlations between the CSFQ-14 scores and the VAS-SFS score were lower than a priori hypothesized. Although significant, were weak in magnitude, particularly for females, suggesting that a single item rating of sexual functioning is less than ideal. On the other hand, this confirms the hypothesis that satisfaction and performance are related but different constructs. It is worth noting that the associations were different in males and females; the desire scale obtained the lower correlation coefficient (0.35) in males and the highest coefficient (0.34) in females. This may be seen as a gender difference in interpreting sexual satisfaction; while males mostly focused on

### Table 4

<table>
<thead>
<tr>
<th></th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ANOVA</td>
<td>ANOVA</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>P</td>
</tr>
<tr>
<td>CGI-SDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No SD</td>
<td>52.4 (9.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mild SD</td>
<td>48.5 (7.7)</td>
<td>0.004</td>
</tr>
<tr>
<td>Moderate SD</td>
<td>44.8 (5.9)</td>
<td>0.001</td>
</tr>
<tr>
<td>Severe SD</td>
<td>33.6 (8.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Desire (5–25)</td>
<td>16.1 (4.1)</td>
<td>0.001</td>
</tr>
<tr>
<td>Arousal (3–15)</td>
<td>12.0 (3.0)</td>
<td>0.001</td>
</tr>
<tr>
<td>Orgasm (3–15)</td>
<td>11.4 (2.9)</td>
<td>0.001</td>
</tr>
</tbody>
</table>

SD = sexual dysfunction. No SD: CGI-SDS scores 1 and 2; Mild SD: CGI-SDS score 3; Moderate SD: CGI-SDS scores 4; Severe SD: CGI-SDS scores 5, 6, and 7.
the biological aspects of the sexual response (arousal and orgasm), females focused mainly on the psychological aspects (desire). It could also be argued that both genders interpret desire in the same way, as correlation coefficients were almost identical, and arousal and orgasm in different ways, as correlation coefficients were very different between genders. However, we think that this would be unlikely, given that in the relatively objective measure, the CSFQ-14, great significant differences between genders were found in the desire scores ($P < 0.001$) and almost no significant differences were found for arousal ($P = 0.048$) or orgasm ($P = 0.063$). It appears that the difference would be in the internal representation of satisfaction with sexual functioning that males and females use when answering the question “How satisfied are you with your sexual functioning?” In addition, while females scored worse on the CSFQ-14 than males, they scored better on the VAS-SDS, demonstrating that females were satisfied with lower levels of sexual functioning than males.

The expected negative moderate correlation found with the severity of the mental disorder (CGI-S) demonstrates that severe mental disorders and/or maintenance treatment have a great impact on sexual functioning, as demonstrated in several studies [1–5].

We found that the CSFQ-14 is able to discriminate among degrees of sexual dysfunction severity in the expected direction. Patients with severe dysfunction obtained significantly lower scores than the other three groups, while patients with no sexual dysfunction obtained significantly higher scores than the other groups.

Finally, we established the sensitivity and specificity of the CSFQ-14 for detecting sexual dysfunction. The clinical value of a screening instrument is based on its sensitivity rather than its specificity. Although the specificity of the CSFQ-14 was moderate, it was sufficiently sensitive to be of clinical value. In our study CSFQ-14 total scores at or below 49 (men) and 43 (women) were indicative of global sexual dysfunction. These are slightly higher than those found by Clayton et al. [21] in patients with depression (men 47 and women 41). This difference may reflect a greater negative influence of severe mental disorders in patient's sexual functioning than depression does. However, it is necessary to bear in mind that it may also be explained by cultural differences. As we are currently conducting the validation of the Spanish CSFQ-14 in depressed patients, we hope we will be able to clarify this in the near future.

Different cutoff points were found for males and females, with males requiring higher scores.

Figure 1: Total Changes in Sexual Functioning Questionnaire Short-Form score receiver operating characteristic curves for males and females.
than females to classified as sexually functional. The same result was obtained by Clayton et al. [21] with the CSFQ-14 and by Bobes et al. [16] with the Spanish CSFQ. So it appears that the difference depends more on gender-specific aspects, as do other psychological concepts (e.g., neuroticism, depression, etc.), than on cultural or illness-related factors.

All these results are in agreement with the results found for the Spanish version of the original interview version of the CSFQ [16,17], thus providing Spanish clinicians with a patient-rated short form of this useful clinical tool.

The CSFQ-14 has several advantages over other instruments for the assessment of sexual functioning in patients with severe mental disorders. In addition to being a self-report, i.e., non-intrusive and brief instrument, it has separate versions for males and females with gender-specific questions according to phases of the sexual response cycle, and, as shown in this paper, has good psychometric properties and norm values.

The external validity of this study can be considered good since the patients included in this study are similar to patients who are sexually active and on maintenance treatment for a severe mental disorder seen in daily clinical practice throughout Spain. On the one hand, the study inclusion and exclusion criteria were very nonrestrictive. On the other hand, this was a multicenter study that included patients from six different cities in Spain. However, the relatively small sample size may be one shortcoming of our study. Other shortcomings were the cross-sectional design of the study and the lack of a control group. In this sense, further studies are needed to demonstrate the sensitivity of the CSFQ-14 to changes related to an intervention.

In conclusion, we were able to demonstrate that the Spanish version of the CSFQ-14 is an instrument that is reliable and valid for assessing sexual functioning in patients with severe mental disorders. As a brief, self-rated instrument, the CSFQ-14 scale seems to be appropriate for use in everyday clinical practice as a means of identifying and monitoring changes in sexual functioning in this population.

**Corresponding Author:** Maria Paz Garcia-Portilla, MD, PhD, Department of Psychiatry, School of Medicine, University of Oviedo, Julian Claveria 6, Oviedo, 33006, Spain. Tel: +34 985 104219; Fax: +34 985 103552; E-mail: albert@uniovi.es

**Conflict of Interest:** None.

---

**Statement of Authorship**

**Category 1**

(a) **Conception and Design**

Julio Bobes; Maria Paz Garcia-Portilla; Pilar Alejandra Saiz

(b) **Acquisition of Data**

Susana Al-Halabi; Maria Teresa Bobes-Bascaran; Manuel Arrojo; Antonio Benabarre; Jose Manuel Goikolea; Emilio Sanchez; Fernando Sarramea

(c) **Analysis and Interpretation of Data**

Julio Bobes; Maria Paz Garcia-Portilla; Pilar Alejandra Saiz; Eduardo Fonseca

**Category 2**

(a) **Drafting the Article**

Maria Paz Garcia-Portilla

(b) **Revising It for Intellectual Content**

Julio Bobes; Pilar Alejandra Saiz; Eduardo Fonseca; Susana Al-Halabi; Maria Teresa Bobes-Bascaran; Manuel Arrojo; Antonio Benabarre; Jose Manuel Goikolea; Emilio Sanchez; Fernando Sarramea

**Category 3**

(a) **Final Approval of the Completed Article**

Julio Bobes; Maria Paz Garcia-Portilla; Pilar Alejandra Saiz; Eduardo Fonseca; Susana Al-Halabi; Maria Teresa Bobes-Bascaran; Manuel Arrojo; Antonio Benabarre; Jose Manuel Goikolea; Emilio Sanchez; Fernando Sarramea

**References**


### Appendix I  Spanish Version of the CSFQ-14 for Females

1. Compara con la vez más placentera de tu vida, ¿cuánto disfrute o placer en tu vida sexual experimentas ahora?
   - 1 Ningún disfrute o placer
   - 2 Poco disfrute o placer
   - 3 Algo de disfrute o placer
   - 4 Mucho disfrute o placer
   - 5 Muchísimo disfrute o placer

2. ¿Con qué frecuencia mantiene actividad sexual (coito, masturbación) actualmente?
   - 1 Ninguna vez
   - 2 Rara vez (menos de 1 vez al mes)
   - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
   - 4 A menudo (2 veces/semana o más)
   - 5 Diariamente

3. ¿Con qué frecuencia desea mantener actividad sexual?
   - 1 Nunca
   - 2 Rara vez (menos de 1 vez al mes)
   - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
   - 4 A menudo (2 veces/semana o más)
   - 5 Diariamente

4. ¿Con qué frecuencia se entretiene con pensamientos sexuales (pensando en hacer el amor, fantasías sexuales) ahora?
   - 1 Ninguna vez
   - 2 Rara vez (menos de 1 vez al mes)
   - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
   - 4 A menudo (2 veces/semana o más)
   - 5 Diariamente

5. ¿Disfrutas con libros, películas, música o arte con contenido sexual?
   - 1 Ninguna vez
   - 2 Rara vez (menos de 1 vez al mes)
   - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
   - 4 A menudo (2 veces/semana o más)
   - 5 Diariamente

6. ¿Cuánto placer o disfrute obtienes de pensar y fantasear acerca del sexo?
   - Ningún disfrute o placer
   - Poco disfrute o placer
   - Algo de disfrute o placer
   - Mucho disfrute o placer
   - Muchísimo disfrute o placer

7. ¿Con qué frecuencia se encuentra excitada sexualmente?
   - 1 Nunca
   - 2 Rara vez (menos de 1 vez al mes)
   - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
   - 4 A menudo (2 veces/semana o más)
   - 5 Diariamente

8. ¿Se excita fácilmente?
   - 1 Nunca
   - 2 Rara vez (la minoría de las veces)
   - 3 A veces (la mitad de las veces)
   - 4 A menudo (la mayoría de las veces)
   - 5 Siempre

9. ¿Tiene lubricación vaginal adecuada durante la actividad sexual?
   - 1 Ninguna vez
   - 2 Rara vez (la minoría de las veces)
   - 3 A veces (la mitad de las veces)
   - 4 A menudo (la mayoría de las veces)
   - 5 Siempre

10. ¿Con qué frecuencia llega a la excitación y luego pierde el interés?
    - 1 Ninguna vez
    - 2 Rara vez (menos de 1 vez al mes)
    - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
    - 4 A menudo (2 veces/semana o más)
    - 5 Diariamente

11. ¿Con qué frecuencia tiene un orgasmo?
    - 1 Ninguna vez
    - 2 Rara vez (menos de 1 vez al mes)
    - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
    - 4 A menudo (2 veces/semana o más)
    - 5 Diariamente

12. ¿Es capaz de alcanzar un orgasmo cuando quiere?
    - 1 Ninguna vez
    - 2 Rara vez (menos de 1 vez al mes)
    - 3 A veces (la mitad de las veces)
    - 4 A menudo (la mayoría de las veces)
    - 5 Siempre

13. ¿Cuánto placer o disfrute obtienes en sus orgasmos?
    - Ningún disfrute o placer
    - Poco disfrute o placer
    - Algo de disfrute o placer
    - Mucho disfrute o placer
    - Muchísimo disfrute o placer

14. ¿Con qué frecuencia tiene orgasmo doloroso?
    - 1 Ninguna vez
    - 2 Rara vez (menos de 1 vez al mes)
    - 3 A veces (1 vez al mes pero menos de 2 veces/semana)
    - 4 A menudo (2 veces/semana o más)
    - 5 Diariamente
### Appendix 2  Spanish Version of the CSFQ-14 for Males

1. Comparado con la vez más placentera de su vida, ¿cuánto disfrute o placer en su vida sexual experimenta ahora?
   - Ningún disfrute o placer
   - Poco disfrute o placer
   - Algo de disfrute o placer
   - Mucho disfrute o placer
   - Muchísimo disfrute o placer

2. ¿Con qué frecuencia mantiene actividad sexual (coito, masturbación) actualmente?
   - Nunca
   - Rara vez (menos de 1 vez al mes)
   - A veces (1 vez al mes pero menos de 2 veces/semana)
   - A menudo (2 veces/semana o más)
   - Diariamente

3. ¿Con cuánta frecuencia desea mantener actividad sexual?
   - Nunca
   - Rara vez (menos de 1 vez al mes)
   - A veces (1 vez al mes pero menos de 2 veces/semana)
   - A menudo (2 veces/semana o más)
   - Diariamente

4. ¿Cómo frecuencia se entretiene con pensamientos sexuales (pensando en hacer el amor, fantasías sexuales) ahora?
   - Nunca
   - Rara vez (menos de 1 vez al mes)
   - A veces (1 vez al mes pero menos de 2 veces/semana)
   - A menudo (2 veces/semana o más)
   - Diariamente

5. ¿Disfruta con libros, películas, música o arte con contenido sexual?
   - Nunca
   - Rara vez (menos de 1 vez al mes)
   - A veces (1 vez al mes pero menos de 2 veces/semana)
   - A menudo (2 veces/semana o más)
   - Diariamente

6. ¿Cuánto placer o disfrute obtiene de pensar y fantasear acerca del sexo?
   - Ningún disfrute o placer
   - Poco disfrute o placer
   - Algo de disfrute o placer
   - Mucho disfrute o placer
   - Muchísimo disfrute o placer

7. ¿Con qué frecuencia tiene una erección?
   - Nunca
   - Rara vez (menos de 1 vez al mes)
   - A veces (1 vez al mes pero menos de 2 veces/semana)
   - A menudo (2 veces/semana o más)
   - Diariamente

8. ¿Alcanza una erección fácilmente?
   - Nunca
   - Rara vez (la minoría de las veces)
   - A veces (la mitad de las veces)
   - A menudo (la mayoría de las veces)
   - Siempre

9. ¿Es capaz de mantener una erección?
   - Nunca
   - Rara vez (la minoría de las veces)
   - A veces (la mitad de las veces)
   - A menudo (la mayoría de las veces)
   - Siempre

10. ¿Con qué frecuencia experimenta erecciones dolorosas y prolongadas?
    - Nunca
    - Rara vez (la minoría de las veces)
    - A veces (la mitad de las veces)
    - A menudo (la mayoría de las veces)
    - Siempre

11. ¿Con qué frecuencia tiene una eyaculación?
    - Nunca
    - Rara vez (menos de 1 vez al mes)
    - A veces (1 vez al mes pero menos de 2 veces/semana)
    - A menudo (2 veces/semana o más)
    - Diariamente

12. ¿Es capaz de eyacular cuando quiere?
    - Nunca
    - Rara vez (la minoría de las veces)
    - A veces (la mitad de las veces)
    - A menudo (la mayoría de las veces)
    - Siempre

13. ¿Cuánto placer o disfrute obtiene en sus orgasmos?
    - Ningún disfrute o placer
    - Poco disfrute o placer
    - Algo de disfrute o placer
    - Mucho disfrute o placer
    - Muchísimo disfrute o placer

14. ¿Con qué frecuencia tiene orgasmo doloroso?
    - Nunca
    - Rara vez (menos de 1 vez al mes)
    - A veces (1 vez al mes pero menos de 2 veces/semana)
    - A menudo (2 veces/semana o más)
    - Diariamente