Internal Structure and Consistency of the Spanish Version of the Six-Item Female Sexual Function Index

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Abstract

Objective: The purpose of this paper is to evaluate the structure of the Spanish version of the FSFI-6 in climacteric Colombian women.

Methods: The validation study involved 1,427 sexually active women aged between 40 and 59 years. Cronbach’s alpha, McDonald’s omega and confirmatory factor analysis were calculated.

Results: The Cronbach’s alpha was 0.876 and the McDonald’s omega was 0.886. The one- dimension model did not fit, chi-square=582.04, df=9, p<0.001, RMSEA=0.211 (90%CI 0.197-0.226), CFI=0.888 and TLI=0.813.

Conclusion: The FSFI-6 presents a one-dimensional structure with high internal consistency in climacteric women from the Caribbean coast of Colombia. But, the data’s goodness of fit is inadequate. These findings need to be verified in other populations.

Keywords: Physiological sexual dysfunction; climacteric; Reliability and validity; Validation studies

Introduction

Sexual dysfunctions are a mixed group of clinical syndromes, typically characterized by a clinically important impairment in a person’s ability to experience sexual pleasure or respond sexually. Female sexual dysfunction, as defined by the latest version of the Diagnostic and Statistical Manual of Mental Disorder (DSM-5), has been separated into several categories, including organic disorder; sexual interest/arousal disorder; Genito-pelvic pain/penetration disorder; substance/medication induced sexual dysfunction, other specified sexual dysfunction, and unspecified sexual dysfunction [1]. Female sexual dysfunction is highly prevalent, but, according to the background and measurement instrument, this prevalence is variable around the world [2,3]. Several factors including physiological, anatomical, and socio-cultural aspects are related to female sexual dysfunction [4,5], the most prevalent of which is hypoactive desire disorder [2]. In Latin America, female sexual dysfunction is close to 20% in Colombia and reaches 98% in Ecuador [6-8].

The psychometric performance of scales varies according to the population’s characteristics. However, a similar functioning in different population groups is an important empirical approximation to the validity and reliability of a measurement [9]. Factor analysis is frequently used to test the dimensionality of health measurement instruments and thereby to indirectly demonstrate the construct validity [10]. Rosen et al. [11] introduced the Female Sexual Function Index (FSFI-19) to evaluate the sexual response over the previous four weeks. Subsequently, a short version (FSFI-6) was designed by Isidori et al. [12], who observed acceptable internal consistency (Cronbach’s alpha=0.79) and stability (Pearson correlation=0.95) in a sample of 184 women aged between 21 and 41. However, the dimensionality of the FSFI-6 was omitted. Subsequently, other investigations replicated the high values of internal consistency and the convergent, discriminant and nomological validity of the instrument [13-16].

Finally, using a sample of 307 women from the general population and another of 68 from the clinical practice, aged between 21 and 66, the one-dimensional structure of the Portuguese version of the FSFI-6 was tested using confirmatory factor analyses. Several translations of both FSFI-6 and FSFI-19 are now available, not all of them have been adequately analyzed and there is little information regarding the ability of those versions to reproduce the dimensionality and then the construct [17,18]. Although, a Spanish version of the FSFI-6 has been applied to assess sexual problems, its dimensionality and construct validity are still unknown [13,14]. The purpose of this study was to evaluate the
dimensionality and internal consistency of a Spanish version of
the FSFI-6 in a large sample of Colombian Caribbean women, to
depth the psychometric performance of the index given the need
to corroborate the validity and reliability of a health measurement
instrument in different contexts. In addition, the McDonald omega
was calculated as a complementary measure of internal consistency
reliability.

Methods

A psychometric or validation study was designed, and approval
was obtained from the research ethics board. Participants gave
their informed consent. The information was collected after a pilot
test applied to a group of twenty women. Questionnaires from this
group of women are not included in the present analysis. The scales
were applied at home. A trained health professional applied the
FSFI-6.

Subjects

The study involved 1427 climacteric sexually active women
from several Caribbean coastal cities in Colombia (Barranquilla,
Cartagena and Monteria). The participants were aged between 40
and 59 years (mean=47.7; SD=5.6). Formal educaion in years was
between zero and 20 (mean=9.7; SD=4.0). In terms of occupation,
784 were housewives (54.9%); 621 employees (43.5%); and 22
were retired (1.6%). In terms of ethnic origin: 882 were mestizo
(61.8%), 388 Afro-Colombian (27.2%), and 157 Amerindian
(11.0%).

Instrument

Women completed the six items of the Spanish version of the
FSFI-6. They were asked about their sexual performance over the
past 4 weeks. Each item provides six response options that are
rated from zero to five, where zero represents the poorest function
and five, optimal function. Total scores range from zero to thirty
[12]. The items are: [A] How would you rate your level ("degree")
of sexual desire or interest? [B] How would you rate your level of
sexual arousal ("turn on") during sexual activity or intercourse? [C]
How often did you become lubricated ("wet") during sexual activity
or intercourse? [D] When you had sexual stimulation or
intercourse, how often did you reach orgasm? [E] How satisfied
have you been with your overall sex life? [F] How often did you
experience discomfort or pain during vaginal penetration?

Statistical analysis

The internal or dimensional structure of the FSFI-6 was
explored through confirmatory factorial analysis (CFA), using the
maximum likelihood method. To find out whether the group of
items had a latent factor, Bartlett’s test of sphericity [19], and Kaiser
Meyer Olkin measure of sampling adequacy (KMO) [20] were both
calculated. These indicators suggest that the factor analysis should
be followed, but there is no guarantee of finding a satisfactory
dimensional structure. Several goodness of fit indicators was
calculated in the CFA: chi square test with degrees of freedom (df)
and probability value (p), and the RMSEA coefficient (Root Mean
Square Error of Approximation Of the approximation error) with a
90% confidence interval (CI90%), the Comparative Fit Index (CFI),
the Tucker-Lewis index (TLI) and SRMS (Standardized Mean Square
Residual). These indicators are acceptable if the chi square shows
the probability value as being greater than 5%; for RMSEA, less
than 0.06; and CFI and TLI, values greater than 0.89. The internal
consistency of the index was estimated using Cronbach’s alpha [21]
and McDonald’s omega [22]. The analysis was performed using
STATA [23].

Result

Factor analysis showed a Bartlett’s test chi-square of 5,095.15,
df=15 and value p<0.001 and KMO of 0.841. Following this, one dimension was retained giving an Eigen value of 3.8, which
explained 63.3% of the total variance. In the CFA, the model did
not fit perfectly and had a chi square=582.04, df=9, p<0.001,
RMSEA=0.211 (90%CI 0.197-0.226), CFI=0.888 and TLI=0.813.
Commonalities and loadings are presented in the . Several one- or
two-dimensional models and different item numbers were tested
without adequate goodness of fit. The FSSI-6 showed high internal
consistency with both measurements, Cronbach’s alpha was 0.876
(95%CI 0.867-0.885) and McDonald omega was 0.886.

Table 1: Commonality and loading for each fsfi-6.

<table>
<thead>
<tr>
<th>Item</th>
<th>Commonality</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual desire</td>
<td>0.479</td>
<td>0.692</td>
</tr>
<tr>
<td>Sexual arousal</td>
<td>0.772</td>
<td>0.879</td>
</tr>
<tr>
<td>Becoming lubricated</td>
<td>0.416</td>
<td>0.645</td>
</tr>
<tr>
<td>Reaching orgasm</td>
<td>0.716</td>
<td>0.846</td>
</tr>
<tr>
<td>Overall sexual life</td>
<td>0.738</td>
<td>0.859</td>
</tr>
<tr>
<td>Discomfort or pain</td>
<td>0.311</td>
<td>0.557</td>
</tr>
</tbody>
</table>

Discussion

In this study, it was found that a FSFI-6 showed poor construct
validity, despite the high internal consistency among climacteric
women from three Caribbean cities in Colombia. In this study, poor
construct validity was observed for the FSFI-6. This finding differs
from that of Santos-Pechorro et al. [24], who using a Portuguese
version, found good indicators for construct validity in several
coefficients using CFA. However, they reported unsatisfactory
RMSEA and omitted chi square and the p value for the chi-square.
The construct validity of the scales should be repeated in different
population groups [10,25].

In this study, the internal consistency for FSFI-6 was high using
two different measures: Cronbach’s alpha and McDonald’s omega.
Previous papers have also reported high internal consistency; for
eexample, Isidori et al. [12] obtained a Cronbach’s alpha of 0.79,
both Chedraui et al. [13] and Perez et al. [14] obtained 0.91, and
Lee et al. [15] found 0.89. However, it is evident that the internal
consistency can change by population, meaning that every time the
scale is applied to a sample, this must be reported [9]. The FSFI-6 is
a recently introduced instrument with few items and easy scoring
and interpretation [12]. The performance of short scales is as good
as that of extensive instruments that purported a comprehensive

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approach to most of the constructs [9,10]. The construct validity should be repeatedly tested by CFA10. The measurement index must be valid and reliable to discover the real prevalence of female sexual dysfunction [10,26].

Possibly, part of the problems of the construct “female sexual dysfunction” derive from the bases of “normality” for female sexual function as they evaluate sexual function comparing it to male sexual response. Also, the construct does not consider that changes in female sexual response through life do not necessarily represent a sexual dysfunction [2,27]. The present study is a contribution to the knowledge of the psychometric performance of the FSFI in Colombian Caribbean climacteric women, especially considering the calculation of CFA [28], and McDonald omega as a measure of internal consistency, which has been omitted in previous studies [22,29,30]. Nevertheless, the study presents the limitation inherent to this type of research, which does not allow generalizations as psychometric performance changes according to populational characteristics [9].

**Conclusion**

To conclude, the FSFI-6 presents a one-dimensional structure with high internal consistency in climacteric women from Colombian Caribbean coast. However, the data’s goodness of fit is inadequate. New research is needed to verify the construct validity of the FSFI-6 in other populations.

**Conflicts of Interest**

The authors have no potential conflict of interest to disclose.

**Acknowledgment**

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