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Is A One-Question Visual Analog Scale A Screening Tool That Can Be Used to Assess Female Sexual Dysfunction Before Implementing A Female Sexual Function Index?

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What's known on the subject? and What does the study add?

In the literature, there is only one study in which the evaluation of female sexual function in women was made using visual analog scale (VAS). However, in this study, Likert scale was used instead of the classical VAS. In our study, classical VAS was used to evaluate female sexual function.

Abstract

Objective: To validate the use of a single-question visual analog scale assessing sexual dysfunction as a screening tool before implementing the female sexual function index (FSFI).

Materials and Methods: The study included 141 sexually active women over 18 years of age who were diagnosed with OAB or UI. A female sexual function-visual analog scale (FSF-VAS) was defined and developed as a one-question form in which participants were asked to mark their sexual function on a 10 cm visual analog scale. The cut-off values for the FSF-VAS in predicting FSD were determined by receiver operating characteristic curve analysis and Youden's index.

Results: A positive, moderately strong correlation was found between the FSFI score and FSF-VAS (rs=0.741). We found a cut-off value for FSF-VAS as 5.95 for in predicting both FSFI score of <25 [area under the curve (AUC) (confidence interval (CI) 95%): 0.886 (0.827-0.945)] and FSFI score of <26.55 [AUC (CI 95%): 0.893 (0.834-0.952)]. FSF-VAS value was below 5.95 in 82 of 141 (58.1%) patients who participated in the study.

Conclusion: Using the FSFI for only those with a FSF-VAS score of 5.95 or lower will reduce the clinician's Workload save time, and also spare patients from the embarrassment caused by the questions in the FSFI.

Keywords: Female sexual function index, female sexual function, visual analog scale

Introduction

Female sexual dysfunction (FSD) is a significant multidimensional health problem with biological and psychological components, which is thought to be highly prevalent in society. Although the true prevalence of FSD is unknown, approximately 50% of women have at least one sexual complaint (1). The International Consensus Development Conference on Female Sexual Dysfunctions recommended a FSD model that includes four major components (desire disorder, arousal disorder, orgasmic disorder, and sexual pain disorder), as described in the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) and the International Statistical Classification of Diseases and Related Health Problems-10 (ICD-10) (2). In 2000, the Female Sexual Function index (FSFI), which is a multidimensional self-report instrument, was developed to measure female sexual function

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(FSF), based on the FSD model. Satisfaction and lubrication were added to the four components (desire, arousal, orgasm and sexual pain) in the FSD model, and a 19-question assessment form was created (3). In 2010, a six-question form (FSFI-6) was developed, in which each item was evaluated with a single question (4). However, no validation studies, which are important to assess the structural validity, have investigated the unidimensional nature of the FSFI-6 (5).

Although the FSFI is the gold standard in evaluating FSF in daily practice (6), the fact that it is a 19-item test can cause difficulties in implementation. Therefore, in our study, we answer the question of whether we can detect patients with sexual dysfunction with the use of a visual analog scale (VAS) with a single question and then evaluate only those patients with the FSFI. Because of the high prevalence of FSD in patients with overactive bladder (OAB) and urinary incontinence (UI), we selected this group of patients for this study (7).

Materials and Methods

Study Design

The study included 141 sexually active women who had been diagnosed with OAB and UI. None of the patients mentioned any sexual dysfunction problems, and they were not questioned on this issue. All participants were asked to complete the self-report FSFI questionnaire and the FSF-VAS individually in turn. The inclusion criteria for the selected participants were that they had to be between 18-60 years old, be sexually active, be able to complete the questionnaires and be willing to participate in the study. The exclusion criteria for the selected participants were having neurological or psychiatric disease, having genitourinary disorder that may cause chronic pelvic pain and painful sexual intercourse, and having drug therapy that may cause sexual dysfunction. All participants were informed about and anonymity and confidentiality.

Data Collection and Definitions

Clinical data, including age, educational status, menopause status, and primary diagnosis, were retrieved from the Gazi University Female Urology Department database retrospectively. Considering the socio-cultural sensitivities of the society we live in, the definition of "sexually active" was done as having a regular sexual life with a partner/husband. The FSFI was used as a reference gold standard measurement tool to evaluate the FSF. The patients were asked to fill in a 19-question hard -copy FSFI questionnaire, which was validated in Turkish (8). For the definition of FSD in FSFI, values of <26.55 and <25, which were previously determined in the literature, were used (9,10). The FSF-VAS was defined and developed as a one-question form, where participants were asked to rate their sexual function on a 10 cm visual analog scale. The patients were asked to complete the FSF-VAS form first, followed by the FSFI questionnaire. Participants were observed during the completion of FSF-VAS form to ensure that measuring instruments were not used.

Statistical Analyses

All statistical analyses were performed with the R version 4.0.4 through R Studio version 1.4.1106. Spearman's correlation analysis was performed to evaluate the correlation between the questionnaire scores. The cut-off values for the FSF-VAS were determined with a receiver operating characteristic (ROC) curve analysis and Youden's index and were reported using the sensitivity, specificity, and area under the curve (AUC) with 95% confidence intervals [95% confidence intervals (CIs)]. A significance level of α=0.05 was set for all analyses.

Ethics Statement

The study protocol was approved by the clinical research ethics committee of our university (Gazi University Clinical Research Ethics Committee - date: 17.10.2012; approval number: 341).

Results

The baseline characteristics are summarized in Table 1. The mean age was 44.6±7.95. The mean FSFI and median FSF-VAS scores were 21.3±(5.0) and 5.2 (4.0-7.0), respectively.

The correlations between the FSFI score and FSF-VAS were evaluated with Spearman's correlation analysis. A moderately

Table 1. Baseline characteristics

	n=141
Age (year) (mean ± SD)	44.6±7.95
Educational status n (%)	
Illiterate	3 (2.1)
Literate	3 (2.1)
Primary school	57 (40.4)
Middle/High school	37 (26.2)
Bachelor's degree	41 (29.1)
Menopause n (%)	
No	96 (68.1)
Yes	45 (31.9)
Primary diagnosis n (%)	
Overactive bladder	21 (14.9)
Stress incontinence	26 (18.4)
Urgency incontinence	28 (19.9)
Mixed incontinence	66 (46.8)
FSFI score (mean ± SD)	21.3±(5.0)
FSF-VAS [median (IQR)]	5.2 (4.0-7.0)

FSFI: Female sexual function index, FSF: Female sexual function, VAS: Visual analog scale, SD: Standard deviation, IQR: Interquartile range

strong positive correlation was found between the FSFI score and FSF-VAS r_s=0.730, p<0.001).

The patients were divided into two groups according to their FSFI scores: <25 vs. ≥25 and <26.55 vs. ≥26.55. A ROC analysis was performed to determine the cut-off values of the FSF-VAS to predict the FSFI scores <25 and <26.55 (Table 2). The cut-off values for predicting FSFI score of <25 were found to be 5.95 for the FSF-VAS [AUC (CI 95%): 0.888 (0.836-0.941); p<0.001].

Table 2. Receiver operating curve analysis of FSFI score and FSF-VAS by using different cut-off values of FSFI

	FSF-VAS	
	AUC	**Cut-off value**
FSFI (<25 vs. ≥25)	0.886	5.95
FSFI (<26.55 vs. ≥26.55)	0.893	5.95

FSFI: Female sexual function index, FSF: Female sexual function, VAS: Visual analog scale, AUC: Area under curve, CI: Confidence interval

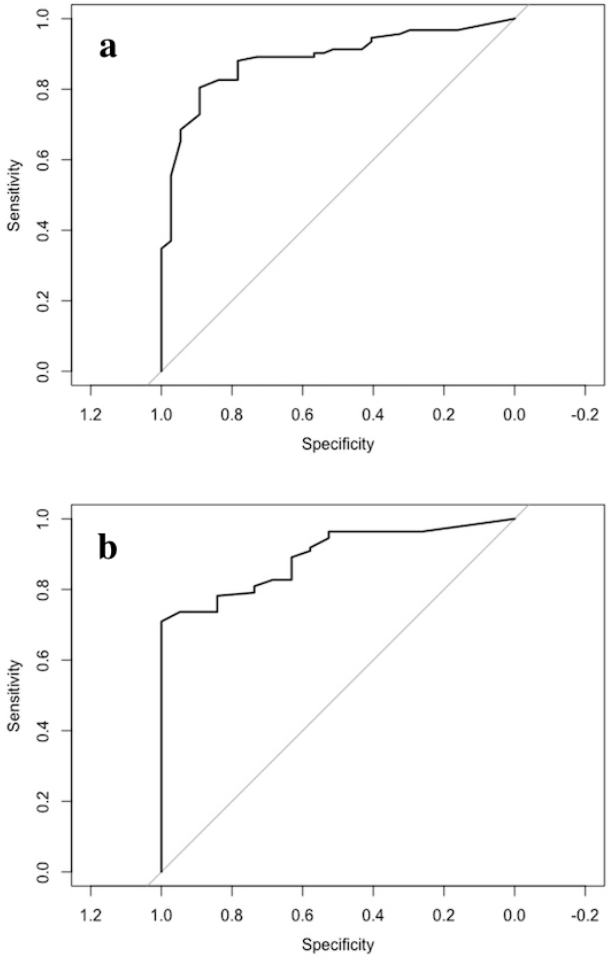

Figure 1. Receiver operating curves of FSF-VAS in predicting FSFI <25 (a) and FSFI <26.55 (b)

FSFI: Female sexual function index, FSF: Female sexual function, VAS: Visual analog scale

The sensitivity and specificity of the cut-cutoff values for FSF-VAS were 0.80 and 0.89, respectively (Figure 1a). The cut-off values for predicting FSFI score of <26.55 were found to be 5.95 for FSF-VAS [AUC (CI 95%): 0.893 (0.834-0.952); p<0.001]. The sensitivity and specificity of the cut-off values for FSF-VAS and FSF-Score were 0.70 and 1 (Figure 1b). When the FSF-VAS cut-off value was taken as 5.95 in predicting FSD, it was found that 82 (58.1%) patients were below this value.

Discussion

In our study, a moderately strong correlation was found between FSFI and FSF-VAS. We used two cut-off values for FSFI, 25 and 26.55, to evaluate FSD. Accordingly, we found a cut-off value for FSF-VAS of 5.95 for predicting FSD.

Evaluating FSD is often a challenge for both healthcare professionals (HCPs) and patients and often results in fears of "opening a can of worms" among HCPs. Structural, healthcare organizational and personal factors are intertwined parameters that influence the approach of HCPs to the evaluation of FSD (11). Women are prevented from talking about their sexual lives due to feeling embarrassed, and lack of time, training and tools, and limited training options are the barriers inhibiting HCPs, and, in addition, being unaware of or having misconceptions about conditions that may impact sexual function are barriers inhibiting patients (12). Awareness of sexual dysfunction among women is also quite limited. It was reported that 31.3% of those who did not seek help the condition indicated that they did not know that the sexual dysfunction they experienced was a medical condition, 28.9% "thought it was normal" to have FSD, and 14.1% did not think that a medical provider would be able to assist them with this issue (13). However, a recent study performed in France found that, despite it being an embarrassing subject, 93% of the patients would have welcomed the question "how is your sexuality these days?" (12). This may indicate that a short, clear, and non-specific screening question about sexual life may not be as intrusive as some might assume. Instead of resorting to long questionnaires cumbersome in practice, our practical approach would ease the possible stress of the detection of FSD for both the physician and patient, especially with women who do not even voice complaints. We think that the FSF-VAS can be used as a screening test that is simple to apply without causing delays in outpatient clinic conditions or discomfort to those who attend the clinic. The FSFI has questions related to the six domains of FSD. However, since there are also socio-cultural and psychological aspects related to FSD in addition to these domains, the VAS may also include these aspects.

The VAS was first developed by Hayes (14) in 1921 as a "graphic rating method" to overcome the limitations of ordinal

measures from Likert-type scales. The VAS has a wide range of uses in different areas in daily urological practice (15-17). The only study in the literature that evaluated the psychometric properties of the FSFI applied to the VAS was conducted by Wolpe et al. (18) in 2015. The 10 cm line on the VAS was divided into five parts for each question, with each 2 cm segment equal to one alternative on the Likert response format. Correlations between FSFI-Likert and FSFI-VAS were evaluated on a question basis, and the correlation coefficient was found to be below 0.7 in only three questions. When evaluated as the total score, a strong correlation was found between FSFI-Likert and FSFI-VAS, with a correlation coefficient of 0.87. The study also revealed that the internal consistency, construct validity, discriminant validity, and reproducibility of the FSFI-VAS were adequate (18). Unlike this study, in our study, we evaluated the relationship between the FSFI-Likert total score and the one-item FSF-VAS and found a moderately strong correlation between them, with a correlation coefficient of 0.74.

In 2000, when the FSFI was first developed, no cut-off value was specified for FSD, but several cut-off values were defined afterwards (3). In a study by Oksuz and Malhan (8) in 2005, who performed validity and reliability analysis of the Turkish version of the FSFI, the mean score was found to be 25.52 in the control group and 22.45 in the FSD group. The same authors diagnosed women with an FSFI score of <25 as having sexual dysfunction in their prevalence study (9). In 2010, Wiegel et al. (10) conducted a study with 568 female participants to determine the cut-off value for FSD. An FSFI score of 26.55 was found to be the optimal cut-off value to distinguish those who have sexual dysfunction issues from those who do not. In another validation and reliability study conducted in 2019 and involving Spanish women, the cut-off value for FSD determination was found to be 24.95 (19). In line with these studies, we preferred to use cut-off values of 25 and 26.55 for FSD. To predicting FSD, we found the cut-off value for FSF-VAS to be 5.95 for both FSFI scores 25 and 26.55.

Two recent studies in the literature that are methodologically similar to our study developed scales to predict a FSFI score of <26.55 to determine FSD. In a study by Mollaioli et al. (20), the authors asked patients to rate their orgasmic intensity on a one-question VAS, the "Orgasmometer-F." It was found that a cut-off value of 5 in the Orgasmometer-F had a high AUC, sensitivity and specificity in differentiating between women with and without sexual dysfunction (AUC=0.9, p<0.0001; sensitivity: 86.5%, specificity: 80.4%, positive predictive value: 75.4%, negative predictive value: 89.5%. In another study by Jara et al. (21,22), an 11-item menopause rating scale, which had been previously described and translated into many languages (21), was used to determine FSD. It was found that a score of >1 for item number 8 identified women with and without sexual dysfunction, with an AUC of 0.70, 78% sensitivity, 62% specificity (22).

Study Limitations

Our study was a cross-sectional observational study. Note that the cut-off values determined for FSD may not reflect the general population since our study was conducted only in female patients with OAB and UI. Our study included young and old and pre- and postmenopausal women. Since there may be different cut-off values for FSD in this group of patients, it would be more appropriate to perform separate analysis for each group, but, due to the small number of patients, we could not perform a separate analysis for each group.

Conclusion

The FSF-VAS value of 5.95 may be a parameter that can be used in the screening of sexual dysfunction in women, since there is a strong correlation between the FSFI score and FSF-VAS, and the FSF-VAS also predicts the cut-off values for FSD with high sensitivity and specificity. Due to the difficulty of implementing the FSFI as a screening tool in daily urological practice, using the FSFI for only those with a FSF-VAS score of 5.95 or higher will reduce the clinician's workload, save time and spare patients from the embarrassment caused by the questions in the FSFI.

Ethics

Ethics Committee Approval: The study protocol was approved by the clinical research ethics committee of our university (Gazi University Clinical Research Ethics Committee - date: 17.10.2012; approval number: 341).

Informed Consent: Retrospective study.

Peer-review: Externally and internally peer-reviewed.

Authorship Contributions

Concept: M.O., Design: İ.Ş., Data Collection or Processing: E.C.B., S.Ç., Analysis or Interpretation: M.Y.K., S.Ç., Literature Search: M.Y.K., M.O., İ.Ş., Writing: M.Y.K., E.C.B.

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