

## Validation of the female sexual desire functional short scale

## Validação da escala curta de avaliação funcional do desejo sexual feminino

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**RESUMO | INTRODUÇÃO:** A disfunção do desejo sexual feminino é prevalente e impacta negativamente sobre a função sexual e a qualidade de vida, mas não existem escalas funcionais que levem em conta função e disfunção. **OBJETIVO:** construir e validar uma escala curta para avaliação funcional do desejo sexual feminino. **MÉTODO:** Correlação dos resultados de função do desejo sexual avaliado pelo Índice de Função Sexual Feminina (FSFI) e a nova escala funcional, em uma amostra via internet da população feminina brasileira em geral por meio do teste T de Student e o coeficiente de Spearman. Curva ROC fomentou a análise de corroboração entre os dados do domínio disfunção do desejo do FSFI com a nova escala de avaliação funcional. **RESULTADOS:** Metade das mulheres da amostra apresentou disfunção sexual pelo FSFI, sendo que um terço apresentou disfunção do desejo sexual. Houve boa correlação entre os resultados da nova escala e do domínio desejo sexual do FSFI, bem como boa sensibilidade e especificidade do modelo pela curva ROC. **CONCLUSÃO:** a nova escala curta de avaliação funcional do desejo sexual feminino com base na Classificação Internacional de Funcionalidade, Incapacidade e Saúde pode ser uma ferramenta útil na avaliação da função do desejo sexual feminino.

**PALAVRAS-CHAVE:** Transtorno do desejo sexual hipotivo. Estudos de validação. Mulheres.

**ABSTRACT | INTRODUCTION:** Female sexual desire dysfunction is prevalent and negatively impacts sexual function and quality of life, but there are no functional scales that take into account function and dysfunction. **OBJECTIVE:** To construct and validate a short scale for functional evaluation of female sexual desire. **METHOD:** Correlation of sexual desire function results assessed by the Female Sexual Function Index (FSFI) and the new functional scale in an internet sample of the Brazilian female population in general through the Student's t test and the Spearman coefficient. ROC curve fostered corroborating analysis between data from the FSFI desire dysfunction domain with the new functional assessment scale. **RESULTS:** Half of the women in the sample had sexual dysfunction by FSFI, and one third had sexual desire dysfunction. There was a good correlation between the results of the new scale and the FSFI sexual desire domain, as well as good sensitivity and specificity of the model by the ROC curve. **CONCLUSION:** The new short functional rating scale for female sexual desire based on the International Classification of Functioning, Disability and Health may be a useful tool in assessing the function of female sexual desire.

**KEYWORDS:** Sexual Dysfunctions. Psychological. Validation studies. Women.

## Introduction

Distinctly from other mammals, human sexuality surpasses biological function, since it provides pleasure that is not related to human reproductive cycle. Therefore, one must consider human sexual response in three different perspectives: biological, psychological and social, along with their interrelations.

Human sexuality interferes in physical and mental health, and is influenced by emotional, natural and social aspects<sup>2</sup>. Sexual dysfunctions are psychosomatic disorders that make it impossible for one to have pleasure or coitus during sexual intercourse, which may lead to personal afflictions, as well as limit quality of life and interpersonal relations<sup>3</sup>.

The concept of sexual health, on the other hand, comprises corporeal, emotional, rational and social elements of the sexual being, through resources that enhance and potentiate love, communication and personality<sup>2</sup>.

The sexual life of sexually healthy individuals is determined by association of four systems: endocrine, neurological, vascular<sup>4</sup>, and muscle-skeleton<sup>5</sup>. Thus, changes in the functioning of and of such systems may disturb sexual response, which may lead to sexual dysfunction. More specifically, changes in any of female sexual response cycle phases – desire, arousal, orgasm/satisfaction, and closure – may lead to sexual dysfunctions on desire, arousal, lubrication, orgasm, satisfaction or pain<sup>6</sup>.

As for female sexual dysfunctions (FSD), level of happiness and health of marital relationship are directly influenced by how sexually pleased a couple is, which includes how the woman is prepared to have an orgasm<sup>7</sup>. Also, lack of knowledge on one's own sexuality, the lack of information on human physiology associated with sexual response, personal issues, hindrances on sexual relationship work as factors that influence the development of emotional problems on women, thus leading to changes

in their sexual response<sup>8</sup>. In fact, sexuality (and, therefore, FSDs) are greatly related to socio-cultural and behavioral factors, which impact negatively on women's health as a whole<sup>9</sup>.

This scenario leads one to infer that FSDs are complex and depend on many factors, since the early stage of sexual response, that is, from desire. Also, it is a relevant issue because of its high prevalence. Dysfunctions on sexual desire afflicts 6% of German women<sup>10</sup>, 32% of North American women<sup>11</sup>, 69% of Australian women<sup>12</sup>, 60% of young Brazilian women<sup>13</sup>, and 43% of 25-40 year-old Brazilian women<sup>14</sup>.

Arousal disorder afflicts 57,9% of Japanese women<sup>15</sup>, 30% of Iranian women<sup>16</sup>, 24% of North American women<sup>17</sup>, and more than half Brazilian women of all ages<sup>13,14</sup>. Orgasm disorder can afflict 32% of Japanese women<sup>15</sup>, 37% of Iranian Women<sup>16</sup>, and nearly 60% of Brazilian women<sup>13,14</sup>. Lastly, intercourse pain afflicts 1% of Swedish women<sup>18</sup>, 25% of Turkish women<sup>19</sup>, 68% of Malayan women<sup>20</sup>, and a third of Brazilian women<sup>13,14</sup>.

Nowadays, the most used questionnaire worldwide to study and evaluate female sexual function and dysfunction, is the Female Sexual Function Index (FSFI), which was created by a multidisciplinary team of researchers on female sexual disorders<sup>21</sup>. The FSFI is simple to analyze and to manage. It is a self-response questionnaire, having an algorithmic scale that is able to analyze each command distinctively, or their constitution as a whole. Recently, a shorter version of FSFI has been developed with six questions<sup>24</sup>, and validated for middle aged Brazilian women<sup>25</sup>.

Despite female sexual desire disorder alone presents more than half of FSDs in general, this subject has not been fully clarified, especially from a functional point of view. In spite of being efficient, and of being widely used worldwide, the FSFI is a long questionnaire, which implies a certain amount of time to be responded. Considering that female sexual desire disorder is assessed and treated by health care professionals in general, a short clinical scale for assessing female desire – not only on dysfunction, but also on function

itself – can be clinically and scientifically useful, as long as it is objective, short, simple to interpret and to be filled in, and as long as it fulfill ratings both on functions and dysfunctions. Building and validating this short scale is the final goal of this essay.

## Methodology

This study is based on observation, descriptive, quantitative, qualitative, transverse and comparative, to develop and validate a short version of an appraisal of female desire applied on clinical environment, and approved by the Faculdade Inspirar Research Ethics Committee, under CAAE 03628118.1.0000.5221.

FSFI was used for validation in comparison to the short scale for functional assessment of female sexual desire, which was developed by the authors and is based on the International Classification of Functioning Disability and Health (ICF) five degrees of dysfunction.

The questionnaires were applied using a virtual environment (online), with the goal of reaching women all over Brazil. The application of an online version of FSFI has recently been validated<sup>13</sup>.

The population studied was comprised of sexually active Brazilian women above 18 years of age who accepted to respond questions voluntarily, in a virtual environment, who were able to read and respond the text. There were no exclusion criteria.

Sampling was carried out by convenience. Invitation was made in social networks and messaging apps, with a brief explanation concerning the study goals and inviting possible subjects. As for the principle of universality and free access, other women, who wished to take part on the study, but did not fit the inclusion of exclusion criteria, were allowed to do it normally, but their data were not included in the statistical analysis. Women who delivered questionnaires with forms incompletely filled in were also excluded.

FSFI has categories and sub-items that are based on the ranking of female sexual disorder of the American Foundation for Urological Disease (AFUD). 19 items assess six commands of sexual function: desire, pain, arousal, lubrication, orgasm and satisfaction, with emphasis on arousal disorder. This category is itself divided into two distinctive commands of lubrication (four items), and proper arousal (four items), allowing for the analysis of four adjacent elements other than the core ones (subjective arousal and desire)<sup>26</sup>. It is a self-response questionnaire, having an algorithmic scale that is able to analyze each command distinctively, or their constitution as a whole. On questions 3 to 14 and 17 to 19, ranking is from 0 to 5, and on questions 1, 2, 15 and 16, it goes from 1 to 5. General result is outlined by the sum of each command, times its equivalent factor, and can vary from 2 to 36. The cutoff used to determine a good sexual function is 26.5, as it has been observed in the validation process of this instrument on a female population from 18 to 74 years old, both with and without sexual dysfunction<sup>23</sup>.

The Female Sexual Desire Functional Short Scale comprises five levels of function, according to the five degrees of dysfunction used at CIF (level 0: 0 to 5% dysfunction; level 1: 6 to 25% dysfunction; level 2: 26 to 50% dysfunction; level 3: 51 to 95% dysfunction; level 4: 95 to 100% dysfunction)<sup>27</sup>. For each of the five levels, each woman must choose a sexual desire pattern that best fit her average sexual desire in the last years, where levels 2, 3, and 4 are considered dysfunctional (Chart 1).

**Chart 1.** The Female Sexual Desire Functional Short Scale

Sexual desire comprises the will to have sex, not necessarily when the body starts responding (arousal: lubrication, vaginal swelling etc.), but rather on pure wish, even before the body starts getting aroused. Which of the levels below best describes your type of sexual desire in the last years? Choose only one number.

LEVEL	Type of symptom
0	<b>Spontaneous desire:</b> I feel like having sex out of nowhere, every now and then, and I don't need to be stimulated or to think about anything erotic.
1	<b>Reactive non-tactile desire:</b> I feel like having sex ONLY when I imagine, see or hear something sex-related. I don't need to be touched to feel the desire, but I need to see, hear or imagine something erotic.
2	<b>Reactive tactile desire:</b> I feel like having sex ONLY when I am touched. I don't need to be penetrated, but I need touching and caress, in my genitals or other parts of my body, to start feeling the urge.
3	<b>Late tactile desire:</b> I feel like having sex ONLY when the act starts, with vaginal penetration. Touching and caressing, even in the genital area, does not make me feel like doing it.
4	<b>Absent desire:</b> I don't feel like having sex. Not even during intercourse or when I am penetrated. If I had to choose, I'd rather not have sex.

Data were collected online. Subjects accessed the virtual platform that was sent via email and messaging apps, so that they were able to access the research material. There was a small text on the first page that explained the study and the Disclaimer, and it could be filled in only after it was signed.

Each subject then filled in the following information on the virtual environment: age, marital status, sexual orientation, use of medical antidepressants, use of birth control pills and/or hormone replacement, steroids and illegal drugs. Next, they answered the Female Sexual Desire Functional Short Scale, and FSFI.

Lastly, the subjects were informed about the occurrence (or lack thereof) of sexual desire disorder,

and about the function of pelvic physical therapy for such disorder, via an informative email.

Online data were transferred into statistical software SSPS v20. Statistical tests carried out were Student's T test, Spearman Coefficient and ROC Curve.

## Results

By the end of the study, 504 women had answered the questionnaires, out of which all were sexually active. Average age of the sample was  $28 \pm 12$  years of age. Table 1 shows a general view of sample socio-demographic and gynecological data.

**Table 1.** Sociodemographic and gynecological features of the sample

<b>Features</b>	<b>n</b>	<b>%</b>
<b>Age (years)</b>		
18-27	113	22.4
28-37	213	42.3
38-47	136	27
48 or more	42	8.3
<b>Orientation</b>		
Straight	482	95.6
Bisexual	12	2.4
Homosexual	9	1.8
Other	1	0.2
<b>Education</b>		
High School	2	0.4
High School	33	6.5
College Degree (not finished)	46	9.1
College Degree (finished)	423	83.9
<b>Marital Status</b>		
Single	164	27.8
Married/With Partner	340	72.2
<b>Children</b>		
None	189	37.5
1 child	175	34.7
2 children	113	22.4
3 or more	26	5.2
<b>Reproductive Stage</b>		
Pregnant	20	4
Puerperal	67	13.3
Menopause	34	6.7
Other	383	76
<b>Physical Activity</b>		
Does not exercise	187	37.1
1-3 times a week	247	49
+3 times a week	70	13.9
<b>Substances</b>		
Antidepressants	30	6
Hormone CA	194	38.5
Illegal Drugs	12	2.4
Does not take drugs	268	53.2

The usage of antidepressants appears as FSD protector ( $p=0.04$  – Pearson), whereas birth control pills and illegal drugs correlate to a higher frequency of FSD ( $p=0.05$ ). There was no correlation between FSD and age, sexual orientation, education, marital status, reproductive phase and physical activity (or lack thereof).

According to FSFI, FSDs occurred in 163 women (32.3%). Arousal disorder, which is characterized by

failing to arouse in the absence of desire dysfunction, appeared in 283 women (56.1%). Lubrication dysfunction appeared in 330 women (65.4%). Orgasm dysfunction, which is characterized by orgasm dysfunction in the absence of desire and/or arousal dysfunction, happened to 19 women (3.7%), whereas satisfaction dysfunction happened to 456 women (90.5%). Sexual pain appeared in 115 women (22.8%).

The new functional scale presented a good distribution of levels, according to FSFI (Table 2). From 279 women that did not present FSD according to FSFI criteria, 97.5% were ranked within levels 0 or 1 (nothing or light) of sexual desire disorder, as per the new functional scale. There was also a good distribution for women with sexual desire disorder by FSFI, where 76% of them were ranked within levels 2 and 3 (light or moderate) of the new functional

scale, and only 2.4% who had desire FSD were ranked within levels 0 and 1 (nothing or light) of the new scale. Level distribution on the new scale was also interesting for the women with general FSD (desire, arousal, lubrication, orgasm, satisfaction or pain), according to FSFI: on the new functional scale, most women (64%) presented intermediary levels (2 or 3) of desire disorder, whereas 12.4% were in levels 0 and 1 (nothing and light).

**Table 2.** Functional characterization of desire dysfunction adjusted by sexual desire disorder status and by sexual desire dysfunction by FSFI e disfunção do desejo sexual pelo FSFI

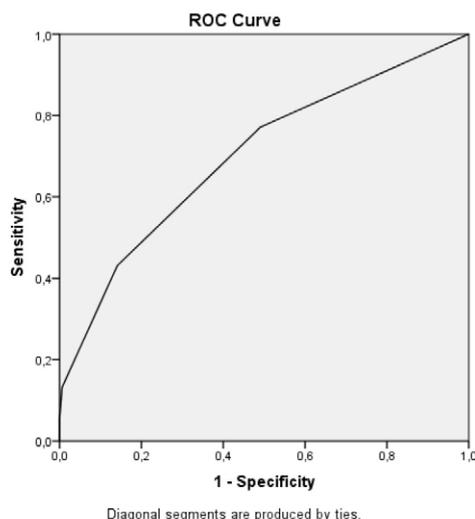
	No FSD*		With FSD*		With FSDD*	
	n	%	n	%	n	%
<b>Level 0</b>	158	56.6	4	1.7	1	0.6
<b>Level 1</b>	114	40.8	24	10.7	3	1.8
<b>Level 2</b>	5	1.8	92	40.9	82	50.3
<b>Level 3</b>	2	0.7	74	32.9	58	35.5
<b>Level 4</b>	-	-	31	13.7	19	11.6
<b>Total</b>	279		225		163	

\*Female Sexual Disorder.

\*\*Female Sexual Desire Disorder (FSDD).

Spearman Coefficient for the group of women with sexual desire disorder by FSFI relative to the Desire Functional Scale scores was 0.78 ( $p=0.01$ ), showing significant correlation among the two models. Qui-square test for a sample showed that there was also a significant difference between the levels of the new functional scale in women with FSD by FFI, when compared to the same levels for women without FSD by FSFI ( $p=0.000$ ). ROC Curve of Functional Scale scores showed a good relation between model sensitivity and specificity to explain female sexual desire disorder by FSFI (Image 1).

**Figure 1.** ROC Curve between variables of the Female Sexual Desire Functional Short Scale, adjusted by the state of sexual desire disorder by FSFI



## Discussion

This study aimed at validating the Female Sexual Desire Functional Short Scale, by comparing its results to those of the FSFI female sexual function questionnaire. The sample comprised women from the general population and, therefore, with no apparent risk for sexual dysfunction, all of them sexually active and with an average age of  $32 \pm 3$  years old; first impression on the sample was the high prevalence of sexual disorder (44.6% of women). This value meets the ones pointed out by other studies on the FSD prevalence in Brazilian population in general<sup>13,14,28</sup>.

When considering FSFI reliability as an instrument for assessing female sexual function – nowadays validated and culturally adapted for hundreds of languages and countries – such prevalence allows for the conclusion that FSD is currently pandemic and needs urgent scientific attention, especially when it comes to designing and implementing preventive and therapeutic strategies. In fact, urgent measures are needed to fight FSD in the general population, since women with sexual disorder do not search for help, and that healthcare professionals still do not make space for women during consultation to expose this type of problem<sup>29</sup>.

These two factors alone make up for the disastrous combination pointed out by the prevalence studies quoted above, to which the present study adds up. While the scientific interest is concerned in exploring almost exclusively women who are considered to be at risk of female sexual disorder – such as cancer patients, women with diabetes, overweight, neurological diseases etc. – nearly half the general population, which is considered not to be at risk, has similar scores of sexual dysfunction, according to valid assessment standards. The last part of this argument comes from disquieting information that 90.1% of (apparently healthy) women who responded this study scored similarly to a dysfunctional sexual satisfaction.

Remarkably, sexual desire disorder has always been present in one out of three women of the sample, a result that echoes, again, national<sup>13,14</sup> and international<sup>11,30,31</sup> literature for women in the general population. Sexual desire disorder is preoccupying since it is a primary dysfunction<sup>6</sup>, that is, it influences negatively every subsequent sexual function. In other words, a woman that as a desire dysfunction will

likely present less arousal, orgasms, satisfaction, and possibly more pain, since desire is the starting trigger for all sexual response to occur.

The fact alone that sexual desire disorder is a primary variable – and therefore basic in human sexual function – calls attention and demands more intensive study. In this context, the Female Sexual Desire Functional Short Scale is helpful, since it qualitatively and quantitatively points out the levels of dysfunction, in a practical way, and as part of daily clinical practice. Inspired by the CIF functional degeneration values, the Female Sexual Desire Functional Short Scale has five degrees of growing dysfunction, which can be recognized by the female patient, and according to the CIF procedures, she must rank herself in one of the groups, while moderated by the healthcare professional who observes her assessment<sup>27</sup>.

One piece of information still unknown was the possible correlation between values observed when applying the Female Sexual Desire Functional Short Scale and the values observed by the prevalence of female sexual desire disorder of the widely used FSFI questionnaire. Such correlation was explored and presented, and its results allow for the inference that the short scale is valid, when based on FSFI. It can be observed that the group of women with desire disorder, according to FSFI, was distributed almost linearly as for the growing levels of the Short Scale. Very few women (2.4%) with desire disorder, according to FSFI, presented milder levels (0 and 1) for desire disorder, according to the Short Scale. As for sensitivity, the Short Scale differentiate sexual desire disorder in levels for women with scores compatible with this disorder by FSFI: women were distributed on all levels (0-4) of the Short Scale, and the average levels of desire disorder (2 and 3) prevailed. ROC Curve showed good relation between Short Scale sensitivity and specificity. The sum of these observations allows for the conclusion that the Short Scale is sensitive and specific enough to qualify and quantify female sexual desire disorder in functional levels, and that it can be a useful tool for the assessment, evolution and follow-up of discharged patients.

Lastly, other specific FSD were present in the sample studied. Arousal disorder, which is characterized by failing to arouse in the absence of desire dysfunction, appeared in 283 women (56.1%). Lubrication dysfunction appeared in 330 women (65.4%). Orgasm dysfunction (orgasm dysfunction in the

absence of desire and/or arousal dysfunctions), on the other hand, happened to 19 women (3.7%). It is worth mentioning that complaining about problems during orgasm is different from orgasm dysfunction. By definition, orgasm dysfunction<sup>6</sup> is characterized by complaints on orgasm problems (too early, too late, or weak) when there are no desire and arousal dysfunctions. In other words, a female who complains about orgasm, but also has low desire, should be classified within the concept of desire disorder, and treated as such. The same goes for women who complain on the arousal time and during intercourse (plateau), such as issues on lubrication, sensitivity etc.: even when there are (expected) complaints on orgasm problems, they should be ranked and treated for arousal dysfunction. Therefore, on a sample studied by FSFI, women with proper dysfunctional orgasm are an intersection between the group of all women that have cutoffs lower than 5.05 on FSFI orgasm, minus the groups of women with desire lower than 4.28, women with arousal lower than 5.28, and women with lubrication lower than 5.08, so that orgasm disorder can be defined and followed. From such operations, very few women actually displayed genuine orgasm disorder, even though a large part of the sample predictably had complaints about orgasm. After all, could the orgasmic function of a woman with desire and/or lubrication problems not be problematic?

## Conclusion

Female sexual desire disorder is prevalent and has relevant effects on women's sex and quality of life all over the world. Before the need of assessing functionally and scaling sexual desire disorder, a Female Sexual Desire Functional Short Scale was developed from the International Classification of Functioning Disability and Health, and results were compared to those of the FSFI questionnaire.

In general, sexual disorder was highly prevalent on the female subjects, in practically half of the sample. Specifically, female sexual desire disorder was also relevant, appearing on one third of the subjects – such data are consonant to the high prevalence described on both Brazilian and international literature. There was a good correlation between short scale values

and the realm of FSFI that measures sexual desire disorder, showing that the new instrument has good sensitivity and specificity.

The short scale for functional assessment of female sexual desire can be used as a complementary instrument for assessing qualitatively and quantitatively both function and dysfunction of sexual desire, with clinical applicability and in practice, appraisal, and evolution, discharge and post-discharge follow-up for patients who were treated for it.

## Authors' contributions

Latorre GFS participated in the conception, design, search and statistical analysis of the research data, interpretation of results, writing of the scientific article. Bobsin ES participated in the data collection of the research and writing of the scientific article. Kist LTL participated in the data collection of the research and writing of the scientific article. Nunes EFC participated in data interpretation and review of the scientific article.

## Conflict of interests

No conflict, either financial, legal or political that involves third parties (government, companies, private foundations etc.) has been declared for any aspect of the work submitted (including, but not limited to, subsidies and financing, parts in consulting boards, study design, manuscript preparation, statistical analysis etc.).

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