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ISSWSH REPORT

Toward a More Evidence-Based Nosology and Nomenclature for Female Sexual Dysfunctions—Part III

Sharon J. Parish, MD,[1] Cindy M. Meston, PhD,[2] Stanley E. Althof, PhD,[3] Anita H. Clayton, MD,[4] Irwin Goldstein, MD,[5] Sue W. Goldstein, CSE,[6] Julia R. Heiman, PhD,[7] Marita P. McCabe, PhD,[8] R. Taylor Segraves, MD, PhD,[9] and James A. Simon, MD[10]

ABSTRACT

Introduction: In 2016 the International Society for the Study of Women's Sexual Health (ISSWSH) published an expert consensus report on new nomenclature that addressed the need for comprehensive, evidence-based criteria for new diagnoses in desire, arousal, and orgasm, with the definition on arousal focusing exclusively on female genital arousal disorder (FGAD).

Aim: A new expert panel solely focused on mechanisms of arousal disorders convened to revise the nomenclature to include female cognitive arousal disorder (FCAD) and FGAD.

Methods: The ISSWSH co-chairs identified experts on arousal disorders in women. The 10 participants included clinicians, researchers, and educators, representing a diverse, multidisciplinary group. Pre-meeting preparation included evidence-based literature review as the basis of presentations panelists made at the meeting on the current knowledge in cognitive arousal. Consensus was reached using a modified Delphi method. Writing assignments were made as a basis of manuscript development.

Main Outcome Measures: The new definition of FCAD is characterized by distressing difficulty or inability to attain or maintain adequate mental excitement associated with sexual activity, as manifested by problems with feeling engaged and mentally turned on or sexually aroused for a minimum of 6 months.

Results: Female sexual arousal disorder encompasses both FGAD (revised definition) and FCAD (new definition). Recommendations regarding diagnosis include a clinical interview to assess for FCAD using targeted questions. Patient-reported outcomes that contain questions to assess FCAD are described, including limitations for differentiating between cognitive arousal, genital arousal, and sexual desire. Laboratory measures of cognitive and genital arousal are discussed, including the relationships between genital and cognitive arousal patterns. Biopsychosocial risk factors for FCAD and FGAD, as well as exclusionary conditions, are presented.

Clinical Implications: The revision of the ISSWSH nomenclature regarding the criteria for the 2 arousal categories, FCAD and FGAD, and the recommended diagnostic strategies offers a framework for management of women with arousal disorders.

Strengths & Limitations: This nomenclature allows for basic science and clinical research in subtypes of arousal in order to develop better diagnostic and treatment options for use by clinicians, scientists, and regulatory agencies. There are limited validated measures of cognitive arousal, including the Female Sexual Function Index, the most commonly used measure, which does not effectively distinguish between cognitive excitement, genital sensations, and event-related desire.

Conclusion: Future directions include the refinement of FCAD and FGAD and development and validation of patient-reported outcomes that distinguish between the cognitive processes and genital responses to enhance

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[1]Weill Cornell Medical College, New York, NY, USA;

[2]University of Texas at Austin, Austin, TX, USA;

[3]Case Western Reserve University School of Medicine, Center for Marital and Sexual Health of South Florida, West Palm Beach, FL, USA;

[4]University of Virginia, Charlottesville, VA, USA;

[5]Alvarado Hospital, San Diego, CA, USA;

[6]San Diego Sexual Medicine, San Diego, CA, USA;

[7]Indiana University, Bloomington, IN, USA;

[8]Faculty of Science, Swinburne University, Melbourne, Australia;

[9]Case Western Reserve University, Shaker Heights, OH, USA;

[10]IntimMedicine Specialists, George Washington University, Washington, DC, USA

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Key words: Female Sexual Dysfunction; Nomenclature; Female Sexual Arousal Disorder; Female Cognitive Arousal Disorder; Female Genital Arousal Disorder

INTRODUCTION

The International Society for the Study of Women's Sexual Health (ISSWSH) convened an expert panel to develop nosology and nomenclature on female sexual dysfunction (FSD) and published 2 articles in 2016.[1,2] The final objective of that panel was to establish a classification system and develop nomenclature for clinical care, research, and regulatory guidance. Nomenclature should be based on evidence from well-conducted research trials, case reports, and expert panel opinions. A uniform language used by clinicians, researchers, and regulatory agencies is needed to enable the development of instruments for diagnosis and assessment of response to interventions in clinical trials and patient management.

The ISSWSH nomenclature addressed the need for a comprehensive, multidisciplinary, evidence-based operational set of standard clinical criteria for FSD diagnoses, including several disorders experienced by women that had not previously been included in any of the editions of the Diagnostic and Statistical Manual of Mental Disorders (DSM).[2]

As the ISSWSH nomenclature was disseminated and used by clinicians and researchers across disciplines and settings, it became apparent that a broader perspective was needed regarding the classification of female sexual arousal. The arousal nomenclature, exclusively based on genital arousal, needed to include cognitive excitement processes. In response, an expert panel focused on sexual arousal disorders in women convened in February 2018. This panel revised the ISSWSH nomenclature by defining the overarching category as female sexual arousal disorder (FSAD) and delineating its subtypes: female cognitive arousal disorder (FCAD) and female genital arousal disorder (FGAD). A definition for FCAD was developed and the definition of FGAD was revised.

METHODS

The ISSWSH is a not-for-profit, multidisciplinary academic and scientific organization dedicated to supporting the highest standards of ethics and professionalism in the research, education, and clinical practice of women's sexual health. The ISSWSH executive committee selected co-chairs for this project who identified experts on arousal disorders in women. The 10 participants were researchers, clinicians, and educators, 5 of whom had served on the expert panel that developed the original ISSWSH nomenclature, and 7 of whom have had leadership roles in the ISSWSH. The diverse group consisted of 4 psychologists, 2 psychiatrists, 1 internist, 1 reproductive endocrinologist, 1 sexual medicine physician, and 1 sexuality educator. All disclosed potential conflicts of interest. Panelists were asked to individually perform an evidence-based literature review, identifying high-quality original research, review, and expert opinion publications that they judged to be important and pertinent to the topic. The consensus meeting convened in San Diego, California, on February 8, 2018. The panelists presented and reviewed the current state of knowledge of cognitive arousal. Consensus decisions were based on a modified Delphi method. After detailed discussions, participants voted anonymously on various key points; consensus required a majority vote for approval. Panelists were assigned to writing groups. The ISSWSH received no grants from industry for the development of this document.

HISTORICAL PERSPECTIVES

The DSM has had a major influence on the categorization of diagnostic criteria for sexual disorders. Disorders of female desire and arousal first appeared in the DSM in 1980.[3] The nomenclature and criteria underwent minor modifications in the DSM-IIIR in 1987[4] and the DSM-IV in 1994.[5] In the DSM-IV, hypoactive sexual desire (HSDD) was defined as persistent or recurrent deficient (or absent) sexual fantasies and desire for sexual activities, and FSAD was diagnosed solely by a minimal/absent genital response to sexual stimulation. Both diagnoses had the additional criterion that the disorder caused marked distress or interpersonal difficulty. Each diagnosis was subtyped as lifelong vs acquired, generalized or situational, as well as due to psychological or combined factors.

The DSM-5 (2013)[6] made a major departure from previous editions of the DSM by HSDD and female sexual arousal disorder and creating a new combined diagnostic entity, female sexual interest/arousal disorder. A separate disorder of genital arousal was not included in the DSM 5. Some elements of HSDD were combined with elements representing disorders of mental and genital aspects of female sexual arousal in the new diagnostic entity. The rationale for this change was based on literature reviews and feedback from professional societies. The major finding indicating the need for this modification was the observation that many women have difficulty differentiating between desire and arousal and that disturbances in mental arousal rarely occur in the absence of sexual desire disorders.[7] This change in diagnosis, which suggests that desire and arousal may represent the same underlying construct, has created considerable controversy in the field.[8]

OTHER CURRENT CLASSIFICATIONS

In addition to the disorders classified in the DSM, FSDs have been defined by the ISSWSH, the Fourth International Consultation on Sexual Medicine (ICSM),[9] and the International Classification of Diseases and Related Health Problems (ICD). The ICD-11 proposes a new chapter on Conditions Related to Sexual Health in which modifiable physiological causes do not exclude the diagnosis of sexual dysfunction, and codes are consistent with criteria established by the ISSWSH and ICSM.[10] Whereas the ICSM and ICD classify these problems as sexual "dysfunctions," the ISSWSH uses the term "disorders" consistent with the DSM schema.

The ICSM endorsed the separation of desire and arousal, clearly supported by distinct incidence, prevalence, and risk factors for these sexual dysfunctions in women. Based on a widely accepted clinical principle, the ICSM definition of female sexual arousal dysfunction is "persistent or recurrent inability to attain or maintain arousal until completion of the sexual activity, despite having an adequate subjective assessment of her genital response."[9]

The proposed ICD-11 diagnostic guidelines define desire and arousal as separate entities labeled as HSDD and female sexual arousal dysfunction.[10] Based on the available evidence, problems in the psychological component of arousal (described in ICD-10 as lack of sexual enjoyment) are incorporated under female sexual arousal dysfunction in ICD-11. An innovation of this classification system is that it does not exclude the diagnosis of sexual dysfunctions when modifiable contributory factors/causes are identified. Instead, it applies a system of etiologic qualifiers, allowing for a diagnosis of sexual dysfunction when it represents an independent focus of treatment. Contributory factors may be coded using all of the relevant etiologic qualifiers.[10]

EPIDEMIOLOGY

The epidemiology of arousal difficulties varies widely based on methodology of data collection and culture. Studies report either lubrication or arousal problems or both, but cognitive and genital arousal issues are not distinguished. The range of prevalence of sexual arousal complaints is 6−28%, with most studies reporting 13−24%[11]; but most studies did not assess distress, thus not meeting the definition of FSAD. In a large epidemiologic study of women in the United States, the prevalence of arousal problems was 26%.[12] The rates of distressing arousal problems were 3.3%, 7.5%, and 6.0% in women aged 18−44, 45−64, and ≥65, respectively.[13] Reported rates of lubrication difficulties are ≤50% in women worldwide,[14,15] with some studies demonstrating prevalence increasing with age.[16] It is not clearly articulated whether lubrication problems in postmenopausal women may be related to vulvovaginal atrophy manifesting as genitourinary syndrome of menopause or overall difficulties with arousal.[17]

SUPPORTING EVIDENCE

2 lines of evidence favor the notion that FCAD should be considered a separate category in the diagnosis of sexual arousal disorders in women: (i) cognitive arousal is distinct from genital arousal and therefore should not be subsumed under the classification of FGAD, and (ii) cognitive arousal is distinct from sexual desire and therefore should not be subsumed under the classification of HSDD.

Data from laboratory studies that measure women's genital arousal using vaginal photoplethysmography and self-reported arousal using a Likert scale, both in response to a neutral-erotic film sequence, indicate only a modest relationship between measures of arousal.[18] Much has been made of this so-called "desynchrony" in the literature. Oftentimes, it has been misinterpreted to mean that women are incapable of detecting genital cues or are in some way mentally disconnected from their genitals. Findings from recent studies indicate, however, that women are actually very good at detecting their genital responses.[19,20] When using methodology that allows women to indicate continuously, in real time during an erotic film presentation, how aroused their genitals are, significant relationships emerge between their perceived genital arousal and actual genital arousal; this holds true for both sexually functional women and women with FSAD.[19,20] While speculative, low correlations between cognitive and genital arousal may not stem solely from women's inability to detect genital cues but may be because only some women incorporate genital cues into their experience of feeling sexually excited. Whereas, for some women, their experience of sexual arousal is closely associated with how their genitals are responding, for others it has much more to do with how psychologically engaged they are in the sexual activity, which in turn is related to a number of relational factors, contextual factors, and factors such as how they feel about their body during sex and their past positive and negative sexual experiences.[21]

Studies that compare the relationship between genital and cognitive arousal using continuous methodologies highlight the variability between women in the degree to which genital cues play a role in cognitive sexual arousal.[21] Traditionally, in research, cognitive arousal is assessed using a self-report Likert scale at the end of an erotic film sequence, and this necessitates analyzing the relationship with genital measures using correlational analyses.[22] As correlations are averaged across data, individual patterns of responding are obscured. When cognitive arousal is measured continuously throughout the film sequence (as is done with genital arousal), individual women's response patterns can be analyzed using more sophisticated statistical analyses (eg, hierarchical linear modeling).[21] Studies that have used this methodology and hierarchical linear modeling demonstrate that, for some women, how mentally aroused they are corresponds extremely well with how their genitals are responding.[21] Looking at the pattern of responses across time, for every standardized unit of increase in genital arousal, there is a corresponding unit of increase in cognitive arousal. But other women experience increases and decreases in cognitive arousal throughout the erotic film presentation that are completely unrelated to how their genitals are responding.[21] Moreover, the degree to

which women's cognitive and genital arousal are related is independent of their level of genital arousal or whether they report difficulties becoming sexually aroused.[21] It is worth noting that, for some women, focusing on their genitals during sexual activity may lead to a form of performance anxiety, similar to what is seen in psychologically-based sexual dysfunctions in men.[23–25]

Domain intercorrelations published in the initial validation study of the Female Sexual Function Index (FSFI)[26] in a combined group of women with and without FSAD indicate a shared variance of 58% between the domains of desire and subjective (cognitive) arousal. Of note, the shared variances between subjective arousal and lubrication, as well as between subjective arousal and orgasm, were 56% and 66%, respectively.[26] As noted by Althof and colleagues,[27] this demonstrates not only overlap but also substantial distinction between the constructs of desire, arousal, and orgasm in women. Similarly, in an online study of 933 women, correlations between individual FSFI items assessing desire and subjective (cognitive) arousal indicated only low to modest shared variance.[27] If desire and cognitive arousal were the same construct, then one would expect to see evidence of low subjective arousal in women with low desire. To the contrary, data from several in-lab vaginal photoplethysmography studies of women with a mixture of sexual problems in which subjective (cognitive) sexual arousal to an erotic film was measured using a self-report Likert scale indicates no significant difference in cognitive sexual arousal between women with and without desire problems.[27]

In addition to the empirical findings that support the notion that desire and cognitive arousal are different, an argument can be made for maintaining this distinction to provide continuity with the past literature and with current, validated instruments used to measure these constructs. Validated instruments used to measure sexual desire consistently conceptualize desire as a motivational state that may or may not be associated with sexual activity (eg, Sexual Function Questionnaire includes items such as "How often *have you wanted to take part* in sexual activity?")[emphasis added].[28] Cognitive arousal, on the other hand, has been conceptualized as a mental state during sexual activity (eg, the FSFI includes items such as, "How often did you feel sexually aroused ("turned on") *during sexual activity* or intercourse [emphasis added].[26] Although it is undoubtedly the case that an overlap exists between sexual desire and arousal, it is important to maintain the concepts and language in the clinical literature moving forward.

DEFINITION ISSUES

The salient issues influencing panelists' decisions regarding definitions of the sexual disorder taxonomy included (i) sexuality is a psychosomatic process with feedback across physiological and cognitive-affective interactions; (ii) classification preferences vary regarding the "lumping" of co-occurring diagnoses vs the use of discrete diagnostic categories[1]; (iii) there are limited data on some categories of sexual functioning; and (iv) the field and thus, the panel continue to reflect the culturally driven difficulty in identifying a normal range of sexual functioning. Research to date indicates that sexual desire and sexual arousal can be separated, as can genital and cognitive arousal, although these categories do also occur concurrently.[1,9] The arousal response is characterized by intra- and inter-individual variability and can fluctuate over time in intensity and in the balance of cognitive, genital and extra-genital components.[29] However, to facilitate the process of identification and diagnosis, discrete categories are needed.[1] The decision to replace the term "subjective" arousal was based on the fact that it is vague and poorly defines the construct. "Cognitive" was a compromise (with some preference to use "cognitive-affective") for increased clarity and simplicity, and also because a cognitive indicator allows for the description of the interaction among interest, motivation, and a sense of mental arousal in a sexual context. This category (separate from desire and genital arousal) allows for improved clinical care and further research that might identity differentiating physiological-, neurogenic-, emotional-, and interpersonal-based factors contributing to sexual problems and their solutions.

DIAGNOSTIC REVISION

FSAD encompasses both the revised definition of FGAD and the new definition of FCAD, discussed below.

Female Genital Arousal Disorder

Revised definition: Female genital arousal disorder (FGAD) is characterized by the distressing difficulty or inability to attain or maintain adequate genital response, including vulvovaginal lubrication, engorgement of the genitalia, and sensitivity of the genitalia associated with sexual activity, for ≥6 months. Causes of this disorder are related to (i) vascular injury or dysfunction and (ii) neurologic injury or dysfunction (Table 1).

Arousal may be associated with non-genital responses such as nipple hardening and erection, skin flushing, increased heart rate, blood pressure, and respiration rate. If the problem with genital arousal is due to insufficient stimulation, then FGAD should not be diagnosed. Vulvovaginal conditions such as atrophy, infection, or inflammatory disorders of the vulva or vagina, vestibulodynia, and clitorodynia should be excluded before the diagnosis of FGAD is made.[2] FGAD may manifest with mild, moderate, or severe distress over the symptoms, which may vary over time.[6,30] FGAD is usually acquired and generalized (present in all situations and all partners).

Female Cognitive Arousal Disorder

New definition: Female cognitive arousal disorder (FCAD) is characterized by the distressing difficulty or inability to attain or maintain adequate mental excitement associated with sexual activity as manifested by problems with feeling engaged or mentally turned on or sexually aroused for ≥6 months.

FCAD may be lifelong or acquired after a period of normal functioning and may be situational (present only in certain situations or with a specific partner) or generalized. FCAD may manifest with mild, moderate, or severe distress over the symptoms, which may change over time.[6,30] Women may experience FCAD and FGAD independently or in various combinations.

Table 1. Revised ISSWSH Sexual Disorders Nomenclature and Definitions Including Level of Evidence modified from Parish et al, Toward a More Evidence-Based Nosology and Nomenclature for Female Sexual Dysfunctions—Part II J Sex Med 2016;13:1888–1906[2]

HSDD (Grade B)
Manifests as any of the following for a minimum of 6 months:
Lack of motivation for sexual activity as manifested by either:
Reduced or absent spontaneous desire (sexual thoughts or fantasies)
Reduced or absent responsive desire to erotic cues and stimulation or inability to maintain desire or interest through sexual activity
Loss of desire to initiate or participate in sexual activity, including behavioral responses such as avoidance of situations that could lead to sexual activity, that is not secondary to sexual pain disorders
AND is combined with clinically significant personal distress that includes frustration, grief, incompetence, loss, sadness, sorrow, or worry
FSAD
FCAD (Expert Opinion)
Characterized by the distressing difficulty or inability to attain or maintain adequate mental excitement associated with sexual activity as manifested by problems with feeling engaged, or mentally turned on or sexually aroused for a minimum of 6 months
FGAD (Grade B)
Characterized by the distressing difficulty or inability to attain or maintain adequate genital response associated with sexual activity for a minimum of 6 months, including:
Vulvovaginal lubrication
Engorgement of the genitalia
Sensitivity of the genitalia associated with sexual activity
Disorders related to:
(a) Vascular injury or dysfunction
or
(b) Neurologic injury or dysfunction
PGAD (Expert Opinion)
Characterized by persistent or recurrent, unwanted or intrusive, distressing feelings of genital arousal, or being on the verge of orgasm (genital dysesthesia), not associated with concomitant sexual interest, thoughts, or fantasies for a minimum of 6 months
May be associated with:
Limited resolution, no resolution, or aggravation of symptoms by sexual activity with or without aversive or compromised orgasm
Aggravation of genital symptoms by certain circumstances
Despair, emotional lability, catastrophizing, or suicidality
Inconsistent evidence of genital arousal during symptoms
FOD (Grade B)
Characterized by a persistent or recurrent, distressing compromise of orgasm frequency, intensity, timing, and/or pleasure, associated with sexual activity for a minimum of 6 months:
Frequency: orgasm occurs with reduced frequency (diminished frequency of orgasm) or is absent (anorgasmia)
Intensity: orgasm occurs with reduced intensity (muted orgasm).
Timing: orgasm occurs either too late (delayed orgasm) or too early (spontaneous or premature orgasm) than desired by the woman.
Pleasure: orgasm occurs with absent or reduced pleasure (anhedonic orgasm, PDOD). (Expert Opinion)
FOIS (Expert Opinion)
Characterized by peripheral or central aversive symptoms that occur before, during, or after orgasm not related, per se, to a compromise of orgasm quality

FCAD = female cognitive arousal disorder; FGAD = female genital arousal disorder; FOD = female orgasm disorders; FOIS = female orgasmic illness syndrome; FSAD = female sexual arousal disorder; HSSD = hypoactive sexual desire disorder; PDOD = pleasure dissociative orgasm disorder; PGAD = persistent genital arousal disorder.

DIAGNOSIS

Clinical Interview to Assess Female Cognitive Arousal

We recommend that the clinician take a comprehensive sexual history using a biopsychosocial approach to carefully assess *all* the phases of sexual function (desire, cognitive and genital arousal, and orgasm), genital pain, mental health concerns (depression, anxiety, etc), quality of the relationship, partner sexual dysfunction, and cultural/contextual barriers to satisfying sexual activity. Because it is not unusual for women to report sexual dysfunction in >1 domain, the clinician should identify all areas that are problematic and ascertain the duration of symptoms and temporal relationship of 1 dysfunction to the other.

Other publications have suggested questions to ask regarding desire, arousal, orgasm, and pain.[31] To demonstrate the application of this new FCAD definition in clinical practice, we

Table 2. Recommended questions to assess FCAD

I am going to ask you a series of questions regarding your mental and emotional experience of being turned on during sexual activity. Sometimes it is the same and sometimes it is different than the physical sensations of being turned on or aroused, or of sexual desire. Remember, I want you to tell me only about your mental and emotional experience.

Purpose of the Question	Question
To assess the presence or absence of FCAD	When you engage in sexual activity with your partner, do you feel mentally "turned on?"
To determine if the condition is lifelong or acquired	In the past have you ever felt mentally "turned on" while engaging in sexual activity?
To determine whether the patient experiences cognitive arousal by herself	Are you able to become mentally "turned on" during sexual activity on your own?
Self-report on the patient's cognitive arousal	When you engage in sexual activity, do you experience a change in your senses such as visual cues, smell, touch, taste, sounds?
To assess the patient's pleasure from her state of cognitive arousal	Do you enjoy the experience of being mentally and emotionally "turned on?"
To ascertain the course of the dysfunction and precipitating or maintaining factors	When did you first experience difficulties with becoming mentally "turned on" during sexual activity?"
	What was going on in your life or relationship at that time?
To learn about situational factors that impact cognitive arousal	How does the setting you are in influence your ability to get "turned on?"
To learn if the dysfunction is generalized or situational	Does your difficulty with being mentally "turned on" occur with all sexual partners or a specific partner? In all or only specific situations?
	If specific partners or situations, ask the patient to elaborate.
To establish the patient's level of distress	How much does this problem with being mentally "turned on" bother you?
To understand the role between distraction and the patient's cognitive arousal	When engaging in sexual activity do you become distracted?
	If yes follow-up with: Does this interfere with being mentally "turned on"?
To discover whether negative thoughts impact cognitive arousal	When engaging in sexual activity do you experience negative thoughts or images?
	If yes, follow-up with: What is the impact of these negative thoughts or images on your feeling mentally "turned on?"
To learn about the impact of cognitive arousal on the partner and/or relationship	What impact does difficulty with being mentally "turned on" have on your partner? On your relationship?
To understand the impact of cognitive arousal dysfunction on other aspects of the woman	What impact does difficulty with being mentally "turned on" have on your body image, femininity, or something else?
To determine what the patient has done to remediate the problem	What have you done to try to improve the problem with being mentally "turned on?"
Patient's assessment of etiologic factors	What do you think underlies the difficulty with being mentally "turned on?"

FCAD = female cognitive arousal disorder.

provide questions specifically related to female cognitive arousal. Each clinician may pick and choose among these recommended questions based on the patient's presentation, as well as the clinician's specialty and areas of interest. The questions and purpose for each are listed in Table 2.

These questions seek to determine the presence/absence of FCAD and the degree to which it interferes with satisfying sexual function. The questions also allow the clinician to ascertain the degree of distress experienced and whether this disorder is acquired or lifelong and generalized or situational. Other questions address the potential impact of distraction, negative thoughts, the effect of the partner and relationship, attempts to mediate the problem, and the assessment of etiological factors.

Patient-Reported Outcomes to Assess Female Cognitive Arousal Disorder

No patient-reported outcome (PRO) exists that exclusively or adequately assesses female cognitive arousal. There are domains and questions embedded within broader sexuality questionnaires that inquire about the experience of arousal, but none have been

Table 3. PROs Assessing Cognitive Arousal[26,28,32]

FSFI—Arousal Domain
Q3. Over the past 4 weeks, how often did you feel sexually aroused ("turned on") during sexual during activity or intercourse?
Q4. Over the past 4 weeks, how would you rate your level of sexual arousal ("turned on") during sexual activity or intercourse?
Q5. Over the past 4 weeks, how confident were you about becoming sexually aroused during sexual activity or intercourse?
Q6. Over the past four weeks, how often have you been satisfied with your sexual arousal (excitement) during sexual activity or intercourse?
SFQ-F—Arousal Cognitive Domain
Q13. Over the last 4 weeks, how often did you have feelings of emotional sexual arousal (e.g., feeling excited, feeling "turned on," wanting sexual activity to continue) when you took part in sexual activity?
Q14. Over the last 4 weeks, how much emotional sexual arousal (e.g., feeling excited, feeling "turned on," wanting sexual activity to continue) did you notice when you took part in sexual activity?
CSFQ—Sexual Interest and Sexual Arousal Dimensions
Q5. Do you enjoy books, movies, music, or artwork with sexual content?
Q6. How much pleasure or enjoyment do you get from thinking about and fantasizing about sex?
Q7. How often do you become sexually aroused?
Q8. Are you easily aroused?
Q10. How often do you become aroused and then lose interest?

CSFQ = Changes in Sexual Function Questionnaire; FSFI = Female Sexual Function Index; PRO = patient-reported outcome; SFQ-F = Sexual Function Questionnaire—Female Version.

validated to differentiate between cognitive and genital arousal. These PROs include the FSFI,[26] Sexual Function Questionnaire—Female Version,[28] and Changes in Sexual Functioning Questionnaire.[32] Table 3 lists the relevant questions contained in these PROs.

Development of a validated measure to include questions focused specifically on cognitive arousal would be a useful tool for the diagnosis of FCAD, as well as measurement of potential efficacy of new treatments. Numerous factors have hindered the development of such an instrument.

Laboratory Procedures to Assess Female Cognitive Arousal Disorder

In research trials in the laboratory, cognitive sexual arousal is assessed either in a discrete or continuous manner.[22,33] The discrete method asks subjects to report their level of sexual arousal before and after being exposed to a sexual stimulus. 1 discrete assessment measure is the 34-item Film Scale.[34] 6 of the 34 items assess cognitive arousal (sensuousness; a desire to be close to someone; and feeling sexy, loving, sexually attractive, and easy to arouse).

A continuous measure, as the name implies, has subjects rate their level of cognitive arousal while being exposed to a sexual stimulus in an ongoing manner. Using a device called an *arousometer*, subjects continuously move a computer mouse or lever to reflect their level of cognitive arousal.[21] This method captures the time course of sexual arousal and reduces types of response bias.

Genital arousal is assessed using photoplethysmography, thermography, or laser Doppler and a heated oxygen electrode. Genital arousal patterns may be juxtaposed with cognitive arousal ratings to assess the relationship between the subject's physiological response and her self-reported cognitive arousal. The relationship is often expressed as the degree of synchrony or desynchrony between the cognitive and physiological measures.

The assessments of FCAD via discrete or continuous measures and their relationships to genital response are not typically used in clinical practice. Because these investigations allow further exploration of the duality of central and peripheral mechanisms of arousal, this research is helpful in refining the clinical picture to enhance management of FSAD.

Neuroimaging studies using functional magnetic resonance imaging or positron emission tomography have been used in women with HSDD and healthy controls to observe the interaction of excitatory and inhibitory neuropathways and their associated neurotransmitters and hormone receptors.[35] These studies have recorded brain activity of subjects while viewing erotic stimuli to assess excitatory and inhibitory responses; hence, while not designed to assess arousal per se, they may be pertinent to understanding the brain processes relevant to mental arousal.

KNOWN ETIOLOGIES AND RISK FACTORS

The etiology of sexual dysfunction, including arousal, is often multifactorial and includes biologic, psychological, interpersonal, and sociocultural risk factors and contributors. Female sexual arousal is a normal physiologic response occurring in anticipation of and during sexual activity.[11,36,37] Genital arousal is a physical state arising from the processing of physical and non-physical emotional stimuli leading to an increased activity in the central and peripheral nervous system.[2] Genital changes include increased vulvovaginal lubrication, engorgement, and increased sensitivity; and non-genital changes involve nipple erection, skin flushing, and increased heart and respiration rates. The genital responses of arousal depend on normal functioning of the endothelium in the hypogastric-cavernosal vascular bed[38] and an intact central and

Table 4. Conditions and risk factors associated with FSAD, modified from Giraldi et al[11]

Hormonal
Decreased androgens/estrogens, diabetes, thyroid conditions
Neurologic
Central, peripheral
Vascular
Metabolic: coronary artery disease, diabetes, hyperlipidemia, hypertension, obesity
Infectious
Urinary tract, vaginal, vulvar
Inflammatory
Contact dermatitis, desquamative inflammatory, lichen planus, lichen sclerosus, plasma cell vulvitis, vaginitis
Iatrogenic
Medication, radiation, surgery
Psychiatric
Anxiety, depression
Psychological: Intrapersonal
Negative cognitive styles, distraction and self-focused attention, perceived stress, body image, emotional/physical/sexual abuse
Psychological: Interpersonal
Relationship issues, partner sexual dysfunction, sociocultural factors

FSAD = Female sexual arousal disorder.

peripheral nervous system. Increased sympathetic nervous system activity leads to increased vascular blood flow to the vulva, vagina, and clitoris resulting in engorgement, increased temperature, and lubricating secretions.[39] The process is associated with increased vaginal length,[40] relaxation of the pelvic floor musculature, and increased nerve conduction in the pudendal and genitofemoral nerves. Numerous biopsychosocial phenomena can affect these responses and potentially alter any aspect of arousal and result in dysfunction. Biological/physiological etiologies and risk factors are categorized as hormonal, neurologic, vascular, infectious, inflammatory, and iatrogenic (Table 4). Psychosocial risk factors including intra- and interpersonal psychological and sociocultural causes of arousal disorder are also listed in Table 4.

Decreased estrogens or androgens can result from physiological phenomena (eg, lactation), medical disorders causing hypogonadotropic hypogonadism (eg, anorexia nervosa, extreme exercise, abnormal weight loss), or menopause. Reduced estrogens and androgens have a significant ongoing impact on the reproductive organs, affecting arousal.[41,42] Diabetes mellitus, types I and II, may have a detrimental effect on nerve stimulated clitoral and vaginal blood flow and on the vascular system resulting in atherosclerotic damage and endothelial dysfunction leading to decreased genital arousal and dyspareunia.[43] Increased HbA1c, body mass index, depression, and disease duration increase the prevalence and risk of sexual dysfunction in diabetic women.[44–46] In addition to diabetes, other components of metabolic syndrome, including hypertension, hyperlipidemia, obesity, and coronary artery disease increase the risk of FSAD, presumably through vascular injury.[2,38] Neurologic abnormalities associated with arousal problems include primary central and peripheral nervous system disorders (eg, multiple sclerosis).[47]

Iatrogenic causes of FSAD include trauma from pelvic surgery (eg, radical hysterectomy with or without adjuvant pelvic radiation) and pelvic radiation, both of which can result in decreased genital blood supply or nerve conduction/sensation.[48] Several classes of medications[14] can result in FSAD.[49,50] These include medications that affect lubrication (eg, antihistamines), vascular response (eg, antihypertensives), and central mechanisms (eg, selective serotonin reuptake inhibitors, serotonin, norepinephrine reuptake inhibitors, and antipsychotics). Vulvovaginal atrophy, inflammatory (eg, lichen sclerosus, lichen planus, plasma cell vulvitis, desquamative inflammatory vaginitis, and contact dermatitis) or infectious disorders of the vulva or vagina, vestibulodynia, clitorodynia, and acute or chronic urinary tract infection should be identified and treated before making a diagnosis of FSAD.[2]

LIMITATIONS

There is substantial confusion surrounding the construct of cognitive sexual arousal and the way it has been defined in the literature to date. Whereas we propose that cognitive arousal pertains to mental arousal that is distinct from genital arousal, an alternative hypothesis is that, instead, cognitive excitement may be the overlapping and connecting phenomenon between sexual desire and arousal. As demonstrated by functional magnetic resonance imaging, when healthy women without HSDD are exposed to sexually desirable stimuli, studies show both rapid and slower information processing occurring automatically.[51,52] In contrast, women with HSDD appear to have cognitive interference (self-monitoring and evaluation) with physical sexual stimuli, resulting in inhibited sexual excitement.[24,53] Thus, women with diminished desire may be more likely to have disruption in the processing of erotic stimuli, and therefore, inhibited cognitive arousal, even with an adequate genital response.[24,35]

Additionally, regarding the distinction between desire and mental arousal, other models of the female sexual response describe responsive desire as onset of desire after stimulation is initiated and sustained desire as the ability to attain and maintain mental engagement during sexual stimulation and wanting sexual activity to continue.[2,54]

Part of the confusion in defining this construct stems from the fact that there are limited appropriate validated measures of cognitive arousal. The most commonly used measure, the FSFI, was designed primarily to evaluate arousal and lubrication as separate domains.[26] All items in the arousal domain are clearly event-related, using descriptors such as "turned on," feeling "sexually aroused" and satisfaction with "arousal (excitement)," which may imply to an individual woman any of the following: cognitive excitement or interest, enhanced genital sensations, or sexual pleasure (a cognitive or genital experience). As such, the language mixes terms in numerous questionnaire items, making

clinical separation of cognitive and genital arousal difficult. Although there are limited items on currently available questionnaires, there are no instruments that solely address sexual excitement, pleasure, or positive mental engagement and focus.[27]

CONCLUSION

The expert panel revised the ISSWSH nomenclature to include FCAD and refined the definition of FGAD, 2 subtypes of FSAD. The intention of this revision is to clarify the subtypes of arousal to develop better diagnostic strategies and treatment options for women and further research in the field. FCAD and FGAD and their criteria offer a framework for use by clinicians, scientists, and regulatory agencies for laboratory and imaging research; the development of improved measurement tools; and clinical trials of psychological, pharmacologic, and device therapies. Areas for further study include validation of these criteria, determination of the usefulness of physiological and neuroimaging measures in establishing the construct of FCAD and the relationship to FGAD and the other female sexual dysfunctions, and development of PROs that differentiate and measure FCAD and establish endpoints for determining efficacy of interventions. In summary, future directions include the refinement of these diagnostic categories and the development and validation of PROs. This process needs to provide useful constructs and meaningful distinctions between categories in the identification, evaluation, and management of women with sexual dysfunction.

Corresponding Author: Sharon J. Parish, MD, Professor of Medicine in Clinical Psychiatry, Professor of Clinical Medicine, Weill Cornell Medical College, 21 Bloomingdale Road, White Plains, NY 10605, USA. Tel: 914-997-5207; Fax: 914-682-6943; E-mail: shp9079@med.cornell.edu

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STATEMENT OF AUTHORSHIP

Category 1

(a) Conception and Design
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

(b) Acquisition of Data
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

(c) Analysis and Interpretation of Data
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

Category 2

(a) Drafting the Article
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

(b) Revising It for Intellectual Content
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

Category 3

(a) Final Approval of the Completed Article
Sharon J. Parish; Cindy M. Meston; Stanley E. Althof; Anita H. Clayton; Irwin Goldstein; Sue W. Goldstein; Julia R. Heiman; Marita P. McCabe; R. Taylor Segraves; James A. Simon

REFERENCES

1. Derogatis L, Sand M, Balon R, et al. Toward a more evidence-based nosology and nomenclature for female sexual dysfunctions-Part I. **J Sex Med 2016;13:1881-1887.**
2. Parish SJ, Goldstein AT, Goldstein SW, et al. Toward a more evidence-based nosology and nomenclature for female sexual dysfunctions—Part II. **J Sex Med 2016;13:1888-1906.**
3. APA. In: Diagnostic and statistical manual of mental disorders. 3rd ed (DSM III). Washington, DC: American Psychiatric Press; 1980.
4. APA. In: Diagnostic and Statistical Manual of Mental Disorders. Third edition revised (DSM IIIR). Washington, DC: American Psychiatric Press; 1987.
5. APA. In: Diagnostic and Statistical Manual of Mental Disorders. Fourth edition (DSM IV). Washington, DC: American Psychiatry Association; 1994.
6. APA. In: Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition: DSM-5. Arlington, VA: American Psychological Association; 2013.
7. Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in women. **Arch Sex Behav 2010;39:221-239.**
8. Balon R, Clayton AH. Female sexual interest/arousal disorder: A diagnosis out of thin air. **Arch Sex Behav 2014;43:1227-1229.**
9. McCabe M, Sharlip ID, Atalla E, et al. Definitions of sexual dysfunctions in women and men: A consensus statement from the Fourth International Consultation on Sexual Medicine. **J Sex Med 2015;13:135-143.**
10. Reed GM, Drescher J, Krueger RB, et al. Disorders related to sexuality and gender identity in the ICD-11: Revising the ICD-10 classification based on current scientific evidence, best clinical practices, and human rights considerations. **World Psychiatr 2016;15:205-221.**
11. Giraldi A, Rellini AH, Pfaus J, et al. Female sexual arousal disorders. **J Sex Med 2013;10:58-73.**
12. Johannes C, Clayton AH, Odom DM, et al. Distressing sexual problems in United States women revisited: Prevalence after accounting for depression. **J Clin Psychiatry 2009;70:1698-1706.**
13. Shifren J, Monz BU, Russo PA, et al. Sexual problems and distress in United States women: Prevalence and correlates. **Obstet Gynecol 2008;112:970-978.**
14. Nappi RE, Kokot-Kierepa M. Vaginal health: Insights, Views & Attitudes (VIVA)—Results from an international survey. **Climacteric 2012;15:36-44.**
15. McCabe M, Sharlip IR, Lewis R, et al. Incidence and prevalence of sexual dysfunction in women and men: A consensus statement from the Fourth International Consultation on Sexual Medicine 2015. **J Sex Med 2016;13:144-152.**
16. Dennerstein L, Guthrie JR, Hayes RD, et al. Sexual function, dysfunction, and sexual distress in a prospective, population-based sample of mid-aged, Australian-born women. **J Sex Med 2008;5:2291-2299.**
17. Parish S, Nappi RE, Krychman ML, et al. Impact of vulvovaginal health on postmenopausal women: A review of surveys on symptoms of vulvovaginal atrophy. **Int J Womens Health 2013;5:437-447.**
18. Chivers ML, Seto MC, Lalumiere ML, et al. Agreement of self-reported and genital measures of sexual arousal in men and women: A meta-analyses. **Arch Sex Behav 2010;39:5-56.**
19. Handy A, Meston CM. Interoceptive awareness moderates the relationship between perceived and physiological genital arousal in women. **J Sex Med 2016;13:1907-1914.**
20. Handy A, Meston CM. Interoception and awareness of physiological sexual arousal in women with sexual arousal disorder. **J Sex Marit Ther 2017;44:398-409.**
21. Rellini A, McCall KM, Randall PK, et al. The relationship between women's subjective and physiological sexual arousal. **Psychophysiology 2005;42:116-124.**
22. Handy AB, Stanton AM, Meston CM. Understanding women's subjective sexual arousal within the laboratory: Definition, measurement, and manipulation. **Sex Med Rev 2018;6:201-216.**
23. McCabe MP, Connaughton C. Psychosocial factors associated with male sexual difficulties. **J Sex Res 2014;51:31-42.**
24. Barlow DH. Causes of sexual dysfunction: the role of anxiety and cognitive interference. **J Consult Clin Psychol 1986;54:140-148.**
25. Cranston-Cuebas M, Barlow DH. Cognitive and affective contributions to sexual functioning. **Ann Rev Sex Res 1990;1:119-161.**
26. Rosen R, Brown C, Heiman J, et al. The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. **J Sex Marital Ther 2000;26:191-208.**
27. Althof S, Meston CM, Perelman MA, et al. Opinion paper: On the diagnosis/classification of sexual arousal concerns in women. **J Sex Med 2017;14:1365-1371.**
28. Quirk FH, Heiman JR, Rosen RC, et al. Development of a sexual function questionnaire for clinical trials of female sexual dysfunction. **J Womens Health Gend Based Med 2002;11:277-289.**
29. Perelman MA. Sex coaching for non-sexologist physicians: How to use the sexual tipping point model. **J Sex Med 2018;15:1667-1672.**
30. Watters CA, Bagby RM. A meta-analysis of the five-factor internal structure of the Personality Inventory for DSM-5. **Psychol Assess 2018;30:1255-1260.**
31. Kingsberg SA, Althof S, Simon JA, et al. Female sexual dysfunction-medical and psychological treatments, Committee 14. **J Sex Med 2017;14:1463-1491.**
32. Clayton AH, McGarvey EL, Clavet GJ. The Changes in Sexual Functioning Questionnaire (CSFQ): Development, reliability, and validity. **Psychopharmacol Bull 1997;33:731-745.**

33. Velten J, Chivers ML, Brotto LA. Does repeated testing impact concordance between genital and self-reported sexual arousal in women? **Arch Sex Behav 2018;47:651-660.**
34. Heiman JR, Rowland DL. Affective and physiological sexual response patterns: The effects of instructions on sexually functional and dysfunctional men. **J Psychosom Res 1983; 27:105-116.**
35. Cacioppo S. Neuroimaging of female sexual desire and hypoactive sexual desire disorder. **Sex Med Rev 2017;5:434-444.**
36. Kinsey AC, Pomeroy WB, Martin CE, et al. Sexual behavior in the human female. New York: Pocket Books; 1953.
37. Masters W, Johnson VE. Sexual behavior in the human female. Boston: Little, Brown; 1966.
38. Miner M, Esposito K, Guay A, et al. Cardiometabolic risk and female sexual health: The Princeton III summary. **J Sex Med 2012;9:641-651.**
39. Kim S, Oh KJ, Lee HS, et al. Expression of aquaporin water channels in the vagina in premenopausal women. **J Sex Med 2011;8:1925-1930.**
40. Schultz W, van Andel P, Sabelis I, et al. Magnetic resonance imaging of male and female genitals during coitus and female sexual arousal. **BMJ 1999;319:1596-1600.**
41. Traish A, Vignozzi L, Goldstein I, et al. Role of androgens in female genitourinary tract structure and function: Implications in the genitourinary syndrome of menopause. **Sex Med 2018; 6:558-571.**
42. Simon J, Goldstein I, Kim NN, et al. The role of androgens in the treatment of genitourinary syndrome of menopause (GSM): International Society for the Study of Women's Sexual Health (ISSWSH) expert consensus panel review. **Menopause 2018;25:837-847.**
43. Maiorino MI, Bellastella G, Esposito K. Diabetes and sexual dysfunction: Current perspectives. **Diabetes Metab Syndr Obes 2014;7:95-105.**
44. Bal M, Yilmaz SD, Celik SG, et al. Does the diabetes of type 2 affect the sexual functions of women? **J Sex Marital Ther 2015;41:107-113.**
45. Enzlin P, Rosen R, Wiegel M, et al. Sexual dysfunction in women with type 1 diabetes: Long-term findings from the DCCT/ EDIC study cohort. **Diabetes Care 2009;32:780-785.**
46. Esposito K, Maiorino MI, Bellastella G, et al. Determinants of female sexual dysfunction in type 2 diabetes. **Int J Impot Res 2010;22:179-184.**
47. Celik D, Poyraz EC, Bingol A, et al. Sexual dysfunction in multiple sclerosis: Gender differences. **J Neurol Sci 2013; 324:17-20.**
48. Pieterse Q, Kenter GG, Maas CP, et al. Self-reported sexual, bowel and bladder function in cervical cancer patients following different treatment modalities: Longitudinal prospective cohort study. **Int J Gyneol Cancer 2013;23:1717-1725.**
49. Taylor M, Rudkin L, Bullemor-Day P, et al. Strategies for managing sexual dysfunction induced by antidepressant medication. **Cochrane Database Syst Rev 2013; 5:CD003382.**
50. Schmidt H, Hagen M, Kriston L, et al. Management of sexual dysfunction due to antipsychotic drug therapy. **Cochrane Database Syst Rev 2012;11:CD003546.**
51. Ortigue S, Bianchi-Demicheli F. [A socio-cognitive approach of human sexual desire]. **Rev Med Suisse 2008;4:768-771.**
52. Janssen E, Everaerd W, Spiering M, et al. Automatic processes and the appraisal of sexual stimuli: Toward an information processing model of sexual arousal. **J Sex Re 2000;37:8-23.**
53. Bancroft J, Graham CA, Janssen E, et al. The dual control model: Current status and future directions. **J Sex Res 2009; 46:121-142.**
54. Basson R, Leiblum S, Brotto L, et al. Definitions of women's sexual dysfunction reconsidered: Advocating expansion and revision. **J Psychosom Obstet Gynaecol 2003;24:221-229.**