Arousal and orgasmic dysfunction in women

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Disorders of female arousal and orgasm induce frustration in healthcare providers for many reasons. Approximately 1 in 20 women in the United States report bothersome sexual problems specifically related to arousal and orgasm, yet there remain no US Food and Drug Administration–approved treatment options available to manage these conditions. This article includes methods for diagnosing female sexual arousal disorder and female orgasmic disorder and reviews off-label and nonpharmacologic treatment options for these conditions.

Female sexual dysfunction encompasses four main categories based on type: desire, arousal, orgasm, and sexual pain. In 2015, the 5th edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) merged arousal and orgasmic dysfunction into one unified disorder, female sexual interest and arousal disorder (FSIAD).[1] Most sexual health experts and organizations, however, do not endorse this unified term because it is not evidence based. Although overlap may exist among two or more of the conditions in the clinical setting, many women report difficulty with arousal or orgasm, independent of other aspects of sexual response. As this article is written for clinicians, it includes terminology from the International Society for the Study of Women's Sexual Health (ISSWSH): female sexual arousal disorder (FSAD) and female orgasmic disorder (FOD).[2,3] This terminology has been endorsed by the International Consultation for Sexual Medicine, and it is also included in the 4th edition of the DSM, text revision (DSM-IV-TR).[4,5] Of note, the conditions persistent genital arousal disorder and post orgasmic illness syndrome are outside the scope of this article and therefore not discussed here.

Definitions and prevalence

Female sexual arousal disorder

FSAD is defined as the distressing inability to attain or maintain sexual excitement until the completion of a sexual encounter, including vaginal lubrication and genital swelling per the DSM-IV-TR.[5] Symptoms of FSAD must not be accounted for by a medical condition or substance. Female sexual arousal disorder is categorized as either primary (lifelong) versus secondary (previous experience with appropriate sexual response), and generalized (occurs in all circumstances) versus situational (only occurs in specific circumstances).[5] Over 25% of women report problems with sexual arousal, although only 5% are distressed by their symptoms.[6]

An expert panel sponsored by ISSWSH recently published a manuscript updating diagnostic terminology for arousal disorders in women.[3] Female sexual arousal disorder has been divided into female cognitive arousal disorder (FCAD) and female genital arousal disorder (FGAD). This article focuses on the latter, which is defined as the inability to develop or maintain adequate genital response for 6 months, including vulvovaginal lubrication, engorgement of genitalia, and sensitivity of genitalia associated with sexual activity, related to vascular or neurologic injury or dysfunction.[3] Many of the diagnostic criteria for FCAD and FGAD remain the same as FSAD, including the presence of distress. One unique aspect of FCAD and FGAD is the manifestation of symptoms for 6 or more months parallel to other sexual dysfunctions in women.[2]

Female orgasmic disorder

Female orgasmic disorder is characterized by "a persistent or recurrent distressing compromise of orgasm frequency, intensity, timing, and/or pleasure associated with sexual activity for 6 months."[2] One key component of this diagnosis is the requirement for sufficient sexual excitement, which excludes women who report absent or muted orgasm with short or inefficient sexual activity that does not properly stimulate self-perceived erogenous areas. In this case, sexuality education or sex therapy may be warranted. Like FSAD, FOD is categorized as primary versus secondary and situational versus generalized.[2]

In 2016, ISSWSH proposed an additional diagnosis, pleasure dissociative orgasm disorder (PDOD), which involves absent or decreased pleasure associated with orgasm.[2] Patients with PDOD may achieve orgasm with ease, but their perception of pleasure is diminished compared to expectation or past experience with orgasm. It is possible for women to experience both FSAD and PDOD. For example, a woman may report delayed orgasm, even with extensive sex play, as well as decreased or absent pleasure when orgasm does occur.

Although 21% of US women report difficulty achieving orgasm, only about 5% meet the criteria of distress for the diagnosis of FOD.[6] Many more women report orgasmic difficulties that exist as a result of patient/partner inexperience, medication side effects, vulvar dermatoses, and neurologic disorders, among many other possible causes. No US Food and Drug Administration (FDA)–approved treatment options are available for women with arousal or orgasmic dysfunction. Nonpharmacologic and off-label options, however, may aid clinicians in managing these conditions.

Etiologies

Sexual response is multidimensional as it involves various excitatory and inhibitory factors. Excitatory factors include dopamine, oxytocin, melanocortin, and norepinephrine. Inhibitory factors include opioids, endocannabinoids, and serotonergic agents.[2,7] Possible biologic risk factors for decreased sexual response in women include: cardiovascular disease; hormonal suppression including lactation, menopause, and metabolic syndrome; neurologic disorders such as multiple sclerosis, Parkinson disease, spinal cord pathology, and traumatic brain injury; history of pelvic irradiation and pelvic surgery; vulvovaginal dermatologic conditions such as genitourinary syndrome of menopause and lichen sclerosus with scarring of periclitoral tissue; side effects from substances including serotonergic agents, lithium salts, opioids, cannabis, combined oral contraceptives, 5α-reductase inhibitors, muscle relaxers, oral contraceptives, and antihypertensives; and history of genital mutilation.[2,8] Psychosocial causes of sexual disorders in women include: relationship discord, fatigue, mood disorders, fear of pregnancy, obsessive self-observation, religious and cultural prohibitions, past experience with sexual pain, sexual abuse, and ineffective sexual communication or stimulation.[2]

Diagnosis

Validated questionnaires such as the Female Sexual Function Index (FSFI) and Female Sexual Distress Scale (FSDS) assist clinicians in diagnosing female sexual dysfunction.[9,10] More specifically, the FSFI identifies area(s) of concern within the six domains of desire, arousal, lubrication, orgasm, satisfaction, and sexual pain.[9] The FSDS determines presence of distress associated with sexual concerns.[10] In addition to biologic factors, it is important to address whether psychosocial factors such as relationship discord, mood disorders, and inexperience are related to current symptomatology.

The evaluation of arousal and orgasmic dysfunction should always include a complete vulvovaginal exam to assess vulvar architecture, genital sensation, pelvic muscle tone, urogenital tissue integrity, clitoral hood mobility, and vaginal pH. Patients may be completely unaware of the presence of vulvar skin disorders, dysesthesias, pelvic floor weakness and/or hypertonicity, urogenital atrophy, and clitoral phimosis. If spinal pathology is suspected, referral should be considered to a specialist to conduct neurogenital testing for lack of sensation in the genital organs, which could be the etiology of arousal or orgasm disorders. The aforementioned conditions often impact genital sensations and may result in arousal and orgasmic dysfunction.

Treatment

FSAD and FOD, like other sexual dysfunctions in women, should be assessed and managed in a biopsychosocial

manner. This involves both biologic and psychological treatment strategies, extending from the least invasive to the most invasive.

Psychosocial

Clinicians managing women with sexual dysfunction should consider collaboration with sex therapists, counselors, and/or educators. When referring patients for sex therapy, it is important to destigmatize the process and set expectations. Women unfamiliar with psychotherapy and sex therapy may have inaccurate preconceived notions about what happens during these sessions. Sex therapy is essentially talk therapy with a focus on sexual concerns using various psychotherapy techniques, including mindfulness, guided imagery, directed masturbation, cognitive restructuring, and sensate focus.

The mind is a powerful component of female sexual response. In women not on hormonal contraception, sexual thoughts increase serum testosterone levels.[11] Certified sex therapists, counselors, and educators are found through the American Association of Sexuality Educators, Counselors, and Therapists at **www.aasect.org**[A] and the Society for Sex Therapy and Research at **www.sstarnet.org**[B].

Hormonal

Testosterone plays a key role in human sexual response.[12,13] Women with higher serologic baseline levels of testosterone may experience increased sexual arousal during sexual activity compared to that experienced by women with lower serologic levels of testosterone.[11] Consideration of factors that suppress endogenous testosterone contributes to the identification of FSD causation. A long-held belief is that women who are on combined oral contraceptive (COC) pills with antiandrogenic progestins may have a higher potential for experiencing sexual adverse effects.[14,15] Changing to a COC with an androgenic progestin and/or 17β-estradiol or a newer COC agent may result in improved sexual response, although more research is needed to confirm this theory.[14,16,17]

Serum testosterone levels consistently decline throughout childbearing years.[18] In postmenopausal women, testosterone replacement that results in the approximation of normal premenopausal serologic testosterone levels is known to improve sexual desire, arousal, orgasm, and responsiveness.[19] Currently, however, there are no FDA-approved testosterone products for women. Instead, off-label use of commercially prepared testosterone products that are FDA approved for men are frequently used for women with FSD at a tenth of the amount prescribed for men. Evidence-based use of testosterone in postmenopausal women relates to the treatment of hypoactive sexual desire disorder (HSDD), but published efficacy of testosterone use in all FSD domains suggests possible benefit to women experiencing difficulties with arousal and orgasm.[19]

Transdermal testosterone preparations that are FDA-approved for men are preferred for use in women over oral, injectable, implantable pellet, or compounded formulations and at a much lower dose.[19] Baseline testosterone levels should be drawn (total testosterone, dihydrotestosterone, and sex hormone-binding globulin) and again 3 to 6 weeks after initiation of testosterone therapy.[19] Repeat levels should be drawn every 6 months once therapeutic levels are reached, and testosterone should be discontinued if bothersome side effects occur or if the patient does not perceive symptomatic benefit within 6 months.[19] Use of testosterone to reach supraphysiologic levels is not advised due to the increased potential for side effects, including acne and facial/body hair growth.[19] Data remain insufficient to support the use of exogenous testosterone in premenopausal women with FSD.[19]

Combination products for women containing testosterone are in development. Although indicated for HSDD, these products may offer secondary benefit to women with arousal and orgasmic dysfunction. Specifically, testosterone combined with a phosphodiesterase type 5 (PDE5) inhibitor may benefit women with poor sexual excitation, while testosterone combined with bupropion may reduce inhibitory responses that interfere with sexual excitation in the female brain.[20–27]

Intravaginal prasterone, a synthetic dehydroepiandrosterone product, is currently FDA approved for use in postmenopausal women with moderate-to-severe dyspareunia as a symptom of vulvovaginal atrophy related to menopause.[28] Clinical trials on intravaginal prasterone identified improvement in all domains of the FSFI, although subsequent trials confirmed improvement in desire, arousal, and orgasm based on improvement in pain.[29] Intravaginal prasterone may benefit women with arousal and/or orgasmic dysfunction secondary to dyspareunia, but further research is warranted.

Topical application of low-potency testosterone directly to the clitoris is commonly used in some women with arousal and orgasmic dysfunction, although evidence is lacking about safety. With topical clitoral application, patients should be counseled that overuse may lead to clitoromegaly.[30]

Central nervous system

Neurobiology is also a major component of human sexual response.[31] Excitatory neurotransmitters include

dopamine, norepinephrine, and melanocortins, and inhibitory neurotransmitters include serotonin and endocannabinoids.[31] Two CNS-acting agents are currently FDA approved for use in premenopausal women with HSDD, although clinical trials on flibanserin and bremelanotide demonstrated improvement in all domains of the FSFI.[32,33] Use of flibanserin (a mixed postsynaptic 5-HT1A agonist and 5-HT2A antagonist) and bremelanotide (a melanocortin receptor-4 agonist) are considered off label for FSAD and FOD in premenopausal and postmenopausal women. Both are valid for consideration, however, especially in women with concurrent HSDD.

In women with selective serotonin reuptake inhibitor (SSRI)-induced sexual dysfunction, off-label use of bupropion may be helpful to improve arousal and orgasm.[34] Bupropion is a norepinephrine–dopamine reuptake inhibitor with dopaminergic properties.[35] In addition, bupropion is an appropriate sole agent for treating depression in women with sexual dysfunction.[35] Women with a history of a seizure disorder should not take bupropion because this agent reduces the seizure threshold.[36] Of note, flibanserin is also appropriate for off-label use in patients with SSRI-induced sexual dysfunction. Clinical trials confirm efficacy in multiple domains of the FSFI and safety with concurrent use of antidepressants.[32,37]

Additional off-label and over-the-counter agents

PDE5 inhibitors are FDA approved for erectile dysfunction in men, but these may also provide benefit to women with arousal and orgasmic dysfunction, assuming that hormone levels are normal.[16,38,39] An over-the-counter (OTC) supplement containing L-arginine, L-citrulline, rose hips extract, and French maritime pine bark extract improves the desire, arousal, and orgasm domains of the FSFI in premenopausal, perimenopausal, and postmenopausal women with FSD.[40–42] Oxytocin, a nonapeptide with prosocial and prosexual properties, increases significantly in the bloodstream during sexual activity and with orgasm.[43,44] Topical, sublingual, and intranasal preparations of compounded oxytocin may increase the intensity of and satisfaction with the female orgasm, although current evidence does not support the use of oxytocin in clinical practice.[45,46]

Topical arousal agents

Often referred to as "scream cream" and "O cream," topical arousal products may enhance female sexual arousal and orgasm. Commonly used ingredients within these compounds include various formulations of alprostadil, sildenafil, aminophylline, arginine, nitroglycerine, phentolamine, fennel, and testosterone.[47–51] Regulation of the content and manufacturing of these products is limited. Products containing arginine should be avoided for use in patients with a history of genital herpes simplex virus due to the increased potential for outbreaks.

Limited data support use of the commercially available botanical product Zestra to enhance female sexual pleasure.[52,53] It contains menthol, which can result in an increased sensation for some but irritation for others. Interest in topical products containing tetrahydrocannabinol (THC) and/or cannabidiol (CBD) to enhance sexual pleasure is on the rise, in accordance with increasing usage of medicinal and recreational marijuana across the country. Data are limited on THC- and CBD-containing products for FSD, although preclinical studies in rats demonstrate potential for future use in sexual medicine.

Sexual aids and toys

Women have more erogenous zones than men.[54] Erogenous hot spots include the genitals, chest, buttocks, anus, mouth, behind the ear, back, thigh, and shin.[54] Use of assistive devices such as sexual aids, toys, and erotica offers unique methods for creative stimulation.[54] Before suggesting sexual devices and erotica as part of a treatment plan, however, it is important to assess patient comfort, familiarity, and experience with such interventions. Encouraging use of interventions that are outside patients' comfort zone may negatively impact the patient–clinician relationship and/or lead to patient distress and guilt. It is appropriate for the clinician to ask permission to discuss various therapies and to assess for patient receptivity to nonmedicinal interventions. When patients are open to learning about sexual aids, toys, and

Table 1. Examples of safe sexual device, erotica, and educational websites

Company	Website
Adam and Eve	www.adamevestores.com[C]
Amazon*	www.amazon.com[D]
Dame	www.dameproducts.com[E]
Good Vibes	www.goodvibes.com[F]
Lelo	www.lelo.com[G]
Pure Romance	www.pureromance.com[H]
Sex Smart Films	www.sexsmartfilms.com[I]
Sinclair Intimacy Institute	www.sinclairinstitute.com[J]

*Search history can be cleared and individual purchases can be archived so that other users of the account will not see search and purchase history.

Table 2. ICD-10 codes for female arousal and orgasmic dysfunction

ICD–10 code	Definition
F52.22	Female sexual arousal disorder
N89.8	Vaginal dryness
N95.1	Vaginal dryness, menopausal
F52.31	Female orgasmic disorder
E34.9	Low testosterone in female
N81.89	Pelvic muscle weakness

erotica, and the clinician is inexperienced, unfamiliar, or uncomfortable discussing such therapies, referral to a sexuality educator is appropriate. *Table 1* offers a list of safe websites for patients to explore and purchase various sexual devices and erotica, while also learning about various methods for enhancing sexual pleasure. These products are made from medical-grade silicone and are safe to use. Not all products are!

Providers should remember that OTC products and sexual aids will not treat the sexual dysfunction but can help the woman have a more satisfying sexual experience once psychological and biologic issues have been addressed.

Billing and coding

ICD-10 codes related to arousal and orgasmic dysfunction are provided in *Table 2*. ICD-10 codes reflect DSM-IV-TR verbiage that is similar to the biologic-based nomenclature developed by ISSWSH. ICD-11, launching in 2022, will contain an entire chapter dedicated to dysfunctions. As clinicians, it is important to remember that F codes refer to "mental, behavioral, and neurodevelopmental disorders" and are often not covered by insurance.[1] Use of N (diseases of the genitourinary system) and E (endocrine, nutritional, and metabolic diseases) codes may better suit clinicians when diagnosing and managing patients with symptoms related to arousal and orgasm.[1] Of note, this article includes commonly used sexual health diagnoses, but the ultimate responsibility for compliance with Medicare rules and regulations lies with the provider of services.

Conclusion

Human sexual response is complicated and elusive. As clinicians and researchers, we are only beginning to understand the neurobiology of sexual disorders in women. Distressing female arousal and orgasmic dysfunctions are prevalent in US women, yet we lack FDA-approved treatment options for clinician management of FSAD and FOD in the healthcare setting. Managing female sexual dysfunction requires the utilization of a holistic treatment approach including the consideration of off-label and nonpharmacologic therapies in collaboration with psychosocial interventions. ●

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Web Resources

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