

Comprehensive Assessment of Women's Sexual Arousal Requires Both Objective and Subjective Measurement



Cindy M. Meston, PhD, and Amelia M. Stanton, BA

INTRODUCTION

The principles of incentive motivation suggest that (i) sexual arousal emerges in response to a set of cues and (ii) each individual has a predisposition to sexual responsiveness that is influenced by biology and psychology.¹ Often, arousal concerns in women are driven by biopsychosocial etiologies (ie, by a combination of factors), but sometimes they stem primarily from either physiologic decrements or decreased mental engagement with a sexual stimulus. Treatment for arousal problems should focus on the most likely causal factor. To that end, a comprehensive assessment of sexual arousal concerns needs to address biological etiologies and psychological etiologies and therefore must include objective and subjective measurements of arousal.

This commentary briefly describes the 2 key components necessary for assessing sexual arousal concerns in women. Objective assessment of sexual arousal involves the measurement of genital responses (ie, vasocongestion, lubrication); subjective assessment entails the use of self-report instruments and other tools that allow women to report their level of mental arousal during sexual activity. We address the relative strengths and weakness of these 2 components.

Our discussion of arousal assessment is framed by shifting nomenclature. In the *Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision* (DSM-IV-TR),² female sexual arousal disorder was defined exclusively by a lack of genital response during sexual activity. The transition to the 5th edition of the DSM³ led to the creation of female sexual interest/arousal disorder, a combination of female sexual arousal disorder and hypoactive sexual desire disorder, which were distinct disorders in the DSM-IV-TR. Many researchers, clinicians, and scholarly societies (including the International Society for the Study of Women's Sexual Health [ISSWSH] and the International Consultation on Sexual Medicine [ICSM]) have advocated for the return of separate diagnostic categories for sexual arousal and desire concerns.^{4–6} Furthermore, some have suggested that female sexual arousal disorder should include a subjective arousal subtype.⁷ Unlike the diagnostic categories established by the DSM, the nomenclature espoused by the ISSWSH and ICSM

was intended for use in biological and psychological therapeutic areas. If these suggestions are adopted, then it will be even more critical to assess objective and subjective indices of arousal before diagnosing an arousal disorder.

OBJECTIVE ASSESSMENT

Objective measurements of sexual arousal in women assess physiologic genital changes from a non-aroused, baseline state to an aroused state. The most common laboratory measurement tool is vaginal photoplethysmography. In research paradigms that use vaginal photoplethysmography, women insert the photoplethysmograph before watching a short neutral film followed by an erotic film. The photoplethysmograph produces 2 signals: vaginal blood volume and vaginal pulse amplitude (VPA). Considered the more sensitive of the 2 indices, VPA reflects short-term changes in the engorgement of the vaginal tissue; it has been shown to be an indicator of physiologic genital arousal.⁸ That is, across studies, VPA during the erotic film is consistently higher than VPA during the neutral film. Other methods of objective assessment include thermography, which tracks changes in genital temperature during arousal and orgasm,⁹ and duplex Doppler ultrasound, which converts Doppler sounds into information about the velocity and direction of blood flow.¹⁰ Normative data have not been established for VPA or for Doppler ultrasound. However, vaginal photoplethysmography reliably differentiates blood flow during an aroused state from baseline blood flow,⁸ whereas Doppler ultrasound does not.¹¹

If blood flow to the genitals does not increase during an erotic stimulus, then underlying neurologic, hormonal, or vascular abnormalities could be driving the arousal concern.¹² This is the 1st key role of objective assessment. Tools such as the vaginal photoplethysmograph can point to a clear biological disruption or to a true genital arousal disorder. For example, critical nerves might have been severed¹³ or decreased levels of estrogen might have inhibited blood flow and therefore potentially compromised the process that leads to the moistening and thickening of the vaginal epithelium.¹⁴ During the transition to menopause, vulvovaginal atrophy and vaginal dryness can affect the genital sexual response¹⁵; antidepressant medications also are associated with disruption in genital arousal.¹⁶ When lack of blood flow to the genitals is the primary symptom of the arousal problem, treatment should target an increase in genital vasocongestion.

The 2nd key role of objective assessment is the evaluation of treatment gains. Objective techniques can effectively assess

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Department of Psychology, The University of Texas at Austin, Austin, TX, USA

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pharmacologic agents that target genital congestion, such as phosphodiesterase type 5 inhibitors. When difficulties with genital sensations dominate the clinical picture, increases in genital blood flow over time can demonstrate the efficacy of drug and other treatment interventions. In laboratory environments, women who report symptoms of low or absent genital arousal can be assessed at multiple time points during treatment to determine whether that intervention is contributing to increased vasocongestion.

These objective assessments have 2 notable limitations. (i) Tools to measure genital blood flow are typically used only in a contrived laboratory environment, during a sexual film rather than during sexual activity with a partner. This means that objective assessment might not be so objective. Some data suggest that genital vasocongestion (assessed by VPA) is greater at home than in the laboratory among sexually healthy women, but this might not be the case for women with sexual dysfunction; no differences were observed between laboratory and home measurements among women with hypoactive sexual desire disorder.¹⁷ (ii) The utility of VPA as a diagnostic assessment tool has not been established. There is no documented VPA clinical cutoff value that consistently differentiates women with an arousal disorder from women without arousal problems. Several studies have examined differences in VPA between clinical populations of women with and without arousal dysfunction and, with few exceptions, there are no substantial differences. However, most of these studies did not specifically identify or differentiate women with exclusively genital concerns. One study did categorize women with sexual arousal disorder into 3 distinct groups (genital arousal disorder, subjective sexual arousal disorder, and combined genital and subjective arousal disorder) and compared these groups against sexually healthy women and women with orgasm disorder.¹⁸ Results indicated that women with genital-specific arousal dysfunction had the lowest VPA, whereas women with combined genital and subjective arousal disorder had the highest VPA. For the most part, we cannot draw diagnostic conclusions from VPA data alone, and not enough data are available to know whether this also holds true for thermography and vaginal ultrasound.

SUBJECTIVE ASSESSMENT

Subjective arousal was recently defined as a positive mental engagement in response to a sexual stimulus, which might or might not be accompanied by perceived genital changes or sensations.⁷ Some studies indicate low correlations between genital and subjective responses, which suggests that the pattern of response between a women's genitals and her psychological state might be discordant.¹⁹ Although some disregard VPA and other objective genital measures because of these low correlations, we believe that objective and subjective assessments of sexual arousal act as complements throughout the diagnostic process.

In the laboratory, subjective arousal is typically assessed with a self-report questionnaire that asks participants to rate their degree of "mental sexual arousal" before and after a sexual stimulus.²⁰ Because women vary considerably in what specific sexual activities they find arousing, this type of retrospective measurement might not accurately capture subjective arousal throughout the several minutes of an erotic film. To address this concern, some researchers have developed devices to measure sexual arousal continuously during the erotic stimulus.²¹ Indeed, studies that have used continuous measurement devices have shown variability in women's subjective arousal throughout the film presentations²² and have noted higher correlations between subjective and objective measurements of arousal.²¹ Ultimately, however, discrete and continuous measurements of subjective arousal reliably differentiate between women with and without sexual arousal concerns.¹⁸

In the clinic, subjective arousal can be assessed informally through specific questions that can be added to a clinical interview or through the arousal subscale of the Female Sexual Function Index (FSFI).²³ Some questions to add to a clinical interview can include: Do you feel mentally engaged during sexual activity? How mentally "turned on" do you feel when you masturbate or have sex with a partner? The FSFI also can be useful in gauging subjective arousal outside the laboratory. The measure includes 2 subscales, with 4 items each, that assess arousal: the lubrication scale (eg, "Over the past 4 weeks, how often did you become lubricated ["wet"] during sexual activity?") and the arousal scale (eg, "Over the past 4 weeks, how often did you feel sexually aroused ["turned on"] during sexual activity or intercourse?"). The items on the lubrication scale pertain to physiologic arousal. Although the arousal scale items do not specifically inquire about positive mental engagement, clinicians might consider using the scale for a basic assessment of subjective arousal.

CONCLUSION

We advocate for the continued use of objective measures of genital arousal, although these measures are not diagnostic, because they offer insights into underlying physiologic etiologies and treatment-related changes. We also consider positive mental engagement in response to a sexual stimulus to be an important component of sexual arousal in women and, as such, it should be assessed. The absence of these feelings can indeed contribute to sexual arousal dysfunction. If objective and subjective assessments are not conducted, women with primarily subjective complaints might receive treatments that aim to increase vasocongestion, which likely will not lead to substantive improvements. Likewise, women whose primary complaint is a lack of genital response might not be directed toward interventions that address the underlying causes of decreased vasocongestion and lubrication. For a comprehensive assessment of arousal concerns in women, objective assessment of genital arousal and subjective

assessment of mental engagement during sexual activity should occur in tandem.

Corresponding Author: Cindy M. Meston, Department of Psychology, The University of Texas at Austin, 108 E Dean Keeton, Stop A8000, Austin, TX, 78712, USA. Tel: 512-232-4644; E-mail: mestoncm@gmail.com

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STATEMENT OF AUTHORSHIP

Category 1

(a) Conception and Design

Cindy M. Meston

(b) Acquisition of Data

Cindy M. Meston; Amelia M. Stanton

(c) Analysis and Interpretation of Data

Cindy M. Meston; Amelia M. Stanton

Category 2

(a) Drafting the Article

Cindy M. Meston; Amelia M. Stanton

(b) Revising It for Intellectual Content

Cindy M. Meston; Amelia M. Stanton

Category 3

(a) Final Approval of the Completed Article

Cindy M. Meston; Amelia M. Stanton

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