Psychological and Interpersonal Dimensions of Sexual Function and Dysfunction

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Psychological and Interpersonal Dimensions of Sexual Function and Dysfunction

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ABSTRACT

Introduction: Psychological, interpersonal, and sociocultural factors play a significant role in making one vulnerable to developing a sexual concern, in triggering the onset of a sexual difficulty, and in maintaining sexual dysfunction in the long term.

Aim: To focus on psychological and interpersonal aspects of sexual functioning in women and men after a critical review of the literature from 2010 to the present.

Methods: This report is part 1 of 2 of our collaborative work during the 2015 International Consultation on Sexual Medicine for Committee 2.

Main Outcome Measures: Systematic review of the literature with a focus on publications since 2010.

Results: Our work as sexual medicine clinicians is essentially transdisciplinary, which involves not only the collaboration of multidisciplinary professionals but also the integration and application of new knowledge and evaluation and subsequent revision of our practices to ensure the highest level of care provided. There is scant literature on gender non-conforming children and adolescents to clarify specific developmental factors that shape the development of gender identity, orientation, and sexuality. Conversely, studies consistently have demonstrated the interdependence of sexual function between partners, with dysfunction in one partner often contributing to problems in sexual functioning and/or sexual satisfaction for the other. We recommend that clinicians explore attachment styles of patients, childhood experiences (including sexual abuse), onset of sexual activity, personality, cognitive schemas, infertility concerns, and sexual expectations. Assessment of depression, anxiety, stress, substance use and post-traumatic stress (and their medical treatments) should be carried out as part of the initial evaluation. Clinicians should attempt to ascertain whether the anxiety and/or depression is a consequence or a cause of the sexual complaint, and treatment should be administered accordingly. Cognitive distraction is a significant contributor to sexual response problems in men and women and is observed more consistently for genital arousal than for subjective arousal. Assessment of physical and mental illnesses that commonly occur in later life should be included as part of the initial evaluation in middle-aged and older persons presenting with sexual complaints. Menopausal status has an independent effect on reported changes in sex life and difficulties with intercourse. There is strong support for the use of psychological treatment for sexual desire and orgasm difficulties in women (but not in men). Combination therapies should be provided to men, whenever possible.

Conclusion: Overall, research strongly supports the routine clinical investigation of psychological factors, partner-related factors, context, and life stressors. A biopsychosocial model to understand how these factors predispose to sexual dysfunction is recommended.

Key Words: Psychological; Interpersonal; Treatment Outcome; Partner Factors; Contextual Factors

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RECOMMENDATIONS

Constitutional and Developmental Factors

Constitutional Factors

Adopt a biopsychosocial model in assessment (recommendation = grade C).

Provide early assessment of patients with hypospadias (recommendation = grade B).

Provide ongoing assessment of all patients with constitutional contributors (recommendation = grade C).

Provide psychological support as an integral part of management (of sexual health and quality of life) in patients with constitutional contributors (recommendation = grade C).

Developmental Factors

Conduct research with and for gender non-conforming children and adolescents to clarify specific developmental factors that organize youth's gender identity, orientation, and sexuality (recommendation = research principle).

Explore attachment styles of patients presenting with sexual difficulties (recommendation = grade C).

Evaluate sexual anxiety and fear of intimacy associated with childhood experiences (recommendation = grade C).

Assess relevant childhood experiences that might be linked to risk or resiliency (recommendation = grade C).

Differentiate between event-based trauma and process-based trauma (recommendation = grade C).

Assess childhood sexual history including abuse (recommendation = grade B).

Assess multiple aspects of sexual functioning, such as sexual self-esteem and sexual satisfaction (recommendation = grade C).

Take a developmental approach to assessing onset of sexual activity and assess non-partnered and partnered experiences, the context of those experiences, and associated beliefs and emotions and attempt to explore their possible role in current sexual function and behavior (recommendation = grade C).

Conduct scientific work on resilience to fully understand the psychopathology of sexual dysfunction and to develop interventions that decrease risk factors and in turn bolster resilience (recommendation = research principle).

Systematically evaluate developmental and constitutional factors that could have negatively affected sexual function in patients complaining of sexual dysfunction (recommendation = grade C).

Individual Trait Factors

General Trait Factors

Clinicians should be aware of the role of personality factors during the assessment and treatment of sexual disorders (recommendation = grade B).

Address cognitive schemas during clinical assessment and use cognitive restructuring techniques aimed at changing cognitive schemas (recommendation = grade A).

Specific (Sexual) Trait Factors

Assess sexual excitation and sexual inhibition during clinical assessment of sexual dysfunctions (recommendation = grade C).

Address sexual beliefs during assessment and treatment of sexual dysfunctions (recommendation = grade B).

Life-Stage Factors

Infertility and Postpartum Period

Assess sexual function and satisfaction during all phases of infertility diagnosis when possible (recommendation = grade C).

Assess sexual function and satisfaction during the postpartum period when possible (recommendation = grade B).

Aging

Sexual health issues should be discussed with older patients (recommendation = grade A).

Assessment of physical and mental illnesses that commonly occur in later life should be included as part of the initial evaluation in middle-aged and older persons presenting with sexual complaints (recommendation = grade A).

Assess adverse life events in older patients presenting with sexual dysfunctions, including evaluation of resulting anxiety and depressive symptoms (recommendation = grade A).

Clinicians should be aware of the relation between symptoms of aging and psychological health in older men and request further investigation when needed (recommendation = grade A).

Menopause

Initiate routine clinical investigation of psychological factors and life stressors of menopausal women (recommendation = grade A).

Address contextual factors that can precipitate and maintain sexual difficulties, including relationship quality, sexual experience, previous sexual function, and mental and physical health of menopausal women (recommendation = grade A).

Consider the potential role of partners in the etiology and maintenance of female sexual dysfunction (recommendation = grade B).

Psychological Processing Factors

Causal Attribution to Negative Sexual Events

Research supports the role of attributional style in the etiology of sexual dysfunction. Clinicians should address patients' causal attributions to sexual problems (recommendation = grade B).

Efficacy Expectations

Assess the presence and potential role of negative and positive efficacy expectations regarding sexual performance (recommendation = grade A).

Cognitive Distraction and Attentional Focus

Evaluate the role of cognitive distraction on sexual dysfunction during assessment and use treatment strategies aimed at decreasing cognitive distraction (recommendation = grade A).

Assess systematically the content of thoughts patients report during sexual activity (recommendation = grade A).

Anxiety and Low Mood

Assess for the presence and role of state anxiety during sexual activity (recommendation = grade B).

Research suggests that low mood is strongly associated with sexual response and sexual functioning in men and women. Clinicians should address patients' mood states related to sexual activity (recommendation = grade B).

Comorbid Mental Health Issues

Stress

Assess for the presence of stress, including daily hassles and critical life events, when assessing patients' sexual function and satisfaction and quality of marital relationship (recommendation = grade A).

Depression

In the context of depression, sexual symptoms, satisfaction, and distress should be assessed; similarly, in the presence of sexual difficulties, depressed mood should be assessed (recommendation = grade A).

Anxiety Disorders

Assessment of anxiety disorders should be carried out as part of the initial evaluation in individuals presenting with sexual complaints (recommendation = grade A).

The role of antidepressants and antianxiety medications as contributory factors to sexual dysfunction should be evaluated (recommendation = grade C).

Post-Traumatic Stress Disorder

Assess for the presence of post-traumatic stress disorder (PTSD) symptoms when evaluating sexual function in men and women. Treatment recommendations for men and women who experience a traumatic event should include screening for sexual dysfunction (recommendation = grade A).

Substance Use Disorder and Medication

Assess for the use and abuse of alcohol, nicotine, and other drugs in patients presenting with sexual concerns (recommendation = grade B).

Interpersonal and Relationship Factors

Relationship Factors

Studies consistently demonstrate the interdependence of sexual function between partners. Clinicians should take a bio-psychosocial approach to the assessment and treatment of sexual dysfunctions and include evaluation of the partners when possible (recommendation = grade B).

When one partner has an illness that affects sexual functioning, the two partners should be involved in assessment and treatment (recommendation = grade B).

Dyadic factors and relationship quality should be addressed in sex therapy (recommendation = grade B).

For people in a romantic relationship, the partner should be included in the treatment of any sexual dysfunction (recommendation = grade B).

Psychological Treatment Outcome

Methodologic Issues

Some newer approaches (eg, Internet-based therapies) require careful consideration of the choice of treatment outcome assessments (recommendation = expert opinion).

There is a need to develop psychometrically valid sexual function assessments for gay, lesbian, bisexual, transgender, and queer individuals (recommendation = research principle).

More research is needed to identify prognostic indicators of treatment success (eg, individual and interpersonal factors; recommendation = grade B).

Sexual Desire Problems in Women

Clinicians should use cognitive-behavioral therapy (CBT) in the treatment of women with low sexual desire (recommendation = grade A).

Clinicians should consider mindfulness-based therapy for women with low sexual desire (recommendation = grade B).

Whenever possible, clinicians should use couple- or group-based therapy (recommendation = grade A).

Female Orgasmic Disorder

Clinicians should use CBT for women with anorgasmia (recommendation = grade A).

Although the coital alignment technique is often used for women who wish to become orgasmic during vaginal penetration with intercourse, only one study has evaluated the effectiveness of this method (recommendation = expert opinion).

Erectile Dysfunction

Group or couple therapy, whenever possible, should be used over individual therapy for men with erectile dysfunction (ED; recommendation = grade A).

Clinicians should use CBT for men with ED (recommendation = grade A).

Based on findings of better efficacy with combined psychological interventions and medical treatment over medical treatment alone, we recommend clinicians use psychological interventions to supplement medical treatment (recommendation = grade A).

Premature Ejaculation

Clinicians should consider psychological or behavioral interventions in the treatment of men with premature ejaculation (PE) and/or use psychological or behavioral interventions to supplement medical treatment of PE (recommendation = expert opinion).

Delayed Ejaculation

Clinicians should consider psychological or behavioral interventions in the treatment of men with delayed ejaculation (DE) and/or use psychological or behavioral interventions to supplement medical treatment of DE (recommendation = expert opinion).

Hypoactive Sexual Desire Disorder in Men

Clinicians should consider psychological or behavioral interventions in the treatment of men with hypoactive sexual desire disorder (HSDD; as defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* [*DSM-IV*]) and/or use psychological or behavioral interventions to supplement medical treatment of HSDD (recommendation = expert opinion).

Integrated Treatments

We recommend that health care providers approach the management of sexual dysfunction with combination or integrated treatments whenever possible (recommendation = grade A).

INTRODUCTION

This article focuses on psychological and interpersonal aspects of sexual functioning in women and men. The focus is on the empirical literature that has been published since the 2009 International Consultation on Sexual Medicine.[1] Even in the advent of significant advances in neurobiological factors contributing to sexual function and dysfunction, psychological, interpersonal, and sociocultural factors play a significant role in making one vulnerable to developing a sexual concern (eg, lack of accurate sexual knowledge), in triggering the onset of a sexual difficulty (eg, a period of stress), and in maintaining sexual dysfunction in the long term (eg, ongoing concerns about partner evaluation and associated anxiety). Importantly, however, absence of sexual dysfunction does not necessarily guarantee that one is sexually satisfied, and presence of sexual concerns does not imply sexual dissatisfaction. Thus, it is important to bear in mind that although the focus of this article is on sexual function and dysfunction, the clinician should be mindful of inquiring about the individual's level of experienced sexual satisfaction or dissatisfaction and explore how these might or might not be related to sexual symptoms.

This chapter is focused on the recent (6-year) literature on the etiology and psychological treatments for sexual difficulties in women and men. The section on etiology summarizes the recent literature on individual factors (including constitutional and developmental factors, trait factors, life-stage stressors, processing factors, and contextual factors) and interpersonal and relational factors. A companion article focuses on sociocultural and ethical factors. Our review of the psychological treatment outcome literature covers methodologic limitations inherent to this literature and then provides a review of recent outcome research testing psychological treatments for sexual difficulties in women and men. This article also reviews recent advances, such as integrating psychological and medical approaches, and novel methods of delivering treatment, such as online and Internet therapies.

Our work as sexual medicine clinicians is essentially transdisciplinary, which involves not only the collaboration of multidisciplinary professionals but also the integration and application of new knowledge and collaborative evaluation and subsequent revision of our practices to ensure the highest level of care provided.

ETIOLOGY

Individual Factors

Constitutional Factors

Constitutional factors are innate biological risk factors that contribute to the development of sexual dysfunction. Recommendations based on our review appear at the start of this article, and a more exhaustive review of the literature on constitutional factors is presented in Table 1.

Adults with disorders of sex development have more sexual and relationship difficulties than adults without disorders of sex development,[2] although the level of impact depends on the type of medical and surgical procedures performed during childhood.[3–5]

There is a high incidence of erectile and ejaculatory difficulties in men with hypospadias[6] and impaired erectile function in men with congenital penile deviation.[7,8] Other congenital disorders (eg, spina bifida[9] and Turner syndrome[10,11]) also can impair adult sexual function and satisfaction.

The adoption of a biopsychosocial model to understand how constitutional factors and disorders of sex development predispose to sexual dysfunction is recommended (recommendation = grade C). Early assessment of patients with hypospadias (recommendation = grade B) and ongoing assessment of all patients with constitutional contributors (recommendation = grade C) are essential for long-term follow-up and psychosexual counseling. Psychological support should be an integral part of management (recommendation = grade C).

Developmental Factors

Recommendations based on our review of developmental factors appear at the start of this article and a more exhaustive review of the literature on developmental factors is presented in Table 1. Here we cover gender identity development, attachment, non-sexual and sexual abuse, puberty/adolescence, and vulnerability and risk factors.

1. Gender Identity Development. Gender conformity is an early developmental predictor for adolescent heterosexuality.[1,12] Gender non-conforming boys are more likely to later identify as gay than gender non-conforming girls.[1,13] Sexual-questioning children have a lower self-concept and fewer same-sex–typed attributes than children who are more at ease with their heterosexuality.[14] However, longitudinal studies have shown that not all childhood gender dysphoria is associated with a transgender outcome.[15]

Further research needs to be conducted with gender non-conforming children and adolescents to clarify specific developmental factors that shape the development of gender identity, orientation, and sexuality (recommendation = research principle).

2. Problematic Attachment and Experience With Parents or Parental Surrogates. Problematic attachment has been cited as a contributing factor in adolescent sexual offending behavior,[16,17] gender identity development,[18,19] sexually compulsive behaviors,[20] and child sexual abuse.[21] It is recommended that clinicians explore attachment styles of patients presenting with sexual disorders (recommendation = grade C) and assess relevant childhood experiences that might be linked to risk or resiliency (recommendation = grade C).

3. Exposure to Childhood Non-Sexual Abuse and Neglect. Studies have found an association between childhood abuse or neglect and later female sexual dysfunctions, in particular low desire and sexual aversion,[22,23] although no relation between physical abuse in childhood and subsequent vaginismus[24] or dyspareunia[25] has been found.

Table 1. Summary of Studies (since 2010) About the Impact of Constitutional and Developmental Factors on Sexual Function in Men and Women

Study	n	Methodology	Results	LE
Constitutional factors				
Jürgensen et al,[2] 2013	66 adolescents, 110 adults	For examination of psychosexual development of 66 adolescents and 110 adults with DSD, the investigators used the Utrecht Gender Dysphoria Scale for adolescents, the Questionnaire of Gender Identity for adults, and a condition-specific DSD study questionnaire. Individuals were analyzed in 4 subgroups reflecting karyotype, absence or presence of androgen effects, and gender of rearing.	Partnership and sexuality were identified as difficult areas of life in individuals with DSD. Adolescents and adults with DSD reported fewer experiences regarding love or sexual relationships compared with unaffected individuals.	3
Kiss et al,[346] 2011	104	Cross-sectional study of 104 men (24–42 y old) who underwent uncomplicated 2-stage hypospadias repair in their childhood and 63 age-matched healthy men without genital malformations and completed a 15-item questionnaire regarding psychosexual well-being and penile appearance.	Subjects with hypospadias repair were less satisfied with their genital appearance; however, they were more satisfied with their sex lives compared with healthy controls. Results showed a significant difference between the 2 groups in almost all psychological outcome measurements.	2
Callens et al,[347] 2013	—	Literature review. PubMed search for relevant publications (1955–2012) on the role of hormonal and surgical treatment in sexual QoL in adult men with micro-penis.	It was difficult to draw firm conclusions that fit all patients in this disparate population. The literature review supports the conclusions that (i) male gender assignment is preferable for most 46,XY infants with congenital micro-penis because of the likelihood of male gender development and genital and sexual function; (ii) small penis persisting into adulthood and dissatisfaction with genital appearance jeopardize sexual QoL; (iii) there is no known intervention, apart from phalloplasty, to guarantee that the penis will become normal in size; (iv) early data suggest that the phalloplasty technique is considered the gold standard for gender reassignment in the transgender population and can be transferred to 46,XY patients with micro-penis.	4
Schönbucher et al,[348] 2012	46	47 persons with 46,XY DSD (17–60 y old) were examined by questionnaire on various aspects of sexual QoL. Scores were compared with those of a non-clinical convenience sample consisting of 145 women. Data were analyzed separately for diagnostic subgroups. Furthermore, persons whose external genitalia had been surgically corrected were compared with persons whose genitalia had been left unaltered.	Compared with the nonclinical group, persons with 46,XY DSD more often had no partner, felt more insecure in social and sexual situations, had more sexual problems, and were less satisfied with overall sex life and sexual function. Participants who underwent genital surgery showed less dyspareunia but more fear of injuries during intercourse than those whose genitals were left unaltered.	2

(continued)

Table 1. Continued

Study	n	Methodology	Results	LE
Tal et al,[8] 2010	32	Prospective, longitudinal, uncontrolled study of 32 men undergoing penile reconstructive surgery for CPD. Assessment of change in sexual relationship, confidence, self-esteem, and sexual function scores.	Penile reconstructive surgery for CPD was associated with significant improvements in overall relationship, sexual relationship, confidence, libido, and satisfaction, as reflected by higher scores in 3 of the 4 domains of the SEAR questionnaire and improvements in 2 of the 4 domains of the IIEF.	
Gender identity development				
Pauletti et al,[349] 2014	195	Data were gathered from 195 boys and girls (mean age = 10.1 y) in the fall and spring of a school year. Children self-reported multiple dimensions of gender identity (intergroup bias, pressure for gender differentiation, gender typicality, gender contentedness); peers assessed each other's social behavior (gender nonconformity, aggression toward each classmate). Using multilevel modeling, the study examined how children's attacks on gender—non-conforming peers (vs their attacks on other peers) changed over the school year depending on their gender identity.	There was modest support for the hypothesis that overconfident, arrogant gender identity promotes abuse of gender-atypical peers but considerable support for the hypothesis that insecure, self-questioning gender identity fosters this tendency.	3
Problematic attachment and experience with parents or parental surrogates				
Rajkumar et al,[350] 2015	46	Case records of 46 men who presented to a clinic for psychosexual disorders in 2012—2013 and were diagnosed with psychogenic ED using a semi-structured interview schedule were reviewed.	Disrupted childhood attachment was common in the sample of men with ED and was associated with significant differences in their clinical profile, particularly an earlier onset, a lower likelihood of being married, and higher rates of performance anxiety.	3
Exposure to childhood non-sexual abuse and neglect				
Leclerc et al,[25] 2010	151	151 women underwent a standardized gynecologic examination and a structured interview to confirm the diagnosis of dyspareunia. They also completed self-report questionnaires investigating past sexual and physical abuse, in addition to current pain, psychosocial adjustment, and sexual functioning.	Results showed that a history of sexual abuse involving penetration was associated with poorer psychological adjustment and sexual functioning. Also, findings showed that women who perceived a link between their dyspareunia and their past sexual abuse reported worse sexual functioning than those who did not. The experience of sexual abuse was not associated with pain intensity and physical abuse was not associated with any of the outcome measurements.	3

(continued)

Table 1. Continued

Study	n	Methodology	Results	LE
Puberty, adolescence, and early sexual experiences				
Heywood et al,[43] 2014	—	Literature review identified and synthesized published literature on the association between early first SI and later sexual and reproductive outcomes. Literature searches were conducted in Medline, Embase, PsycINFO, and Current Contents. In all, 65 citations met the selection criteria (industrialized, population-based studies).	The most common sexual behavior investigated was sexual partners. Studies consistently associated early first intercourse with more recent, lifetime, and concurrent sexual partners. Early initiators also were more likely to participate in a wider range of sexual practices and report increased sexual satisfaction (among men).	4
Reissing et al,[351] 2012	475	Retrospective study examined contextual factors of first intercourse, affective salience of the experience, possible effects on sexual attitudes and beliefs, and subsequent sexual development and adjustment in a sample of 475 young adults.	Young men and women experienced intercourse for the first time at approximately 17 y old, were in a committed relationship, and reported positive affective responses. Affective reactions to the first sexual experience of intercourse, sexual self-efficacy, sexual aversion, and age at first intercourse affected individuals' current sexual adjustment; however, only sexual self-efficacy mediated between first intercourse and current sexual adjustment in young men and women. Older age at first intercourse was associated with less sexual self-efficacy and lower current sexual adjustment for women.	3
Bauman et al,[352] 2011	4388	Data were drawn from the 2002 Swiss Multicenter Adolescent Survey on Health database, a nationally representative cross-sectional survey including 7,429 adolescents in post-mandatory school-age years (16–20). Only adolescents reporting SI were included (n = 4,388; 45% women) and categorized by age of onset of SI (early initiators, <16 y old, n = 1,469, 44% girls; late initiators, ≥16 y old, n = 2,919, 46% women). Analyses were done separately by gender. Groups were compared for personal characteristics at the bivariate level.	After adjusting for YSSI instead of age, negative sexual outcomes in early initiators were no longer significant, except for multiple sexual partners in women, although at a much lower level. Early initiators were less likely to report condom non-use at last SI when adjusting for YSSI.	3
Rapsey,[47] 2014	388	Data from 388 questionnaires were gathered from students 17–21 y old living in accommodation halls and by postal invitation to adults 25–35 y old.		

CPD = congenital penile deviation; DSD = disorders of sex development; ED = erectile dysfunction; IIEF = Internation Index of Erectile Function; LE = level of evidence; QoL = quality of life; SEAR = self-esteem and relationship questionnaire; SI = sexual intercourse; YSSI = years since onset of sexual intercourse.

A study on men who have sex with men has reported an association between physical and sexual childhood abuse and an augmented risk of ED and sexual problems caused by a medical condition.[26]

It is recommended that clinicians assess childhood experiences in patients presenting with sexual dysfunctions, including evaluation of resulting sexual anxiety and fear of intimacy (recommendation = grade C), and differentiate between event-based trauma and process-based trauma (recommendation = grade C).

4. Experience of Childhood Sexual Abuse. Women with a history of childhood sexual abuse (CSA) are more likely to engage in risky sexual behaviors, to have sexual problems, and to experience sexual re-victimization in adulthood.[27–30] Experience of CSA involving attempted or completed penetrative sex has been associated with worse sexual outcomes than CSA involving sexual touching only.[28]

Men with a history of CSA, particularly those who experienced penetrative CSA, also are more likely to experience sexual problems and engage in risky sexual behavior.[27,29,31–34]

Berthelot et al[35] reported that more than half the women and more than a third the men attending clinics with sexual problems had experienced CSA. However, not all individuals who experienced CSA have poorer sexual functioning in adulthood; characteristics of the abuse and family dynamics influence the extent to which CSA affects later sexual functioning.[28,29,36,37]

It is recommended that clinicians assess childhood sexual history, including whether clients have experienced CSA and, if so, its characteristics (eg, frequency and duration) and whether the perpetrator was known or unknown (recommendation = grade B). Clinicians should assess multiple aspects of sexual functioning, including, but not limited to, subjective aspects such as sexual self-esteem and sexual satisfaction (recommendation = grade C).

5. Puberty, Adolescence, and Early Sexual Experiences. Boys with an earlier onset of puberty tend to have higher sexual desire and more frequent sexual activity as adults.[38] In girls, puberty seems to have less impact on sexual interest and response.[38,39]

A consistent finding is that boys start masturbating earlier and masturbate more frequently than girls.[14,40,41] Among women, masturbation in childhood and adolescence has been associated with more satisfying sexual experiences, better body image, and more positive sexual self-esteem.[41] Girls with negative or indifferent views about masturbation are more likely to report negative experiences of their first sexual experience.[42]

Early sexual debut is associated with more recent, lifetime, and concurrent sexual partners in men and women.[43] Among men and women, early initiators report higher sexual satisfaction than later initiators.[44,45] Independently of gender, negative first experiences and less stable relationships at the onset of sexual activity contribute more to later sexual difficulties than the age of initiation.[46,47]

Our recommendation is that clinicians take a developmental approach to assessing onset of sexual activity and assess nonpartnered and partnered experiences, the context of those experiences, and any associated beliefs and emotions and attempt to explore their possible role in the individual's current sexual function and behavior (recommendation = grade C).

6. Vulnerability and Risk Factors. Vulnerability can be defined as the increased likelihood of developing a particular disorder among individuals possessing certain susceptibilities or exposed to certain environmental factors, whereas resilience decreases this likelihood. We have very little understanding of these vulnerability and protective mechanisms in relation to sexual functioning.

More research on resilience is needed to develop interventions that decrease risk factors and in turn bolster resilience (recommendation = research principle). In patients with sexual dysfunction, a systematic evaluation of developmental and constitutional factors that could have negatively affected sexual function is recommended (recommendation = grade C).

TRAIT FACTORS

General Trait Factors

Personality and Other General Traits

Neuroticism has been related to sexual performance anxiety and ED in men[48,49] and to global sexual functioning,[50] sexual arousal,[51] and orgasmic difficulties[51,52] in women. In a sample of gay, lesbian, bisexual, and transgender men and women, those with sexual problems scored higher on neuroticism compared with healthy controls.[53]

Extraversion is associated with higher levels of sexual functioning and sexual satisfaction in men and women.[49,50,52,54,55] Women with sexual dysfunction also have lower levels of positive trait affect compared with healthy controls.[56]

These findings suggest that neuroticism, introversion, and low positive trait affect could play a role in predisposing men and women to develop sexual dysfunction. We recommend that clinicians explore the role of personality factors during the assessment and treatment of sexual disorders (recommendation = grade B).

Cognitive Schemas

Cognitive schemas are ideas about the self, others, and the future that are responsible for the meaning individuals assign to their current or past experiences.[57] Individuals with sexual dysfunction activate significantly more negative cognitive schemas in response to adverse sexual episodes.[58–61]

Experimental studies in women have associated induced positive schemas with higher subjective and genital sexual arousal and positive affect compared with induced negative schema.[62,63]

Women with negative sexual self-schemas report lower interest in sexual activity, fewer sexual thoughts, and lower sexual arousal than women with more positive sexual self-schema.[64] Men with negative sexual schemas tend to report low arousability levels.[65] In addition, sexual self-schemas predict sexual functioning[66] and satisfaction in women.[66,67]

Studies have shown a clear role of cognitive schemas in predicting sexual dysfunction. It is recommended that clinicians address cognitive schemas during clinical assessment and, when relevant, use cognitive restructuring techniques aimed at changing cognitive schemas (recommendation = grade A).

Specific (Sexual) Trait Factors

Sexual Inhibition/Excitation

The dual control model proposes that sexual response results from a balance between relatively independent inhibitory and excitatory mechanisms[68–70] and that individuals with higher levels of sexual inhibition (SI) and lower levels of sexual excitation (SE) are more vulnerable to sexual difficulties.

Studies have supported these predictions. Men with ED scored lower on SE and higher on SI due to threat of performance failure compared with sexually healthy men.[71] In a study of newlywed couples, SI owing to performance failure was the best predictor of male erectile problems.[72] Among heterosexual women, SI scores were positively associated with the likelihood of reporting sexual problems.[73,74]

Findings suggest that SE and SI propensities are associated with sexual functioning in men and women. It is recommended that clinicians assess SE and SI during clinical assessment of sexual dysfunctions (recommendation = grade C).

Sexual Beliefs

Sexual myths (eg, "a real man is always ready for sex") are more commonly endorsed by men with sexual problems than by healthy controls.[75] In women, body image beliefs are strongly associated with female orgasmic disorders.[76] Age-related beliefs are common in women with vaginismus[76] and conservative sexual beliefs are strongly related to low desire[77,78] and vaginismus.[79]

Research suggests that sexual beliefs can play a role as predisposing and maintaining factors of sexual dysfunction in men and women. It is recommended that clinicians address sexual beliefs during assessment and treatment (recommendation = grade B).

Life-Stage Stressors

Infertility

Impairment in sexual functioning, satisfaction, and sexual self-esteem have been associated with infertility,[80–83] with women more frequently affected than men.[84–86] PE, ED, anxiety, and depression are significantly more common in infertile men than in those without fertility problems.[87,88] Treatments for infertility also can adversely affect sexuality.[89,90] However, some studies have found no associations between sexual functioning and fertility problems.[91,92]

Our recommendation is that during all phases of infertility diagnosis, investigation, and management, clinicians, whenever possible, assess sexual function and satisfaction (recommendation = grade C).

Postpartum Period

Sexual function problems are believed to affect 22% to 86% of women at 2 to 6 months after childbirth.[93–96] There is conflicting evidence on whether the mode of delivery and perineal injury affect sexual function after delivery.[97–103]

Our recommendation is that, whenever possible, clinicians assess sexual function and satisfaction during the postpartum period (recommendation = grade B), keeping in mind that sexual response and motivation may be unrelated to timing of the physical healing from delivery.

Aging

In a survey of men and women 57 to 85 years old, approximately half the respondents reported at least one bothersome sexual problem, with low desire, orgasm, and lubrication being the most prevalent sexual problems in women and erectile difficulties being the most prevalent in men.[104]

Many stressors and adverse life events can affect sexual function and satisfaction, including depression, physical illnesses, disabilities,[105–110] and the lack of an available partner.[104]

Serum testosterone levels gradually decrease in men with aging but this decrease does not always cause symptoms. However, late-onset clinical hypogonadism is associated with low libido and ED.[111]

Many older people are reluctant to seek help for sexual problems.[112–114] There is some evidence that successful sexual aging is related to the ability to adapt to sexual relationships that are less focused on intercourse.[115,116]

Sexual health issues should be proactively discussed by clinicians with older patients (recommendation = grade A). Assessment of physical and mental illnesses that commonly occur in later life should be included as part of the initial evaluation in middle-aged and older persons presenting with sexual complaints (recommendation = grade A). It is recommended that clinicians assess adverse life events in older patients presenting with sexual dysfunctions, including evaluation of resulting anxiety and depressive symptoms (recommendation = grade A). Clinicians should be aware of the relation between symptoms of aging and psychological health in older men and request further investigation when needed (recommendation = grade A).

Menopause

Large-scale surveys have reported decreases in sexual functioning related to menopausal status.[117,118] Factors such as partner availability,[119] relationship quality,[120,121] psychological function,[119,122,123] and health[122,124] are often more important determinants of sexual function than hormonal factors. Other

non-hormonal factors associated with sexual functioning are smoking,[122] social class and education level,[122,125,126] and mental health problems.[107]

Menopausal status has an independent effect on reported changes in sex life and difficulties with intercourse. Overall, research provides support for the routine clinical investigation of psychological factors and life stressors (recommendation = grade A). Clinicians are encouraged to address contextual factors that can precipitate and maintain sexual difficulties, including relationship quality, past sexual experience, previous sexual function, and mental and physical health of menopausal women (recommendation = grade A). We also recommend that clinicians consider the potential role of partners in the etiology and maintenance of female sexual dysfunction (recommendation = grade B).

Psychological Processing Factors

Recommendations based on our review appear at the start of this article, and a more exhaustive review of the literature on psychological processing factors is presented in Table 2. Here we briefly review causal attributions, performance anxiety, efficacy expectations, distraction/attention, automatic thoughts, and state emotions as exemplars of psychological processing factors.

1. Causal Attribution to Negative Sexual Events. Men with ED tend to give internal attributions for their sexual difficulties.[127–129] When causal attributions for low erectile response were manipulated in sexually healthy men, men with internal attributions were more likely to show decreased erectile response.[130]

Women with orgasmic disorders more often attribute their problems to internal rather than external factors (eg, a sexual partner's skills).[131]

These findings support the role of attributional style in the etiology of sexual dysfunction. Although most studies used cross-sectional designs, at least one experimental study found a causal link between internal attribution for negative sexual events and sexual dysfunction. Clinicians are encouraged to address patients' causal attributions to their sexual problems (recommendation = grade B).

2. Performance Anxiety and Demands. In an early study, instructions to focus on achieving a full erection ("spectatoring" condition) or to focus on sexual stimuli and pleasure ("sensate focus" condition) did not affect sexual responses in sexually healthy men.[132] In contrast, men with sexual dysfunction showed higher erectile responses in a sensate focus condition compared with a spectatoring condition.[133] In a study of sexually healthy women, genital response increased as a function of performance demand instructions.[134]

These findings suggest that performance demands can have a different effect in individuals with and without sexual dysfunction. Sexually healthy individuals respond with higher sexual arousal, whereas those with sexual problems show decreased sexual response in the face of performance anxiety and demands.

3. Efficacy Expectations. In aging couples in which the male partner had undergone prostate surgery, efficacy expectations of the male partner were one of the best predictors of frequency and quality of sexual functioning.[135]

In women with sexual dysfunction, the manipulation of efficacy expectations through positive false feedback on physiologic sexual response had a significant effect on subsequent sexual response.[136] Using a similar paradigm with sexually healthy men, men who received false negative feedback on genital arousal reported significantly lower efficacy expectations and lower genital response compared with sexually healthy men.[137]

In men with and without sexual dysfunction, negative feedback decreased self-predicted erection scores and subjective arousal to sexual films, whereas positive feedback had the opposite effect.[138] In women, negative feedback significantly decreased subjective but not genital arousal.[139]

More recent studies have indicated that false feedback (whether negative or positive) has a significant impact on subjective arousal in men and women with and without sexual dysfunction but has no effect on genital sexual arousal (particularly in women). Thus, the effect of manipulated expectations (using false feedback instructions) on sexual arousal seems to be mediated by cognitive processes. Research is needed to better clarify the impact of expectations on subjective and genital arousal. Our recommendation is that clinicians assess the presence and potential role of these expectations (recommendation = grade A).

4. Cognitive Distraction and Attentional Focus. Early studies suggested that distraction interfered with erectile response in sexually healthy men[140,141] but not in men with ED.[142] Van Lankveld and van den Hout[143] reported that distraction inhibited genital arousal but had no effect on subjective sexual arousal in men with and without sexual dysfunction. In sexually healthy women, lower genital and subjective sexual arousal occurred during exposure to erotic stimuli accompanied by a cognitive distraction task.[144,145]

Findings indicate a clear negative impact of cognitive distraction on sexual response in men and women, more consistently observed on genital arousal than on subjective arousal. Although neutral distraction tasks seem to negatively interfere with sexual response in sexually healthy men more than in men with sexual dysfunction, the opposite pattern is observed when sexual performance distractors are used. The recommendation for clinicians is to assess for the presence of cognitive distraction (recommendation = grade A).

5. Sexual Cognitions and Automatic Thoughts. Men and women with sexual dysfunction report having significantly more negative thoughts during sexual activity[146,147] and lack of erotic

Table 2. Summary of Studies (since 2010) on the Role of Psychological Processing Factors on Sexual Function and Dysfunction

Study	n	Methodology	Results	LE
Causal attribution to negative sexual events				
Rowland et al,[353] 2013	59	59 sexually dysfunctional men recruited from a urology clinic participated in the study and completed measurements assessing patients' attributions and 5 global affective factors derived through principal components analysis: apprehension, insecure, arousable, affection, and pleasant.	Results indicated that external attribution (biomedical vs psychological or unknown) had significant effects on 3 psycho-affective factors (insecure, arousable, affection); men who attributed their problem to a biomedical cause had higher positive affect and lower insecurity.	3
Cognitive distraction, sexual cognitions, and automatic thoughts				
Carvalho and Nobre,[78] 2010	237	237 women from the general population answered a set of questionnaires assessing psychopathology, cognitive-emotional factors, dyadic adjustment, presence of medical pathologies, and menopause.	Findings indicated conservative beliefs and age-related beliefs were significant predictors of sexual desire. Also, lack of erotic thoughts, failure and disengagement of sexual thoughts, and thoughts related to female passivity during sexual activity were significant predictors of desire in women.	3
Carvalho and Nobre,[148] 2011	237	237 men from the general population were assessed on medical problems, psychopathology, dyadic adjustment, cognitive-emotional factors, and sexual functioning. Path analysis was used to test a biopsychosocial model of sexual desire in men.	Results showed that cognitive factors (sexual beliefs and automatic thoughts during sexual activity) were the best predictors of sexual desire in men. Specifically, beliefs related to restrictive attitudes toward sexuality, erection concerns, and lack of erotic thoughts in a sexual context had a significant direct effect on decreased sexual desire. Moreover, this set of cognitive-emotional factors mediated the relation among medical problems, age, and sexual desire.	3
Carvalho et al,[167] 2013	85	43 women presenting PGAD symptoms and 42 controls responded to a Web survey assessing Sexual Dysfunctional Beliefs Questionnaire, Sexual Modes Questionnaire, Positive and Negative Affect Schedule, and Brief Symptom Inventory.	Findings showed that women reporting PGAD symptoms presented significantly more negative thoughts (eg, thoughts of sexual abuse and of lack of partner's affection). Women with PGAD also presented significantly more negative affect and less positive affect during sexual activity than women without PGAD.	3
Morton and Gorzalka,[146] 2013	200	Euro-Canadian (n = 77) and East Asian-Canadian (n = 123) undergraduate women completed Sexual Dysfunctional Beliefs Questionnaire, Sexual Modes Questionnaire, Female Sexual Function Index, and Vancouver Index of Acculturation.	East Asian women endorsed almost all sexual beliefs assessed in this study more than did Euro-Canadian women, and endorsement of these beliefs was associated with acculturation. Also, East Asian-Canadian and Euro-Canadian women differed in the frequency of experiencing negative automatic thoughts. Results also showed associations between difficulties in sexual functioning and both sexual beliefs and automatic thoughts.	3

(continued)

Table 2. Continued

Study	n	Methodology	Results	LE
Nelson and Purdon,[354] 2011	153	153 individuals from a community sample (81 women, 72 men) in long-term relationships completed measurements assessing non-erotic thoughts, sexual activity, and sexual satisfaction.	Findings indicated that women were more likely to report body image concerns and external consequences of sexual activity, whereas men were more likely to report performance-related concerns. Equally likely in men and women were thoughts about emotional consequences of the sexual activity. Regardless of thought content, experiencing more frequent NETs was associated with more sexual problems in women and men.	3
Oliveira et al,[355] 2014	27	27 sexually healthy men participated in a laboratory study in which they were presented with 2 sexually explicit films. Genital responses, subjective sexual arousal, self-reported thoughts, and positive and negative affect were assessed during exposure to the sexual films.	Regression analyses showed that genital responses were predicted by self-reported thoughts but not by affect during exposure to erotic films. Conversely, subjective sexual arousal was significantly predicted by positive and negative affect and self-reported thoughts. Follow-up analyses showed that "sexual arousal thoughts" were the best predictor of subjective response and that "distracting/disengaging thoughts" were the best predictor of genital response.	2
Nobre,[149] 2010	352	352 men (303 participants from the general population and 49 participants with a *DSM-IV* diagnosis of sexual dysfunction) answered a set of questionnaires assessing cognitive and emotional variables and sexual functioning. Path analysis was conducted to test a conceptual model of male erectile disorder.	Results showed that the effects of the main proposed direct predictors explained 55% of the erectile function variance. Macho beliefs were strongly associated with erectile function. Results also indicated significant direct effects of erection concern thoughts and lack of erotic thoughts on erectile function.	3
Pujols et al,[356] 2010	154	Women 18–49 y old in sexual relationships (N = 154) participated in an Internet survey that assessed sexual functioning, 5 domains of sexual satisfaction, and several body image variables.	Findings indicated significant positive relations among sexual functioning, sexual satisfaction, and all body image variables. Multiple regression analysis showed that sexual satisfaction was predicted by high body esteem and low frequency of appearance-based distracting thoughts during sexual activity, even after controlling for sexual functioning status.	3
Purdon and Watson,[357] 2011	165	165 (n = 71 men) undergraduates completed measurements of sexual dysfunction and relationship satisfaction and reported on the content and frequency of non-erotic thoughts during sex with a partner (ie, "spectatoring"), emotional impact of non-erotic thoughts, and strategies used to manage them.	Findings indicated that greater frequency of, and anxiety evoked by, non-erotic thoughts was associated with poorer sexual functioning. Poorer sexual functioning was associated with more negative interpretations of ambiguous sexual scenarios, but this was mediated by relationship satisfaction. However, positive interpretations were predicted by sexual functioning.	3

(continued)

Table 2. Continued

Study	n	Methodology	Results	LE
Vilarinho et al,[163] 2014	28	28 sexually functional women were presented with sexually explicit and non-explicit romantic films. Genital responses, subjective sexual arousal, state affect, and self-reported thoughts were assessed.	Self-reported thoughts and affect were significant predictors of subjective sexual arousal. The strongest single predictor of subjective arousal was sexual arousal thoughts. None of the cognitive or affective variables predicted women's genital responses.	2
State emotions				
Brauer 2012	84	Premenopausal U.S. and Dutch women with acquired HSDD (n = 42) and a control group of sexually functional women (n = 42) completed a single-target Implicit Association Task and a Picture Association Task assessing automatic affective associations with sexual stimuli and a dot-detection task measuring attentional capture by sexual stimuli.	Results showed that women with acquired HSDD displayed less positive (but not more negative) automatic associations with sexual stimuli than sexually functional women.	1
Mehta 2014	44	44 depressed young women (mean age = 18 y) participated in a study investigating associations of sexual desire with time of day, physical and social context, and positive and negative affect using momentary sampling.	Analyses showed that depressed young women experienced sexual desire when with their boyfriends and later in the evening. Sexual desire also was positively associated with positive affect. Sexual desire was not associated with negative affect or physical context. This research suggests that sexual desire is experienced by depressed young women in normative developmental social contexts	3
Peixoto and Nobre,[165] 2015	324	Participants were 156 heterosexual and gay men and 168 heterosexual and lesbian women with and without self-reported sexual problems (matched for demographics). Participants completed a Web-survey assessing sexual functioning and the Positive Affect—Negative Affect Scale.	Findings indicated a main effect of group, with groups with sexual problems reporting significantly more negative and lower positive affect during sexual activity compared with men and women without sexual problems, regardless of sexual orientation	3
Rowland et al,[353] 2011	95	Participants were men seeking treatment at a urology clinic for a sexual problem (n = 79) or another urologic disorder (n = 16). Individuals rated their affective state across 28 descriptors in response to a partnered sexual experience.	Significant differences were found on nearly all 28 measurements of affective response and 5 major underlying factors constructed from those measurements. Dysfunctional men more strongly endorsed negative affect and functional men more strongly endorsed positive affect, although all had a significant urologic health issue. No differences existed in sexual desire or the value ascribed to sexual intimacy, suggesting that negative feelings were specifically associated with inadequate sexual performance and not general health concerns.	3

DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition; HSDD = hypoactive sexual desire disorder; LE = level of evidence; PGAD = persistent genital arousal disorder.

thoughts[147] compared with sexually healthy individuals. In men, lack of erotic thoughts and erection concerns during sexual activity are significant predictors of decreased sexual desire[78,148] and ED.[149]

"Failure" and disengagement thoughts and lack of erotic thoughts are more often reported by women with sexual desire, orgasm, and vaginismus problems than by sexually healthy controls.[78,147,150,151] A relation between negative body image concerns during sexual activity and difficulties in reaching orgasm among women also has been found.[152]

Findings indicate that cognitive distraction from erotic cues is strongly associated with sexual dysfunction. These negative automatic thoughts experienced during sexual activity could be the result of previous activation of negative self-schemas and seem to play an important role as maintaining factors for sexual dysfunction. Clinicians are encouraged to systematically assess the content of thoughts patients experience during sexual activity (recommendation = grade A).

6. State Emotions. Anxiety. Early experimental studies in men and women have suggested that state anxiety might be associated with no change in[132] or even an enhanced[142,153,154] genital response. Studies conducted in women with and without sexual problems have reported a facilitating effect of anxiety and activation of the sympathetic system[135,155–157] on genital sexual response but not on subjective arousal.

In general, findings consistently suggest a facilitating role of sympathetic activation on genital response (but not on subjective arousal) in men and women with and without sexual dysfunction. The role of the cognitive component of anxiety is not yet established, but findings suggest a detrimental effect on sexual arousal in men with sexual dysfunction but not in sexually healthy men. We recommend that clinicians assess for the presence and role of state anxiety during sexual activity (recommendation = grade B).

Low Mood. Several studies have reported that men with sexual dysfunction show significantly higher depressed affect during exposure to erotica compared with sexually healthy men.[133,142,158,159] In a test of the effect of induced mood on sexual response, men in a depressed mood condition showed a significant delay in subjective sexual arousal during exposure to an erotic film compared with men in a positive mood condition; genital response did not differ between the two groups.[160] A significant increase in erectile response in men in a positive affect condition compared with men in a neutral affect condition was reported in one study[161]; men in a negative affect condition showed less erectile response compared with men in a neutral condition.

Several studies have indicated that positive affect (but not negative affect) is a significant predictor of subjective sexual arousal in sexually healthy men and women.[162–164]

Men and women with sexual dysfunction report having significantly more negative emotions (eg, sadness or fear) and less pleasure and satisfaction during sexual activity compared with sexually healthy individuals.[76,77,149,165–168]

These data suggest that low mood is strongly associated with sexual response and sexual functioning in men and women. Findings from experimental studies support this association, suggesting that state depressed mood has a negative impact on sexual arousal. It is recommended that clinicians address patients' mood states (recommendation = grade B).

COMORBID MENTAL HEALTH ISSUES

Depression and its pharmacologic treatment are associated with sexual difficulties in men and women.[51,169,170]

Different types of anxiety disorders can have differential effects on sexual function. Panic disorder appears to have a stronger relation with sexual disorders than social phobia.[171] Individuals with obsessive-compulsive disorder have higher rates of orgasmic dysfunction than patients with generalized anxiety disorder[172] or social anxiety.[173] Studies on depression, anxiety, and sexual function (since 2010) are summarized in Table 3.

Stress

Studies on the effects of acute stressors on sexual function have found mixed results, with some showing facilitatory[174,175] and others inhibitory[153,176] effects. There is increasing evidence for the negative effects of chronic stress, including daily hassles, on sexual function,[177,178] and provoked genital pain.[179]

Our recommendation is that clinicians routinely assess for the presence of stress, including daily hassles and critical life events, when assessing patients' sexual function and satisfaction and quality of the relationship (recommendation = grade A).

Depression

The most common pattern associated with depression is loss or decrease of sexual interest and/or sexual arousal.[51,180,181] In a study of patients presenting with desire disorders, the proportion of low desire in individuals with histories of major and intermittent depression was almost twice as large as that of controls.[182] In men, depression and anger are highly correlated with ED[183–185] and with low sexual.[186]

Women with current depression have more impaired sexual function than non-depressed women.[187] In a cohort study of sexually active women 40 to 65 years old, lower sexual function was related to menopausal and mood symptoms.[188] Other studies have reported similar findings.[189,190]

Depression and Physical Illness

In women with multiple sclerosis and their partners, self-reports of relationship and physical functioning were significantly associated with the women's depression scores.[191]

Table 3. Summary of Studies (since 2010) on the Relation Between Depression and Anxiety Disorders and Sexual Functioning

Study	n	Methodology	Results	LE
Depression				
McPheters et al,[191] 2010	54	The study explored associations between patients with MS and partner reports of physical functioning, depression, and couple relationship quality.	Depression and couple relationship quality were associated with physical functioning of the patient with MS. Couples with higher relationship quality might be better able to cope with the stresses of MS.	3
Clayton et al,[187] 2012	1,088	Validated measurements of sexual function and distress, physical and mental health, and depression symptoms.	Approximately one third of premenopausal women with HSDD presented with current symptoms or a diagnosis of depression. Women with HSDD and depression reported poorer relationships and sexual function compared with women with HSDD and no depression.	3
Perez-Lopez et al,[188] 2012	179	Cross-sectional study in which 179 sexually active women (40–65 y old) completed the 6-item FSFI, Menopause Rating Scale, and Hospital Anxiety and Depression Scale.	In this middle-age Spanish sample, lower sexual function was related to menopausal and mood symptoms and in several women to partner factors.	3
Rutte et al,[358] 2014	158	This study assessed the prevalence and correlates of sexual dysfunction in a sample of Dutch men and women with type 2 diabetes	Sexual dysfunction was highly prevalent in men and women with type 2 diabetes and was associated with older age, clinical depression, and diabetes-related complications.	3
Shadman et al,[192] 2014	420	This study considered all possible influencing variables, including hormonal, physical and psychological status, socioeconomic status, and dietary intake.	FSFI showed a significant negative association with age, stress-depression score, and systolic blood pressure.	3
Dunlop et al,[197] 2015	808	Baseline data from 808 chronically depressed outpatients with and without a history of CSA were evaluated using structural equation modeling.	CSA scores predicted depression severity and lower relationship quality and sexual satisfaction. Long-term effects of CSA appear to be mediated by depressive and anxious symptoms.	3
Lee et al,[194] 2015	304	This observational cohort study enrolled premenopausal and sexually active women diagnosed with early-stage breast cancer. Questionnaires were completed, and sexual activity was measured after surgery, to assess sexual activity and function before diagnosis, and then ≥12 mo after completion of chemotherapy or endocrine therapy.	Chemo-related menopause was significantly associated with sexual inactivity and dysfunction after treatment. Thyroid dysfunction and depression were risk factors for sexual inactivity in younger breast cancer survivors.	3

(continued)

Table 3. Continued

Study	n	Methodology	Results	LE
Oskay et al,[195] 2015	45	This study assessed sexual function and depression in women with MI.	The correlation between FSFI and BDI total scores indicated that increasing BDI scores in the MI and control groups affected total FSFI scores negatively.	3
Anxiety				
Dettore et al,[359] 2013	130	Women without an anxiety disorder were compared with women with an anxiety disorder to examine the effect of anxiety on sexual response and propensity toward sexual inhibition or excitation.	Women with an anxiety disorder reported worse sexual functioning compared with those without an anxiety disorder (except for desire, lubrication, and pain) and a greater propensity toward sexual inhibition.	3
Kempeneers et al,[207] 2013	461	Main outcome measurements were self-reported ejaculatory latency time, feeling of control at ejaculation, sexual satisfaction, distress related to PE, trait anxiety, sexual cognitions, and social anxiety.	Men with generalized and lifelong PE with self-reported latency times <30 s reported lower sexual satisfaction and control, higher distress, higher social anxiety, and harm avoidance. The situational subtype of PE was characterized by a higher level of satisfaction, a greater feeling of control, less distress, and higher trait anxiety scores.	3
Punnen et al,[360] 2013	649	Questionnaires assessing levels of depression, anxiety, distress, and urinary and sexual function were applied at baseline, within 1 y, and 1–3 y from baseline.	Moderate or higher levels of depression or anxiety were low in men with localized prostate cancer but were associated with sexual outcomes, whereas increased distress was associated with urinary outcomes.	2
Kalmbach et al,[361] 2014	171	The study used a 2-wk daily diary approach to examine same-day and temporal relations between affective symptoms and sexual function.	Simultaneous changes in affective symptoms and sexual function could indicate that they are products of shared underlying mechanisms. That is, in response to stress, the processes manifesting as feelings of weak positive affect and amotivation are the very same processes responsible for decreased capacity for sexual desire.	3

BDI = Beck Depression Inventory; CSA = childhood sexual abuse; FSI = Female Sexual Function Index; HSDD = hypoactive sexual desire disorder; LE = level of evidence; MI = myocardial infarction; MS = multiple sclerosis; PE = premature ejaculation.

In a study of menopausal women with diabetes, sexual function was related to age, stress, depression, duration of diabetes, and systolic blood pressure.[192] In another study, most men and women with type 2 diabetes had sexual problems; sexual difficulties were positively associated with age, clinical depression, and at least one diabetes-related complication.[193]

Sexual difficulties also have been reported to be common in breast cancer survivors,[194] women who had had myocardial infarction,[195] and women with systemic sclerosis.[196]

Depression and History of CSA

In a sample of chronically depressed adults, history of CSA predicted depression severity and lower relationship quality and sexual satisfaction.[197]

Our recommendation is that sexual symptoms, satisfaction, and distress be assessed in the context of depression; similarly, in the presence of sexual difficulties, depressed mood should be assessed (recommendation = grade A). The clinician should be aware of the potential bidirectional nature of this relation and the potential complicating role of antidepressant medications—which can improve mood symptoms but might exacerbate sexual symptoms.

Anxiety and Female Sexual Dysfunction

Overall, the evidence for the role of anxiety in sexually dysfunctional women is mixed[198–200] (Table 3 presents a more comprehensive review).

A few studies have examined the relation between specific types of anxiety disorder and female sexual dysfunction. In one study, social phobia was associated with concomitant desire disorders and dyspareunia.[201] Women with panic disorder comorbid with obsessive-compulsive disorder or with depression showed significantly lower sexual desire than sexually healthy women.[202,203] Low sexual desire and orgasmic disorder appeared more prevalent in women with generalized anxiety.[204]

Anxiety and Male Sexual Dysfunction

Compared with sexually healthy men, men with ED report higher levels of sexual anxiety but no difference in general or social anxiety.[205] In men with ED, Mallis et al[206] found that most had high levels of state and trait anxiety, but only trait anxiety was correlated with ED severity.

Men with generalized and lifelong PE have lower sexual satisfaction and control, higher distress, and higher social anxiety, and harm avoidance scores.[207] In contrast, men with situational PE are characterized by higher levels of satisfaction, greater feelings of control, less distress, and higher trait anxiety scores.

Controlled studies of male sexual dysfunction and specific types of anxiety disorder are scarce.[204] Panic disorder has been linked to ED[171,208,209] and social phobia with PE.[171,210,211] Anxiety related specifically to sexual performance can be a significant contributor to PE[212] and ED.[213,214]

Anxiety and Sexual Performance

Research has demonstrated that anxiety is not always disruptive to sexual functioning. Although moderate levels and relatively "safe" situations can enhance sexual arousal, higher levels of anxiety likely impair sexual functioning.[203]

In summary, assessment of depression and anxiety should be carried out as part of the initial evaluation in individuals presenting with sexual complaints (recommendation = grade A). An attempt should be made to ascertain whether the anxiety or depression is a consequence or a cause of the sexual complaint. If there is pre-existing acute depression, this should be treated with the sexual problem. Some research suggests that relief of the sexual problem is associated with relief of depression.[215] The role of antidepressants and antianxiety medications as contributory factors to sexual dysfunction should be evaluated in addition to any other mental health comorbidities (recommendation = grade C).

Post-Traumatic Stress Disorder

Sexual dysfunction is a frequent complaint of trauma survivors.[216–222] In two studies of military veterans,[223,224] PTSD was a significant risk factor for sexual dysfunction.

We suggest that clinicians assess for the presence of PTSD symptoms when evaluating sexual function in men and women. Treatment recommendations for men and women who experience a traumatic event should include screening for sexual dysfunction. Sexual functioning should be assessed in the context of partner intimacy, because men with PTSD might have no difficulty with erection and ejaculation with masturbation, yet have problems in partnered settings. Therapy should address sexual avoidance of the partner with PTSD, the shame and guilt associated with the trauma, and sexual dysfunction (recommendation = grade A).

Substance Use

Alcohol consumption can be directly associated with a decrease in sexual function due to inhibition of genital response[225,226] or indirectly through decreasing negative emotions such as depression or anxiety.[225,226] Alcohol has long been regarded a risk factor for ED, but epidemiologic evidence has been equivocal.[227] Three large studies demonstrated progressively smaller odds ratios of ED with increasing levels of alcohol consumption.[228–230] These studies suggest that, at least when consumed at low levels, regular consumption of alcohol in men is not a risk factor for ED.

Studies examining the effects of long-term alcohol consumption on sexual function in women are scarce. In one investigation, women with heavy alcohol use were more likely to report problems with orgasm and arousal but less likely to report problems with functional dyspareunia.[231] Witting et al[232] found that greater alcohol use was related to fewer sexual function

problems, whereas drinking in connection to intercourse was related to increased likelihood of sexual problems.

Evidence suggests that smoking can significantly increase the risk of ED,[233,234] and this association might be potentiated with alcohol use, physical inactivity, or comorbid physical conditions.[235] In a laboratory study of women who were randomized to receive nicotine gum or placebo gum before viewing an erotic film, nicotine significantly decreased genital responses to erotic films but had no effect on subjective arousal.[236]

Although there are differential effects of specific drugs, all recreational drugs can affect sexual functioning in men.[237–239] Research on the effects of substance abuse on sexual function in women is very limited.[240]

In summary, although there has been little research in this area, particularly involving women, most of the available research suggests a negative effect of nicotine and recreational drug use on sexual functioning. We recommend that clinicians assess for the use and abuse of alcohol, nicotine, and other drugs in patients presenting with sexual concerns (recommendation = grade B).

INTERPERSONAL AND RELATIONAL FACTORS

Most, although certainly not all, sexual activity occurs in an interpersonal context. The quality of the non-sexual aspects of the relationship and the two partners' experiences within the sexual interaction can affect sexual functioning.

Intimacy

One important motivation for sexual activity is enhancing emotional intimacy.[241] In a survey of women with chronic vulvar and pelvic pain, women who reported greater intimacy reported less impact of the pain on their sexual relationship.[242] In women with provoked vestibulodynia, sexual satisfaction was associated with women's and their partner's reports of sexual intimacy[243]; however, emotional intimacy was not associated with sexual satisfaction.

Low sexual desire in women has been associated with low dyadic cohesion and low affection[150] and with lower levels of intimacy and less relationship satisfaction.[244] Individuals with lower sexual satisfaction and/or sexual dysfunction appear to have poorer sexual and non-sexual communication.[44,245–250]

In women in same-sex and mixed-sex relationships, having sex to improve intimacy with partners has been associated with greater sexual satisfaction, whereas having sex to please partners or maintain the relationship has been associated with lower sexual satisfaction.[251] In research examining motives for sex, "approach-related" goals that focus on obtaining positive outcomes (eg, enhanced intimacy) have been positively associated with relationship and sexual satisfaction for women and men and "avoidance-related" goals that focus on averting negative outcomes have been associated with lower sexual and relational satisfaction.[252]

Relationship Satisfaction

There is a strong link between relationship well-being and sexual satisfaction.[249,253–258]

Individuals with low sexual desire experience lower relationship satisfaction and dyadic adjustment.[78,259–261] In one study, the major predictors of female sexual problems were relationship dissatisfaction and partner sexual dysfunction.[262]

Partner Sexual Dysfunction

A woman's sexual dysfunction can affect not only her own but also her partner's sexual functioning.[123,263–266] Women whose partners have PE consistently report diminished sexual satisfaction, although there might be little impact on the female partner's sexual function.[267,268]

Female partners of men with ED are more likely to experience sexual problems than are the partners of men without ED.[269–272] Several studies have shown improvement in the female partner's sexual functioning after the male partner's treatment with phosphodiesterase type 5 inhibitors.[264,270,273–276] A more comprehensive review of the impact of a man's ED on the female partner is presented in Table 4.

There is some evidence associating vaginismus and dyspareunia in women with sexual dysfunction, in particular ED, in the male partner.[277–279]

Taken together, these studies consistently demonstrate the interdependence of sexual function between partners. Specifically, they suggest that dysfunction in one partner tends to cause problems in sexual functioning and/or sexual satisfaction for the other and that improvement in function in one partner tends to have a positive effect on the other partner. Conversely, some couples report high sexual satisfaction even when one partner has a sexual dysfunction.[247] Thus, we recommend that clinicians take a biopsychosocial approach to the assessment and treatment of sexual dysfunctions (recommendation = grade B) and that assessment include evaluation of the two partners when possible (recommendation = grade B).

Partner Illness

Among the myriad possible partner-related illnesses, a few have been studied with regards to their impact on sexual function in a partner. In couples with chronic prostatitis or chronic pelvic pain syndrome, pain severity significantly predicts sexual and relationship functioning.[280] Research on men with prostate cancer and their partners has reported negative changes in sexual functioning.[281–283] Women whose partners had a myocardial infarction during the previous year have reported decreased desire and function in their partners and a negative impact on themselves.[284]

We recommend that when one partner has an illness that affects sexual functioning, the two partners should be involved in assessment and treatment to discuss each partner's role in the other's sexual adjustment after treatment and to help the couple develop a new sexual script (recommendation = grade B).

Table 4. Summary of Studies on the Impact of Erectile Dysfunction on the Female Partner

Study	n	Methodology	Results	LE
Fisher et al,[271] 2005	293 partners	Internet questionnaires, frequency of sexual activity, and sexual experience before and after development of partner's ED and with PDE5 inhibitor.	Sexual frequency and sexual satisfaction were less frequent after ED. Women whose partners were currently using PDE5 inhibitors had a more satisfying sexual experience than those whose partners did not use a PDE5 inhibitor.	2
Goldstein et al,[362] 2005	229 couples	Randomized, double-blinded, placebo-controlled vardenafil vs placebo trial using FSFI and mSLQQ for QoL of female partners.	Vardenafil increased multiple domains of women's sexual function, except pain, and a marked improvement in sexual QoL of female partners.	1
Fisher et al,[271] 2005	197 couples	Randomized, double-blinded, placebo-controlled vardenafil vs placebo trial using FSFI and mSLQQ to measure QoL.	Vardenafil increased QOL and each FSFI domain. Partners' total mSLQQ QoL score in vardenafil group was double that of the placebo group.	1
Hundertmark et al,[363] 2007	96 couples	Randomized, double-blinded, placebo-controlled vardenafil vs placebo trial using the Dyadic Adjustment Scale.	No difference between the 2 groups in relationship functioning.	1
Chevret-Méasson et al,[270] 2009	57 couples	Prospective, open-labeled clinical trial of sildenafil, context close to routine clinical practice, ISL and EDITS-Partner.	ISL sexual life satisfaction score was low at baseline and increased with a very significant change in each domain: desire, satisfaction with her sexual life, and general life satisfaction.	2
Heiman et al,[275] 2007	155 couples	Randomized, double-blinded, placebo-controlled sildenafil trial using the (i) FePEDS Q3 and (ii) SFQ, FSFI, and EDITS-Partner.	Greater improvement in Q3 for sexual function; sexual satisfaction measurements showed the interdependence of sexual function and satisfaction between members of couple.	1
Cayan et al,[264] 2004	87 with partners, 38 partners with ED, 13 partners with sildenafil-treated ED, 17 partners with penile prosthesis	Women's sexual function was evaluated with FSFI. Men evaluated with IIEF.	After treatment of men's ED, significant improvement in sexual arousal, lubrication, orgasm, and satisfaction was reported by women.	4
Conaglen and Conaglen,[364] 2008	100 couples	Sildenafil or tadalafil for a 12-wk phase, followed by another 12-wk period using the alternate drug. Female partners were interviewed at baseline, midpoint, and end of study.	79.2% of women preferred their partners' use of tadalafil, whereas 15.6% preferred sildenafil. Women's reasons were relaxed, satisfying, longer-lasting sexual experiences.	4

ED = erectile dysfunction; EDITS = Erectile Dysfunction Inventory of Treatment Satisfaction; FePEDS Q3 = Female Partner of ED Subject Questionnaire question 3; FSI = Female Sexual Function Index; IIEF = Internation Index of Erectile Function; ISL = Index of Sexual Life; LE = level of evidence; mSLQQ = modified Sexual Life Quality Questionnaire; PDE5 = phosphodiesterase type 5; QoL = quality of life; SFQ = Sexual Function Questionnaire.

Partner Discrepancies

Discrepancies in level of sexual desire between partners often affect sexual functioning.[232,277]

In couples in monogamous long-term relationships, higher desire discrepancies have been associated with lower relationship satisfaction for men but not for women.[285] For couples in long-term relationships, discrepancies of desire have predicted an individual's and the partner's ratings of quality of the sexual experience.[285] In married couples[286] and women in same-sex relationships,[255] desire discrepancy has predicted lower relationship satisfaction, lower relationship stability, and greater couple conflict.

Partner Responses

The partner's response can influence the extent to which an individual finds his or her or the partner's sexual difficulties distressing.[287] Male partners of women with provoked vestibulodynia who made more global and stable negative attributions about their partner's pain reported lower sexual satisfaction and poorer dyadic adjustment.[288] A male partner's facilitative responses (reactions that encourage women's adaptive coping with the pain) to his female partner with provoked vestibulodynia were associated with lower self-reports of pain compared with solicitous responses (responses that reinforce avoidance and passivity).[289,290]

Partner Violence

Episodes of physical and sexual intimate partner violence have been associated with increased sexual risk taking, sexually transmitted infections, unintended pregnancy, and chronic pelvic pain. Episodes of sexual and emotional abuse in adulthood have been significantly and positively associated with sexual difficulties, in particular pain and dissatisfaction.[30]

We recommend that dyadic factors and relationship quality be addressed in sex therapy (recommendation = grade B) and that, for people in a romantic relationship, the partner be included in treatment of any sexual dysfunction whenever possible (recommendation = grade B).

PSYCHOLOGICAL TREATMENT OUTCOME

Overview of Methodologic Issues

The goal of psychological therapies is increasingly recognized as not simply the absence of dysfunction but the presence of positive sexual and relationship functioning.[291] There has been a shift in focus from assessing only improvement in individual sexual functioning to broader and more clinically meaningful outcome variables such as sexual satisfaction,[292] sexual quality of life, and sexual confidence.[293]

Although there are validated assessments of sexual functioning and of sexual distress,[294,295] some are suitable only for sexually active individuals or for heterosexual couples[296]; few assessments exist for sexual minority individuals.[297]

When evaluating sexual function variables, what constitutes a "good" outcome is not straightforward. In recent pharmacological trials, the focus has been on sexual activity (eg, percentage increase in the number of "sexually satisfying events"),[298] but this focus on quantity rather than quality of sexual activity has been criticized.[299]

After an early spate of outcome studies in the 1970s and 1980s, many of which were uncontrolled, few evaluations of psychological treatments have been conducted in recent years, and few have focused on unique delivery methods (eg, Internet therapy) and diverse patient samples (eg, those from sexual minority groups). There also has been limited attention paid to prognostic factors that relate to specific psychological treatments.[300] One exception is female sexual pain disorders, for which there have been several well-designed controlled outcome studies.[301–303] The decrease in outcome research does not reflect a lack of growth in sex therapy,[304,305] and some have argued that the growth of sexual medicine has highlighted the need for an integration of medical and psychological approaches.[306]

Some newer approaches (eg, Internet-based therapies) require careful consideration of the choice of treatment outcome assessments (recommendation = expert opinion). There is a need to develop psychometrically valid sexual function assessments for gay, lesbian, bisexual, transgender, and queer individuals (recommendation = research principle). More research is needed to identify prognostic indicators of treatment success (eg, individual and interpersonal factors; recommendation = grade B).

Treatment Outcomes for Women

Women With *DSM-IV* HSDD

A meta-analysis yielded 20 controlled studies, most involving CBT approaches.[307] Overall, a large effect size for the primary end point of low desire and a moderate effect size on improving sexual satisfaction were reported. CBT approaches also can improve quality of sexual and marital life and sexual satisfaction.[308] Inclusion of the male partner in CBT treatment for low desire yields better outcomes.[309]

Two controlled studies evaluated mindfulness-based therapy compared with a wait-list control group[310,311]; these studies found that this approach led to significant improvements in sexual desire in women (strong effect size), but this research was limited in the absence of a treatment control group.

Based on the meta-analysis showing strong effect sizes, we recommend that clinicians use CBT in the treatment of women with low sexual desire (recommendation = grade A). We also recommend that the clinician consider mindfulness-based therapy for women with low sexual desire (recommendation = grade B) and that clinicians, whenever possible, use couple- or group-based therapy over individual therapy (recommendation = grade A).

Women With *DSM-IV* Female Sexual Arousal Disorder

A meta-analysis and a systematic review identified no controlled treatment outcome studies focused on women with specifically sexual arousal complaints.[307,312] As such, no

Table 5. Summary if the Psychotherapy Outcomes Studies for the Treatment of Erectile Dysfunction (since 2010)

Study	Methodology	Results	LE
Günzler and Berner,[309] 2012	Systematic review of controlled clinical trials; 14 ED studies were included. Of these, 4 investigated only psychosocial interventions in men with ED. Outcomes were efficacy measured by different indicators: frequency of and satisfaction with sexual activity, sexual functioning, self-assessment of efficacy of treatment, satisfaction with treatment, quality of life, and partnership. Main outcome measurements ranged from psychometrically validated scales, diary notes to interviews, and clinical assessments by an independent rater.	Overall, psychosocial interventions in men with ED were successful. Whether they are more effective than pharmacotherapy is still unclear and studies came to different results. Sex therapy, communication training, hypnosis, Internet-based cognitive-behavioral therapy counseling, or theme-based group therapy seemed effective.	4
Frühauf et al,[307] 2013	Systematic review and meta-analysis of 14 studies (ED = 2) with direct comparison of active interventions. Primary outcome was self-rated symptom severity. Secondary outcome was self-rated sexual satisfaction.	This meta-analysis found no clear evidence that psychological interventions are effective in patients with ED. There are still many gaps in research that need to be filled concerning topics such as efficacy of specific interventions for specific sexual dysfunctions, comparative efficacy of different interventions, and underpinning of effects by methodologically sound studies with larger samples.	2

ED = erectile dysfunction; LE = level of evidence.

recommendations can be made for this population of women at this time.

Women With *DSM-IV* Female Orgasmic Disorder

Most treatment programs for acquired female orgasm problems include a combination of sex education, sexual skills training, couple therapy, directed masturbation, and sensate focus.[313] In a meta-analysis, there was a moderate effect size for the efficacy of psychological treatments on the primary end point of anorgasmia and a moderate effect size for sexual satisfaction.[307]

In the only study evaluating the coital alignment technique,[314] a significantly higher rate of orgasms during intercourse, simultaneous orgasms between partners, and satisfying orgasms was reported.[315]

Taken together, we recommend CBT for women with anorgasmia (recommendation = grade A). Although the coital alignment technique is often used for women who wish to become orgasmic during vaginal penetration with intercourse, only one study evaluated the effectiveness of this method. Thus, we can only provide an expert opinion recommendation on this approach.

Treatment Outcomes for Men

Men With ED

There have been few large, randomized controlled studies evaluating the efficacy of psychological treatment of ED (Table 5).[307,312,316] Despite this, a CBT approach, combined with the use of as-needed antidepressant medication, is often recommended.[215,317,318]

In a systematic review, 13 randomized controlled trials that investigated psychosocial interventions in men with ED were identified; overall, interventions were successful.[312] In contrast, another meta-analysis found only non-significant, moderate effect sizes of psychological therapy for ED.[307]

In studies of men with ED, those who were randomized to receive psychotherapy plus sildenafil showed greater improvement and lower attrition than those receiving sildenafil only.[319,320] In a meta-analysis, two trials compared group therapy plus sildenafil with sildenafil alone; the two studies concluded that there was evidence that group psychotherapy can improve erectile function.[316]

Taken together, this literature review allows us to recommend group or couple therapy over individual therapy for men with ED (recommendation = grade A). We recommend that clinicians use CBT for men with ED (recommendation = grade A). Based on findings of better efficacy with combined psychological interventions and medical treatment over psychological or medical treatment alone, we recommend that clinicians use psychological interventions to supplement medical treatment (recommendation = grade A).

Men With PE

Although the authors of a recent systematic review concluded that behavioral techniques are effective for men with PE,[312] most outcome studies have been uncontrolled, with small samples and limited or no follow-up[321] Overall there is weak and inconsistent evidence regarding the effectiveness of psychological interventions for the treatment of PE.[307,322]

We recommend that clinicians consider psychological or behavioral interventions in the treatment of men with PE (recommendation = expert opinion). We also recommend that the clinician use psychological or behavioral interventions to supplement medical treatment of PE (recommendation = expert opinion).

Men With DE

A range of treatment techniques have been used to treat DE,[323–325] but the literature on these approaches is mainly anecdotal.[326]

We recommend that clinicians consider psychological or behavioral interventions in the treatment of men with DE (recommendation = expert opinion). We also recommend that the clinician use psychological or behavioral interventions to supplement medical treatment of DE (recommendation = expert opinion).

Men With HSDD

There are no reports solely on the psychological treatment of men presenting with HSDD.[327]

We recommend that clinicians consider psychological or behavioral interventions in the treatment of men with HSDD (recommendation = expert opinion). We also recommend that clinicians use psychological or behavioral interventions to supplement medical treatment of HSDD (recommendation = expert opinion).

INTEGRATING MEDICAL AND PSYCHOLOGICAL TREATMENTS FOR SEXUAL DYSFUNCTION

Combination or integrated treatment addresses the relevant medical and psychosocial issues that predispose, precipitate, and perpetuate sexual dysfunction.[328–332]

There is scant literature on combination therapy for women with sexual dysfunction. For men, most studies of sildenafil alone vs psychotherapy plus sildenafil for men with ED have demonstrated superiority of combined treatment.[319,333–337]

Beneficial effects of combining psychological treatment with intracavernosal injection therapy also have been reported,[338–341] although not consistently.[340] In a study of combined treatment using vacuum therapy and counseling,[342] greater improvement occurred in the combined group.

Several studies that compared combined behavior and drug therapy with behavioral therapy and/or drug treatment alone for men with PE showed small but significant differences favoring the combined approach.[343–345]

We recommend that health care providers approach the management of sexual dysfunction with combination or integrated treatments wherever possible (recommendation = grade A).

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