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# Andrology and Sexual Medicine

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# Management of Urology

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Selcuk Sarikaya • Giorgio Ivan Russo  
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# Andrology and Sexual Medicine

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# Introduction, Epidemiology and Etiology of Sexual Dysfunctions in Men and Women

1

Joana Carvalho and Borja García-Gómez

## Abstract

The epidemiology and etiology of male and female sexual dysfunctions should be addressed within a comprehensive biopsychosocial perspective. This perspective considers the interaction between the organic, psychological and cultural factors shaping human sexual response and functioning, allowing for more complete and tailored interventions. In this chapter, we will provide an overview of the epidemiology and etiology of male and female sexual dysfunctions, considering their position within a medical and a psychosocial framework, and further present evidence-based etiological and maintenance factors specific to men and women's sexual difficulties. We also discuss the interplay of the medical and psychosocial spaces and how both spaces can improve healthcare in the context of sexual dysfunctions. We stress current limitations in the field of epidemiology and etiology of sexual dysfunctions, such as the great gap in evidence regarding sexual and gender minorities, or the lack of a cultural frame regarding how epidemiology and etiology have been approached in sexual dysfunctions research.

## Sexual Dysfunctions in the Biopsychosocial Context

Sexual dysfunctions in men and women are believed to be better approached by a biopsychosocial perspective. This perspective brings together the organic, psychological, and social components of sexuality, considering their interaction in the

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etiology, maintenance, and adaptation to sexual dysfunctions. The definition of sexual health established by the World Health Organization (WHO) has greatly contributed to the communication and partnership between different scientific areas. The concept of sexual health, defined as a state of physical, emotional, mental, and social well-being in the way individuals experience their sexuality, rather than the mere absence of physical illness or dysfunction [1], has promoted the dialog between medical and social sciences. This biopsychosocial perspective leads us to the understanding of the individuals in their context, which necessarily involves the consideration of background variables, including individuals' historical and even political scene, in the expression of sexual difficulties and their treatment. Currently, several scientific and professional organizations embrace this biopsychosocial dimension, which has echoed in the way we look at the etiology and/or maintenance of sexual dysfunctions. The etiological aspects are paramount in the way we design the therapeutic plan; an integrative view of the organic, psychological, and social aspects regarding the etiology of sexual dysfunctions will result in a more careful and refined analysis of the predisposition and maintenance mechanisms of sexual dysfunctions. Eventually, that will improve the definition of the therapeutic targets; therapeutic targets will be adjusted to individuals' context, and, therefore, treatments may have better chances of success.

In this chapter, we propose to present the epidemiology of male and female sexual dysfunctions, acknowledging that the evidence includes both clinical populations, i.e., those who received a formally recognized diagnosis, and data collected from the general/non-clinical population. In the last one, the concept of sexual difficulty, rather than sexual dysfunction, has empirical value and gives us a broader view of how individuals experience their sexuality. Additionally, the etiological aspects will be considered, not only from an organic and medical perspective but also from a psychosocial view. Specificities regarding sexual dysfunctions in men and women, as well as etiological aspects regarding particular sexual conditions, will be considered as well. In the end, we hope to present some remarks on the interplay role of the medical and psychosocial aspects in order to promote lines of action for clinical practice.

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## **Epidemiology of Women's Sexual Dysfunctions**

The estimated prevalence of female sexual dysfunction is quite high, with around 40% of women reporting one or more sexual complaints [2]. Evidence about sexual desire difficulties in Britain indicates that 34.2% of women report low sexual desire; the highest prevalence is found in the range between 55 and 64 years old [3]. In Canada, similar data show that 40% of women between 40 and 59 years old report low sexual desire [4]. If we consider data regarding the difficulty in spontaneous versus responsive sexual desire (data from Flanders), 19% of women report lack of spontaneous sexual desire, 14% report difficulties in responsive desire, and 9% report difficulties in both [5]. It is important to mention that 15% to 35% of women report a discrepancy between their sexual desire and their partner's sexual desire

[3], and the distress associated with this discrepancy is a variable of great clinical interest [6]. Complaints of low sexual desire are expected to be the most frequent sexual complaints in women, although in non-Western countries complaints associated with orgasm or arousal/lubrication difficulties are the most frequent [7]. Additionally, women with low sexual desire are nine times more likely to report sexual arousal problems [8]. Vaginal lubrication difficulties are seen in 8% to 28% of women [9, 10], although the associated distress rates are only 3.3% [10]. With regard to Persistent Genital Arousal Disorder (PGAD) its prevalence is unknown, although it is estimated that between 0.6% to 1% of women may suffer from this condition [11, 12]. The percentage of women reporting orgasm difficulties can range from 3% to 34% [13], although more recent data point that 3% to 10% of women in the European and North American context may suffer from those [14]. Surprisingly, only half of women seem to report distress associated with the inability to reach orgasm [15]. Data on genito-pelvic pain indicate that 10% to 28% of women of reproductive age have genital pain [16]. With regard to vaginismus, data are equally limited, suggesting that the prevalence may reach 6.2% [17], but may rise to 68% in non-Western and more conservative communities [18]. In fact, epidemiological data seem to be quite dependent on the cultural context. The “sexual regime” of each country or culture seems to play a fundamental role, with the prevalence of female sexual dysfunctions being higher in patriarchal systems [19].

In the epidemiological context of sexual dysfunctions in women, it is important to acknowledge that the evidence is quite dated and that the data vary depending on the different terminology that researchers use. It is equally important to recognize the role of the cultural context in the expression of sexual complaints as the evidence suggests that culture plays a role in the type and prevalence of reported symptoms, with differences between Western and non-Westerns cultures.

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## Epidemiology of Men’s Sexual Dysfunctions

Data on the prevalence of male sexual dysfunctions reveal that erectile dysfunction is highly prevalent, increasing with age [20]. Prevalence rates have varied from 9.5% to 18% (findings from Australia, United Kingdom and U.S.A; [3, 21, 22]). Despite the prevalence can go up to 75% in men older than 70 years old [9], approximately 10% of men under the age of 40 may present erectile difficulties [22]. Indeed, data regarding men seeking first time help for erectile dysfunction showed that one out of four men were younger than 40 [23]. Incidence data point to 25.9 new cases per 1000 men in the U.S.A, naturally increasing along each decade of age [24]. In the Dutch context, the incidence rate (cases per 1000 person-year) was 99, ranging from 77 to 205 (age 50–59 and 70–78, respectively) [25]. Recent data on the prevalence of erectile difficulties is somehow surprising, as numbers are quite high, varying from 37.2% to 48.6% (Brazil and Italy, respectively) [26]. In obese, non-diabetic men, erectile difficulties are frequent as well—42.1% [27]. Prevalence rates of premature ejaculation strongly depend on the diversity of definitions and whether or not the condition was assigned by a trained clinician [28]. Still, rates

ranging from 20% to 30% have been found [28], with specific rates of 2.3% to 3% regarding lifelong premature ejaculation, 3.9% to 4.8% regarding acquired premature ejaculation, 8.5% to 11% regarding variable premature ejaculation, and 5% to 7% regarding subjective premature ejaculation [29, 30]. Despite these numbers, and the overlapping between premature ejaculation and psychological comorbidities, men seem to seek little assistance [31]. As for delayed ejaculation, the prevalence rates seem to be little expressive, with only about 3% of men presenting the condition [32]. Yet, in U.S.A 8% to 20% of men reported difficulties achieving climax or ejaculation [33], but only 0.7% reported the same difficulty in Britain [34]. Older age may be associated with delayed ejaculation [32].

Despite sexual desire difficulties are often seen in the context of female sexuality, 3% to 28% of men reported low sexual desire [35, 36]. In young men (18–29 years), the prevalence can range from 6% to 19%, while in older men can go up to 27% (60–67 years) [33, 37, 38]. Data can be different if we consider solitary versus dyadic sexual desire (desire to engage in sexual behavior with one's self versus with a partner, respectively). Fourteen percent of men seem to report low dyadic sexual desire, and 68% report low solitary sexual desire [39]. The incidence rate was seen to be higher regarding solitary desire [40]. Looking at sexual fantasies, which are an important marker, absence of sexual fantasies is more prevalent in older men (20%) [41]. Sexual desire difficulties may be prevalent in gay men, with numbers ranging from 19% to 57% [42, 43].

Finally, is worth recognizing that the numbers here presented vary as a function of the assessment methodologies that were used by researchers. Also, the numbers may not be representative of the countries and cultures that receive little attention in sexuality research.

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## Medical Approach to the Etiology of Sexual Dysfunctions

### Specific Etiological Factors in Women

Both in men and women, testosterone, or its biochemical metabolite  $5\alpha$ -DHT, modulates many physiological and biochemical pathways. Considering only its sexual implications, in adulthood, it determines sexual differentiation, contributes to maintain the functional state, and modulates the sexual behavior [44]. Although the underlying mechanisms are not completely understood, testosterone positively modulates sexual desire in women in the central nervous system, and it has a role, together with estradiol, in the increased blood flow to the vagina, labia, vulva and clitoris, and in the lubrication of the vagina during sexual arousal [45]. Similarly to men, androgen levels decline progressively with age in women, and with the decreased ovarian function and adrenal precursor steroids availability [46]. However, menopause seems to have no effect in this process, as long as the androgen levels found in women in their 70s are similar to those premenopausal. Different studies have failed to demonstrate a correlation between the presence of hypoactive sexual desire in women or its severity, and the levels of testosterone. In fact, when reaching

levels of testosterone above those present in the premenopausal period, sexual desire may actually decrease, suggesting a bimodal effect [47].

In contrast, after menopause, an abrupt drop in circulating estrogens is observed. These changes lead to many changes in the physiology of women, including the deterioration of the vagina epithelia. It appears flattened, with an absence of papillae, and a lower proportion of cells containing glycogen, which leads to a decrease of Lactobacilli and an increase in the pH. Also, the collagen I/III ratio is lower, resulting in reduced tissue strength [48], so it is more susceptible to trauma and it can result in pain, ulceration or bleeding during or after sexual intercourse. This scenario can result in inflammation and further worsening of the atrophy [49].

Although some relation has been observed, there is no clear correlation between hormone levels and PGAD. This disorder has been related with a myriad of other conditions as bipolar disorder, anxiety, depression, overactive bladder, interstitial cystitis and pudendal neuralgia; but their pathophysiological mechanisms remain widely unknown [50].

## Specific Etiological Factors in Men

In the last 30 years there has been an increasing interest in the study of the pathophysiology of sexual dysfunctions in both men and woman, but there is still a long way to go in some disorders. Erection is the result of a complex coordination of neural, vascular and hormonal mechanisms that work together to achieve and maintain rigidity during sexual intercourse [51]. When some of these mechanisms is disrupted, different types of ED are defined: vascular, neurological or hormonal, with a variable presence of psychological factors in almost all of them, that can ease or worsen the previous condition. Isolated psychogenic ED is a non-well defined entity, that usually affects younger patients, with rates of prevalence as high as 30% of those adults under 40 [52]. The relationship between vascular ED and cardiovascular disease (CVD) has been well established through the last 20 years, considering in fact ED as an independent risk factor for CVD, and to be present an average of 2–3 years before the onset of the first coronary event [53]. Therefore, comorbidities known to cause CVD, as smoking, diabetes, hypertension, dyslipidemia, overweight, or sedentary lifestyle, are mandatory to assess and investigate when a man complains about ED [54]. The high prevalence of these comorbidities in general population makes vasculogenic ED, by far, the most common subtype of ED [55]. Age is an independent risk factor for both ED and CVD [56]. Thereby, a recent study found a decrease in the peak systolic flow of the cavernosal arteries in a cohort of healthy male patients through the years, supporting the idea that even in men without comorbidities, ED will be more prevalent with age [57]. With respect to diabetes, two pathogenic pathways, neurologic and vascular, can be present, resulting in very high prevalence rates as high as 52.5% in this subgroup of patients [58]. The progressive obliteration of the arteries due to arteriosclerosis usually associated with a poor glucose control can be followed or preceded by a lesion of the distal branches of the pudendal nerve, making it difficult to transfer the erectogenic

stimuli. This is the reason why this subgroup of patients is considered difficult to treat [59], and why neurogenic ED can be present in other disorders causing central or peripheral nerve damage, as multiple sclerosis, spinal cord injuries or chronic renal failure [60]. The most common cause of iatrogenic ED is after radical pelvic surgery, where nerve damage is supposed to have an important role and has been widely investigated in the literature. However, the reported incidence of ED after surgery shows an extremely variability, with figures ranging from 12% to 96%, due to methodological differences [61].

Late onset hypogonadism, also referred as age-associated testosterone deficiency syndrome or, more recently and correct, as “functional hypogonadism”, is a biochemical and clinical syndrome characterized for the presence of a wide spectrum of clinical symptoms and low testosterone levels, which is related to age. In men, average levels of androgens decline constant and progressively through the years [62]. Focusing on sexual function, it is known that testosterone deficiency can cause low sexual desire, and also a decrease in morning erections and ED. So when a man complain of these conditions, it is mandatory to assess testosterone levels [63], especially in the elder population, given that androgen therapy could improve or solve these problems [64].

Despite the high prevalence of ejaculation disorders, as PE and DE, their biological pathophysiology has not been so widely investigated and has not been precisely established [65]. Acquired PE has been related to conditions as inflammation or infection of the prostate, abnormal hormonal levels (LH, prolactin and TSH), and low levels of serotonin, which, in some cases, could be successfully treated to improve the dysfunction [66]. In the case of lifelong PE, the most widely accepted hypothesis is that in men with low 5-hydroxytryptamine (5-HT) the hyposensitivity of the 5-HT<sub>2C</sub>, or the hypersensitivity of the 5-HT<sub>1A</sub> receptors that are located in the neuronal centers, can lead to a more rapid threshold for ejaculation, with lower stimulation [67]. This theory also explains that those men with a higher set point can better control the process, and that those with an abnormally high set point experience delayed, or even absent ejaculation with normal erection [68]. Several studies in the literature have used imaging techniques as magnetic resonance to investigate the functional and structural neural basis of PE, with findings as higher activation in the middle temporal gyrus; larger volume of the caudate nucleus; cortical, parietal, occipital and cingulate cortical thickening; altered structural connectivity of the fronto-cingulate-parietal control network; and lower activation of the left inferior frontal gyrus and left insula [65]. Although all of them try to better understand the condition, and to put some light in the darkness, there is still a need to put together these results and demonstrate the importance of these findings in daily clinical practice.

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## **Psychosocial Approach to the Etiology of Sexual Dysfunctions**

Over the last few decades, several models conceptualizing sexual dysfunctions have emerged. These models vary in the way they regard the role of different psychosocial factors in the etiology and/or maintenance of sexual dysfunctions. The

precursor model of Masters and Johnson (the so-called linear model of sexual response) which was aimed at characterizing the physiological processes involved in arousal, plateau, orgasm, and resolution stages [69], gave little emphasis to the subjective and contextual processes involved in sexual response [70]. Nevertheless, the model proposed two core etiological factors regarding sexual dysfunctions: performance anxiety and *spectatoring*, i.e., spectator of oneself during sexual activity. The phenomenon of sexual performance anxiety appears to characterize individuals with sexual difficulties and emerges as a specific component of the broader concept of anxiety [71]. Therefore, while anxiety has the potential to increase the sexual response in men and women, increasing their erectile response and vaginal lubrication, more specific components such as the anticipation of failure or poor sexual performance are associated with clinical conditions of sexual dysfunction [72]. In the clinical context, is it important for the health professional to define the weight of this etiological variable, as well as the sources that promote it, e.g., cultural standards? partner pressure? Regarding the role of anxiety and its triggers, Barlow proposes a more elaborate model with greater empirical value, mostly focused on male sexual dysfunction, and in particular, on erectile dysfunction [73]. From a series of studies focusing on physiological variables (namely, erectile response) but also psychological or subjective measures, it became clear that what most differentiated men with and without erectile dysfunction, more than their erectile response, was the fact that men with dysfunction respond with more negative affect through sexual stimulation, a feeling of loss of control, preoccupation with performance or the negative consequences of sexual performance, and an underestimation of their erectile response [74]. The man with sexual dysfunction ends up focusing on non-erotic cues, with implications for his adaptive response. Basson, who were more aligned with the domain of female sexuality, proposed an alternative model, considering relationship aspects, namely, emotional intimacy [75]. Emotional intimacy is seen as a driving source of sexual response, especially in terms of sexual arousal and desire. Although a basic condition is necessary—be it organic or psychological—that guarantees the ability to process sexual stimuli, there is an important relational purpose for the understanding of sexual (dys)function [76].

Another interesting model is that of the sexual scripts of Gagnon and Simon [77]. Sexual scripts emerge from more general scripts, i.e., social scripts, and result from a social learning process that defines what is correct and expected at a given time, in a given society. These scripts incorporate a sociocultural, interpersonal, and individual dimension that guides individuals in how they should live their sexuality and build their sexual interactions [78]. These sexual scripts will thus guide individuals in what they should and should not do sexually, how, and with whom. According to this model, it is expected that individuals with sexual dysfunctions present more rigid, conventional, or routine sexual scripts, which contribute to the maintenance of their symptoms [79]. A contextual look would therefore be essential for understanding the etiology and maintenance factors of sexual dysfunctions. More recently, and in articulation with a cognitive-behavioral clinical intervention proposal, Nobre suggested the cognitive-emotional model according to which a series of cognitive structures, of information processing, are at the core of erroneous interpretations of

negative sexual events (e.g., sexual failure). These cognitive structures promote a vicious cycle that feeds dysfunctional thoughts in the sexual context as well as emotional states that are not compatible with the capacity to perform sexually [80, 81]. Data collected over several years and in independent investigations allowed researchers to characterize different sexual difficulties, in men and women, with and without heterosexual preferences, pointing potential etiological and maintenance factors of sexual dysfunctions [82]. Examples of these factors are lack of erotic thoughts, preoccupation with erections during sexual activity, the anticipation of failed sexual performance, thoughts of sexual abuse, or preoccupation with body image [82]. Finally, and because we will not cover all models of a psychosocial nature, we highlight the Dual Control Model of sexual response. This model postulates that the sexual response results from the balance between relatively independent mechanisms of sexual arousal and inhibition [83, 84]. In this regard, it is interesting to analyze the factorial structure of the model, as it resulted in an excitation mechanism and two inhibition mechanisms [85, 86]. The latter refers to the predisposition to sexual inhibition due to the fear of sexual performance failure, and inhibition due to the fear of the negative consequences associated with the sex (e.g., STD, unwanted pregnancy). It is interesting to see that sexual inhibition due to fear of sexual performance failure echoes other models (Barlow model, Nobre and Pinto-Gouveia model), supporting the role of learned cultural standards about sexual performance—often, unrealistic standards—, in male and female sexual functioning. Empirical evidence on the Dual Control Model suggests that sexual inhibition, especially the fear of sexual performance failure, is a vulnerability factor for sexual dysfunction in men and women [87, 88].

Furthermore, there is a consensus to improve the focus on the individuals' proximal relationship context. Accordingly, it is paramount that the focus is on the dyad or partners and not on the individual carrying the symptom or the sexual complaint. What sometimes causes the complaint is not the sexual symptoms themselves, but the fact that there is a discrepancy in the sexual response between the elements of the couple, or the fact that one of the elements has unrealistic and very high expectations regarding the sexual functioning of the other. This contextual and relationship view becomes an asset in understanding the etiological and maintenance variables of sexual complaints.

### **Specific Etiological Factors in Women**

In addition to the models presented, a series of studies have made it possible to assess psychosocial etiological factors specific to each sexual dysfunction or difficulty. For example, in women's sexual desire difficulties, the quality of the relationship seems to be a determining factor, to the point that satisfaction with the partner in one specific day, promotes sexual activity the next day [89]. Relationship duration seems to play a negative role [90], while conservative sexual beliefs and medical aspects have an indirect effect, influencing female sexual desire through lack of

erotic thoughts and perception of sexual failure [91]. Insecure and anxious attachment styles, i.e., dysfunctional relationship styles, characterized the expression of sexual desire in women [92]. Thoughts of sexual abuse were also associated with lower sexual desire [93]. Additionally, communication in the relational context has also a central role, being a key target in therapy [94]. On the other hand, cultural aspects can be important etiological mechanisms of sexual desire difficulties in women. These include social narratives favoring female passivity and responsiveness [95], poor sex education, overload of professional and parental tasks, or even demanding and unrealistic standards of female attractiveness [96]. Likewise, and considering patterns of sexual arousal, while sexually explicit stimuli (stimuli with a focus on genital interaction) seem to induce greater genital activation, subjective sexual arousal in women is prompted by stimuli that suggest a relational context [97, 98]. In fact, relational satisfaction seems to be associated with fewer arousal difficulties [99]. In addition, women with PGAD reported more dysfunctional sexual beliefs (sexual conservatism or sexual desire regarded as a sin), as well as thoughts of sexual abuse and lack of affection during sexual activity [100]; likewise, the quality of the dyadic relationship was associated with the levels of distress [101].

With regard to orgasm difficulties, the data suggest that a history of sexual victimization may play an etiological role, particularly in women who experienced physical sensations and orgasm during abuse [102]. Similar to desire difficulties, the presence of thoughts of sexual failure and lack of erotic thoughts during sexual activity predicted orgasm difficulties in women [103]. Women with genito-pelvic pain also reported a higher probability of sexual and physical abuse [104, 105], which places this problem in a relational and interpersonal context. Anxiety factors such as catastrophizing thoughts and hypervigilance towards pain also triggered the perception of genito-pelvic pain [106].

## Specific Etiological Factors in Men

Regarding male sexual dysfunctions, there is also evidence about vulnerability factors specific to each clinical condition. Cases of erectile dysfunction are often accompanied by depressive and anxiety symptoms, resulting in a context of psychological distress [107]. Lower erectile capacity is also associated with situational events where psychological distress arises in response to a critical event [108]. On the other hand, the perception of intimacy has been shown to be a protective factor in erectile dysfunction [109]. Additionally, much has been written about the importance of cognitive factors in erectile dysfunction. High expectations of sexual performance coupled with dysfunctional processing styles of sexual information result in a sense of loss of control, guilt for poor sexual performance, and cognitive distraction during sexual activity, contributing to the maintenance of erectile difficulties [82]. In the context of non-heterosexual relationships, sexual minority associated distress seems to be linked with erectile difficulties in men who have sex with men [110]. All these factors are relevant in the design of biopsychosocial interventions



for erectile dysfunction. Although the evidence is more limited, cases of premature ejaculation seem to be characterized by a style of internalization, in which the man attributes to himself the responsibility for his dysfunctional sexual response, blaming himself and monitoring the partner for confirmation signs of his poor sexual performance [111]. These men have a more preoccupied personality style and are less motivated to look for new sensations, fearing novelty [112]. Delayed ejaculation cases also appear to be characterized by an anxiety profile, lack of confidence, in which a pattern of negative self-talk interferes with reaching climax even with a good erectile response [113]. Regarding the difficulties of sexual desire in men, although the literature is also insufficient, the data suggest that some psychosocial determinants such as duration of the relationship, professional stress, little confidence in achieving an erection, higher education and more demanding careers, or even the desire to having children or having young children are associated with lower sexual desire in men [39, 114–116]. The combination of cognitive and emotional aspects proved to be an important predictor of desire difficulties, with a special emphasis on concerns with erectile capacity and the lack of erotic thoughts during sexual intercourse [117].

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### **Combining the Medical and Psychosocial Factors Toward a Comprehensive Approach to Sexual Dysfunction**

The biopsychosocial view of sexual dysfunctions promotes a more comprehensive analysis of the etiological and maintenance factors of sexual difficulties, focusing on the interaction between etiological aspects and looking for better forms of intervention, as well as more adjusted ways to address the specificities of each individual or partner(s). Therefore, it is a vision that makes it possible to overcome the reductionist dichotomy of organic versus psychological, improving assessment and intervention practices, and stimulating the articulation between the different scientific and professional domains [118]. The different fields are not incompatible; on the contrary, they make it possible to maximize interventions. In this regard, some scientific and professional societies have promoted this vision, resulting in proposals for the integrative assessment and intervention in sexual problems. Indeed, existing integrative approaches have shown promising results [119]. In order to further explore the link between the organic and the psychosocial, important networks, including the European Sexual Medicine Network, have invested in this approach as a way to ensure greater interdisciplinary and, therefore, better services in the field of human sexuality [120]. This biopsychosocial approach to the etiological aspects of sexual dysfunctions needs further empirical work, especially if we consider that the etiological factors of a psychosocial order are permeable to the cultural, historical, and even political context, and those are in constant change. It is, therefore, essential to follow this evolutionary process for a better understanding of the etiology and maintenance factors of sexual dysfunctions.

## Final Remarks

This section intended to present evidence on the epidemiology and etiological factors associated with sexual dysfunction in men and women. It is important to highlight methodological limitations. Among them, we highlight the reduced information about the etiological aspects and prevalence in sexual and gender minorities. This limitation clearly excludes the possibility of a rigorous analysis of the etiological aspects or the specific needs of these populations, resulting in a less effective and less socially fair intervention approach. Furthermore, and although this chapter has focused on the context of sexual dysfunctions, the tendency to look at other equally relevant constructs such as issues of sexual pleasure or sexual well-being is also worthy of attention. Indeed, the gap between men and women in access to sexual pleasure requires an analysis of the factors that promote this gap and the respective consideration by professionals and clinicians in the area of sexuality [121]. The same is true for the concept of sexual distress. It has emerged as a more comprehensive view of sexual dysfunction, referring to the negative emotional response resulting from the sexual functioning of individuals, and being a fundamental criterion for the diagnosis of sexual dysfunction [122, 123]. In fact, the prevalence of sexual dysfunctions is lower when this criterion is considered [124]; the application of cutoff points (e.g., IIEF or FSFI) to understand the prevalence and etiology of sexual dysfunctions is insufficient as it assumes the presence versus absence of dysfunction as a fundamental criterion, rather than the actual impact of the symptomatology on the life of individuals [125]. Finally, we consider that some evidence about the psychosocial etiological factors is dated. Available data may fail to reflect the transformative character of the biopsychosocial vision.

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## References

1. World Health Organization. Sexual health. [https://www.who.int/health-topics/sexual-health#tab=tab\\_2](https://www.who.int/health-topics/sexual-health#tab=tab_2). Accessed December, 6, 2021.
2. McCool-Myers M, Theurich M, Zuelke A, Knuettel H, Apfelbacher C. Predictors of female sexual dysfunction: a systematic review and qualitative analysis through gender inequality paradigms. *BMC Womens Health*. 2018;8(1):108.
3. Mitchell KR, Mercer CH, Ploubidis GB, Jones KG, Datta J, Field N, Copas AJ, Tanton C, Erens B, Sonnenberg P, Clifton S, Macdowall W, Phelps A, Johnson AM, Wellings K. Sexual function in Britain: findings from the third National Survey of Sexual Attitudes and Lifestyles (Natsal-3). *Lancet*. 2013;382(9907):1817–29.
4. Quinn-Nilas C, Milhausen RR, McKay A, Holzapfel S. Prevalence and predictors of sexual problems among midlife Canadian adults: results from a National Survey. *J Sex Med*. 2018;15(6):873–9.
5. Hendrickx L, Gijs L, Enzlin P. Prevalence rates of sexual difficulties and associated distress in heterosexual men and women: results from an Internet survey in Flanders. *J Sex Res*. 2014;51(1):1–12.
6. Marieke D, Joana C, Giovanni C, Erika L, Patricia P, Yacov R, Aleksandar Š. Sexual desire discrepancy: a position statement of the European Society for Sexual Medicine. *Sex Med*. 2020;8(2):121–31. <https://doi.org/10.1016/j.esxm.2020.02.008>.

7. Atallah S, Johnson-Agbakwu C, Rosenbaum T, Abdo C, Byers ES, Graham C, Nobre P, Wylie K, Brotto L. Ethical and sociocultural aspects of sexual function and dysfunction in both sexes. *J Sex Med.* 2016;13(4):591–606.
8. Graham CA, Boynton PM, Gould K. Women's sexual desire: challenging narratives of "dysfunction". *Eur Psychol.* 2017;22(1):27–38.
9. Lewis RW, Fugl-Meyer KS, Corona G, Hayes RD, Laumann EO, Moreira ED Jr, Rellini AH, Segraves T. Definitions/epidemiology/risk factors for sexual dysfunction. *J Sex Med.* 2010;7(4 Pt 2):1598–607.
10. Shifren JL, Monz BU, Russo PA, Segreti A, Johannes CB. Sexual problems and distress in United States women: prevalence and correlates. *Obstet Gynecol.* 2008;112(5):970–8.
11. Jackowich R, Pukall C. Prevalence of persistent genital arousal disorder criteria in a sample of Canadian undergraduate students. *J Sex Med.* 2017;14(6):e369.
12. Garvey LJ, West C, Latch N, Leiblum S, Goldmeier D. Report of spontaneous and persistent genital arousal in women attending a sexual health clinic. *Int J STD AIDS.* 2009;20(8):519–21.
13. Graham CA. The DSM diagnostic criteria for female orgasmic disorder. *Arch Sex Behav.* 2010;39(2):256–70.
14. Carpenter KM, Williams K, Worly B. Treating women's orgasmic difficulties. In: Peterson Z, editor. *The Wiley handbook of sex therapy.* Hoboken: Wiley-Blackwell; 2017. Chapter 5.
15. Laan E, Rellini AH, Barnes T, International Society for Sexual Medicine. Standard operating procedures for female orgasmic disorder: consensus of the International Society for Sexual Medicine. *J Sex Med.* 2013;10(1):74–82.
16. Pukall CF, Goldstein AT, Bergeron S, Foster D, Stein A, Kellogg-Spadt S, Bachmann G. Vulvodynia: definition, prevalence, impact, and pathophysiological factors. *J Sex Med.* 2016;13(3):291–304.
17. Oberg K, Sjögren Fugl-Meyer K. On Swedish women's distressing sexual dysfunctions: some concomitant conditions and life satisfaction. *J Sex Med.* 2005;2(2):169–80.
18. Amidu N, Owiredun WK, Woode E, Addai-Mensah O, Quaye L, Alhassan A, Tagoe EA. Incidence of sexual dysfunction: a prospective survey in Ghanaian females. *Reprod Biol Endocrinol.* 2010;8:106.
19. Hall KSK, Graham CA. The privilege of pleasure: sex therapy in global cultural context. In: Hall KSK, Binik YM, editors. *Principles and practice of sex therapy.* New York: Guilford; 2020. Chapter 11.
20. Lewis RW, Fugl-Meyer KS, Bosch R, Fugl-Meyer AR, Laumann EO, Lizza E, Martin-Morales A. Epidemiology/risk factors of sexual dysfunction. *J Sex Med.* 2004;1(1):35–9.
21. Richters J, Grulich AE, de Visser RO, Smith AM, Rissel CE. Sex in Australia: sexual difficulties in a representative sample of adults. *Aust N Z J Public Health.* 2003;27(2):164–70.
22. Selvin E, Burnett AL, Platz EA. Prevalence and risk factors for erectile dysfunction in the US. *Am J Med.* 2007;120(2):151–7.
23. Capogrosso P, Colicchia M, Ventimiglia E, Castagna G, Clementi MC, Suardi N, Castiglione F, Briganti A, Cantiello F, Damiano R, Montorsi F, Salonia A. One patient out of four with newly diagnosed erectile dysfunction is a young man—worrisome picture from the everyday clinical practice. *J Sex Med.* 2013;10(7):1833–41.
24. Johannes CB, Araujo AB, Feldman HA, Derby CA, Kleinman KP, McKinlay JB. Incidence of erectile dysfunction in men 40 to 69 years old: longitudinal results from the Massachusetts male aging study. *J Urol.* 2000;163(2):460–3.
25. Schouten BW, Bosch JL, Bernsen RM, Blanker MH, Thomas S, Bohnen AM. Incidence rates of erectile dysfunction in the Dutch general population. Effects of definition, clinical relevance and duration of follow-up in the Krimpen Study. *Int J Impot Res.* 2005;17(1):58–62.
26. Goldstein I, Goren A, Li VW, Tang WY, Hassan TA. Epidemiology update of erectile dysfunction in eight countries with high burden. *Sex Med Rev.* 2020;8(1):48–58.
27. Molina-Vega M, Asenjo-Plaza M, Banderas-Donaire MJ, Hernández-Ollero MD, Rodríguez-Moreno S, Álvarez-Millán JJ, Cabezas-Sanchez P, Cardona-Díaz F, Alcaide-Torres J, Garrido-Sánchez L, Castellano-Castillo D, Tinahones FJ, Fernández-García JC. Prevalence

- of and risk factors for erectile dysfunction in young nondiabetic obese men: results from a regional study. *Asian J Androl.* 2020;22(4):372–8.
28. Althof SE. Treatment of premature ejaculation. In: Hall KSK, Binik YM, editors. *Principles and practice of sex therapy.* New York: Guilford; 2020. Chapter 6.
  29. Serefoglu EC, Yaman O, Cayan S, Asci R, Orhan I, Usta MF, Ekmekcioglu O, Kendirci M, Semerci B, Kadioglu A. Prevalence of the complaint of ejaculating prematurely and the four premature ejaculation syndromes: results from the Turkish Society of Andrology Sexual Health Survey. *J Sex Med.* 2011;8(2):540–8.
  30. Gao J, Zhang X, Su P, Liu J, Xia L, Yang J, Shi K, Tang D, Hao Z, Zhou J, Liang C. Prevalence and factors associated with the complaint of premature ejaculation and the four premature ejaculation syndromes: a large observational study in China. *J Sex Med.* 2013;10(7):1874–81.
  31. Porst H, Montorsi F, Rosen RC, Gaynor L, Grupe S, Alexander J. The Premature Ejaculation Prevalence and Attitudes (PEPA) survey: prevalence, comorbidities, and professional help-seeking. *Eur Urol.* 2007;51(3):816–23. discussion 824
  32. Perelman MA, Rowland DL. Retarded ejaculation. *World J Urol.* 2006;24(6):645–52.
  33. Laumann EO, Paik A, Rosen RC. Sexual dysfunction in the United States: prevalence and predictors. *JAMA.* 1999;281(6):537–44.
  34. Mercer CH, Fenton KA, Johnson AM, Copas AJ, Macdowall W, Erens B, Wellings K. Who reports sexual function problems? Empirical evidence from Britain's 2000 National Survey of Sexual Attitudes and Lifestyles. *Sex Transm Infect.* 2005;81(5):394–9.
  35. Fugl-Meyer AR, Fugl-Meyer KS. Sexual disabilities, problems and satisfaction in 18–74 year old Swedes. *Scand J Sex.* 1999;3:79–105.
  36. Laumann E, Nicolosi A, Glasser D, et al. Sexual problems among women and men aged 40–80 y: prevalence and correlates identified in the Global Study of Sexual Attitudes and Behaviors. *Int J Impot Res.* 2005;17:39–57.
  37. Najman JM, Dunne MP, Boyle FM, Cook MD, Purdie DM. Sexual dysfunction in the Australian population. *Aust Fam Physician.* 2003;32(11):951–4.
  38. Traeen B, Stigum H. Sexual problems in 18–67-year-old Norwegians. *Scand J Public Health.* 2010;38(5):445–56.
  39. Martin S, Atlantis E, Wilson D, Lange K, Haren MT, Taylor A, Wittert G, Members of the Florey Adelaide Male Ageing Study. Clinical and biopsychosocial determinants of sexual dysfunction in middle-aged and older Australian men. *J Sex Med.* 2012;9(8):2093–103.
  40. Martin S, Haren M, Taylor A, Middleton S, Wittert G, FAMAS. Cohort profile: the Florey Adelaide Male Ageing Study (FAMAS). *Int J Epidemiol.* 2007;36(2):302–6.
  41. Corona G, Isidori AM, Aversa A, Burnett AL, Maggi M. Endocrinologic control of men's sexual desire and arousal/erection. *J Sex Med.* 2016;13(3):317–37.
  42. Hirshfield S, Chiasson MA, Wagmiller RL Jr, Remien RH, Humberstone M, Scheinmann R, Grov C. Sexual dysfunction in an Internet sample of U.S. men who have sex with men. *J Sex Med.* 2010;7(9):3104–14.
  43. Peixoto MM, Nobre P. Prevalence of sexual problems and associated distress among lesbian and heterosexual women. *J Sex Marital Ther.* 2015;41(4):427–39.
  44. Parish SJ, Simon JA, Davis SR, Giraldi A, Goldstein I, Goldstein SW, et al. International Society for the Study of Women's Sexual Health Clinical Practice Guideline for the use of systemic testosterone for hypoactive sexual desire disorder in women. *J Women's Health.* 2021;30(4):474–91.
  45. Cappelletti M, Wallen K. Increasing women's sexual desire: the comparative effectiveness of estrogens and androgens. *Horm Behav.* 2016;78:178–93.
  46. Burger HG, Dudley EC, Cui J, Dennerstein L, Hopper JL. A prospective longitudinal study of serum testosterone, dehydroepiandrosterone sulfate, and sex hormone-binding globulin levels through the menopause transition. *J Clin Endocrinol Metab.* 2000;85(8):2832–8.
  47. Krapf JM, Simon JA. A sex-specific dose-response curve for testosterone: could excessive testosterone limit sexual interaction in women? *Menopause.* 2017;24(4):462–70.
  48. Miller EA, Beasley DE, Dunn RR, Archie EA. Lactobacilli dominance and vaginal pH: why is the human vaginal microbiome unique? *Front Microbiol.* 2016;7:1936.

49. Alvisi S, Gava G, Orsili I, Giacomelli G, Baldassarre M, Seracchioli R, et al. Vaginal health in menopausal women. *Medicina (Mex)*. 2019;55(10):615.
50. Pease ER, Ziegelmann M, Vencill JA, Kok SN, Collins CS, Betcher HK. Persistent genital arousal disorder (PGAD): a clinical review and case series in support of multidisciplinary management. *Sex Med Rev*. 2022;10(1):53–70.
51. Irwin GM. Erectile dysfunction. *Prim Care*. 2019;46(2):249–55.
52. Nguyen HMT, Gabrielson AT, Hellstrom WJG. Erectile dysfunction in young men—a review of the prevalence and risk factors. *Sex Med Rev*. 2017;5(4):508–20.
53. Montorsi P, Ravagnani PM, Galli S, Rotatori F, Veglia F, Briganti A, et al. Association between erectile dysfunction and coronary artery disease. Role of coronary clinical presentation and extent of coronary vessels involvement: the COBRA trial. *Eur Heart J*. 2006;27(22):2632–9.
54. Burnett AL, Nehra A, Breau RH, Culkin DJ, Faraday MM, Hakim LS, et al. Erectile dysfunction: AUA guideline. *J Urol*. 2018;200(3):633–41.
55. Yafi FA, Jenkins L, Albersen M, Corona G, Isidori AM, Goldfarb S, et al. Erectile dysfunction. *Nat Rev Dis Primers*. 2016;2:16003.
56. Miner M, Parish SJ, Billups KL, Paulos M, Sigman M, Blaha MJ. Erectile dysfunction and subclinical cardiovascular disease. *Sex Med Rev*. 2019;7(3):455–63.
57. Pathak RA, Broderick GA. Color Doppler duplex ultrasound parameters in men without organic erectile dysfunction. *Urology*. 2020;135:66–70.
58. Kouidrat Y, Pizzol D, Cosco T, Thompson T, Carnaghi M, Bertoldo A, et al. High prevalence of erectile dysfunction in diabetes: a systematic review and meta-analysis of 145 studies. *Diabet Med*. 2017;34(9):1185–92.
59. Gandhi J, Dagur G, Warren K, Smith NL, Sheynkin YR, Zumbo A, et al. The role of diabetes mellitus in sexual and reproductive health: an overview of pathogenesis, evaluation, and management. *Curr Diabetes Rev*. 2017;13(6):573–81.
60. Thomas C, Konstantinidis C. Neurogenic erectile dysfunction. Where do we stand? *Med Basel Switz*. 2021;8(1):3.
61. Emanu JC, Avildsen IK, Nelson CJ. Erectile dysfunction after radical prostatectomy: prevalence, medical treatments, and psychosocial interventions. *Curr Opin Support Palliat Care*. 2016;10(1):102–7.
62. Wang C, Nieschlag E, Swerdloff R, Behre HM, Hellstrom WJ, Gooren LJ, et al. Investigation, treatment and monitoring of late-onset hypogonadism in males: ISA, ISSAM, EAU, EAA and ASA recommendations. *Eur J Endocrinol*. 2008;159(5):507–14.
63. Corona G, Goulis DG, Huhtaniemi I, Zitzmann M, Toppari J, Forti G, et al. European Academy of Andrology (EAA) guidelines on investigation, treatment and monitoring of functional hypogonadism in males: endorsing organization: European Society of Endocrinology. *Andrology*. 2020;8(5):970–87.
64. Taniguchi H, Shimada S, Kinoshita H. Testosterone therapy for late-onset hypogonadism improves erectile function: a systematic review and meta-analysis. *Urol Int*. 2021;2:1–14.
65. Lu J, Chen Q, Li D, Zhang W, Xing S, Wang J, et al. Reconfiguration of dynamic functional connectivity states in patients with lifelong premature ejaculation. *Front Neurosci*. 2021;15:721236.
66. Crowdis M, Nazir S. Premature ejaculation. In: *StatPearls*. Treasure Island, FL: StatPearls Publishing; 2021. <https://www.ncbi.nlm.nih.gov/books/NBK546701/>.
67. Saitz TR, Serefoglu EC. Advances in understanding and treating premature ejaculation. *Nat Rev Urol*. 2015;12(11):629–40.
68. Giuliano F, Clement P. Neuroanatomy and physiology of ejaculation. *Annu Rev Sex Res*. 2005;16:190–216.
69. Masters WH, Johnson VE. Human sexual response. Boston: Little Brown; 1966.
70. Rosen CR, Beck JG. Patterns of sexual arousal: psychophysiological processes and clinical applications. New York: Guilford; 1988.
71. Masters WH, Johnson VE. Human sexual inadequacy. Boston: Little Brown; 1970.

72. Kane L, Dawson S, Shaughnessy K, Reissing ED, Ouimet AJ, Ashbaugh AR. A review of experimental research on anxiety and sexual arousal: implications for the treatment of sexual dysfunction using cognitive behavioral therapy. *J Exp Psychopathol.* 2019;10(2):1–24.
73. Barlow DH. Causes of sexual dysfunction: the role of anxiety and cognitive interference. *J Consult Clin Psychol.* 1986;54(2):140–8.
74. Abrahamson DJ, Barlow DH, Abrahamson LS. Differential effects of performance demand and distraction on sexually functional and dysfunctional males. *J Abnorm Psychol.* 1989;98(3):241–7.
75. Basson R. The female sexual response: a different model. *J Sex Marital Ther.* 2000;26(1):51–65.
76. Basson R. Human sex-response cycles. *J Sex Marital Ther.* 2001;27(1):33–43.
77. Gagnon JH, Simon W. *Sexual conduct: the social sources of human sexuality.* Chicago: Aldine; 1973.
78. Gagnon JH, Simon W. The sexual scripting of oral genital contacts. *Arch Sex Behav.* 1987;16(1):1–25.
79. Gagnon JH, Rosen RC, Leiblum SR. Cognitive and social aspects of sexual dysfunction: sexual scripts in sex therapy. *J Sex Marital Ther.* 1982;8(1):44–56.
80. Nobre PJ. Treating men's erectile problems. In: Peterson Z, editor. *The Wiley-Blackwell handbook of sex therapy.* Hoboken, NJ: Wiley-Blackwell; 2017. Chapter 4.
81. Nobre PJ. Treatments for sexual dysfunctions. In: Hoffman S, editor. *Clinical psychology: a global perspective.* Hoboken, NJ: Wiley-Blackwell; 2017. Chapter 14.
82. Tavares IM, Moura CV, Nobre PJ. The role of cognitive processing factors in sexual function and dysfunction in women and men: a systematic review. *Sex Med Rev.* 2020;8:403–30.
83. Bancroft J, Janssen E. The dual control model of male sexual response: a theoretical approach to centrally mediated erectile dysfunction. *Neurosci Biobehav Rev.* 2000;24(5):571–9.
84. Janssen E, Bancroft J. The dual control model: the role of sexual inhibition and excitation in sexual arousal and behavior. In: Janssen E, editor. *The psychophysiology of sex.* Bloomington: Indiana University Press; 2007. Chapter 10.
85. Janssen E, Vorst H, Finn P, Bancroft J. The Sexual Inhibition (SIS) and Sexual Excitation (SES) Scales: I. Measuring sexual inhibition and excitation proneness in men. *J Sex Res.* 2002;39(2):114–26.
86. Carpenter D, Janssen E, Graham C, Vorst H, Wicherts J. Women's scores on the sexual inhibition/sexual excitation scales (SIS/SES): gender similarities and differences. *J Sex Res.* 2008;45(1):36–48.
87. Bancroft J, Graham CA, Janssen E, Sanders SA. The dual control model: current status and future directions. *J Sex Res.* 2009;46(2-3):121–42.
88. Sanders SA, Graham CA, Milhausen RR. Predicting sexual problems in women: the relevance of sexual excitation and sexual inhibition. *Arch Sex Behav.* 2008;37(2):241–51.
89. Dewitte M, Mayer A. Exploring the link between daily relationship quality, sexual desire, and sexual activity in couples. *Arch Sex Behav.* 2018;47(6):1675–86.
90. Mark KP, Leistner CE, Garcia JR. Impact of contraceptive type on sexual desire of women and of men partnered to contraceptive users. *J Sex Med.* 2016;13(9):1359–68.
91. Carvalho J, Nobre P. Sexual desire in women: an integrative approach regarding psychological, medical, and relationship dimensions. *J Sex Med.* 2010;7(5):1807–15.
92. Attaky A, Kok G, Dewitte M. Attachment orientation moderates the sexual and relational implications of sexual desire discrepancies. *J Sex Marital Ther.* 2022;48(4):343–62.
93. Carvalho J, Nobre P. Predictors of women's sexual desire: the role of psychopathology, cognitive-emotional determinants, relationship dimensions, and medical factors. *J Sex Med.* 2010;7(2 Pt 2):928–37.
94. Brotto LA, Velten J. Sexual interest/arousal disorder in women. In: Hall KSK, Binik YM, editors. *Principles and practice of sex therapy.* New York: Guilford; 2020. Chapter 1.
95. Boul L, Hallam-Jones R, Wylie KR. Sexual pleasure and motivation. *J Sex Marital Ther.* 2009;35(1):25–39.
96. Tiefer L, Hall M, Tavris C. Beyond dysfunction: a new view of women's sexual problems. *J Sex Marital Ther.* 2002;28(Suppl 1):225–32.

97. Laan E, Everaerd W, van Bellen G, Hanewald G. Women's sexual and emotional responses to male- and female-produced erotica. *Arch Sex Behav.* 1994;23(2):153–69.
98. Carvalho J, Gomes AQ, Laja P, Oliveira C, Vilarinho S, Janssen E, Nobre P. Gender differences in sexual arousal and affective responses to erotica: the effects of type of film and fantasy instructions. *Arch Sex Behav.* 2013;42(6):1011–9.
99. Jiann BP, Su CC, Yu CC, Wu TT, Huang JK. Risk factors for individual domains of female sexual function. *J Sex Med.* 2009;6(12):3364–75.
100. Carvalho J, Veríssimo A, Nobre PJ. Cognitive and emotional determinants characterizing women with persistent genital arousal disorder. *J Sex Med.* 2013;10(6):1549–58.
101. Carvalho J, Veríssimo A, Nobre PJ. Psychological factors predicting the distress to female persistent genital arousal symptoms. *J Sex Marital Ther.* 2015;41(1):11–24.
102. Buehler S. What every mental health professional needs to know about sex. New York: Springer; 2017.
103. Tavares IM, Laan ETM, Nobre PJ. Cognitive-affective dimensions of female orgasm: the role of automatic thoughts and affect during sexual activity. *J Sex Med.* 2017;14(6):818–28.
104. Khandker M, Brady SS, Stewart EG, Harlow BL. Is chronic stress during childhood associated with adult-onset vulvodynia? *J Womens Health (Larchmt).* 2014;23(8):649–56.
105. Landry T, Bergeron S. Biopsychosocial factors associated with dyspareunia in a community sample of adolescent girls. *Arch Sex Behav.* 2011;40(5):877–89.
106. Bergeron S, Corsini-Munt S, Aerts L, et al. Female sexual pain disorders: a review of the literature on etiology and treatment. *Curr Sex Health Rep.* 2015;7:159–69.
107. Li K, Liang S, Shi Y, Zhou Y, Xie L, Feng J, Chen Z, Li Q, Gan Z. The relationships of dehydroepiandrosterone sulfate, erectile function and general psychological health. *Sex Med.* 2021;9(4):100386.
108. Carvalho J, Campos P, Carrito M, Moura C, Quinta-Gomes A, Tavares I, Nobre P. The relationship between COVID-19 confinement, psychological adjustment, and sexual functioning, in a sample of Portuguese men and women. *J Sex Med.* 2021;18(7):1191–7.
109. Sivaratnam L, Selimin DS, Abd Ghani SR, Nawi HM, Nawi AM. Behavior-related erectile dysfunction: a systematic review and meta-analysis. *J Sex Med.* 2021;18(1):121–43.
110. Parent MC, Wille L. Heterosexual self-presentation, identity management, and sexual functioning among men who have sex with men. *Arch Sex Behav.* 2021;50(7):3155–62.
111. Giuri S, Caselli G, Manfredi C, Rebecchi D, Granata A, Ruggiero GM, Veronese G. Cognitive attentional syndrome and metacognitive beliefs in male sexual dysfunction: an exploratory study. *Am J Mens Health.* 2017;11(3):592–9.
112. Gao P, Gao J, Wang Y, Peng D, Zhang Y, Li H, Zhu T, Zhang W, Dai Y, Jiang H, Zhang X. Temperament-character traits and attitudes toward premature ejaculation in 4 types of premature ejaculation. *J Sex Med.* 2021;18(1):72–82.
113. Perelman MA. Delayed ejaculation. In: Hall KSK, Binik YM, editors. Principles and practice of sex therapy. New York: Guilford; 2020. Chapter 7.
114. Carvalheira A, Traeen B, Štulhofer A. Correlates of men's sexual interest: a cross-cultural study. *J Sex Med.* 2014;11(1):154–64.
115. Nimbi FM, Tripodi F, Rossi R, Simonelli C. Expanding the analysis of psychosocial factors of sexual desire in men. *J Sex Med.* 2018;15(2):230–44.
116. Durette R, Marrs C, Gray PB. Fathers faring poorly: results of an Internet-based survey of fathers of young children. *Am J Mens Health.* 2011;5(5):395–401.
117. Carvalho J, Nobre P. Biopsychosocial determinants of men's sexual desire: testing an integrative model. *J Sex Med.* 2011;8(3):754–63.
118. Kalogeropoulos D, Larouche J. An integrative biopsychosocial approach to the conceptualization and treatment of erectile disorder. In: Hall KSK, Binik YM, editors. Principles and practice of sex therapy. New York: Guilford; 2020. Chapter 4.
119. Brotto L, Atallah S, Johnson-Agbakwu C, Rosenbaum T, Abdo C, Byers ES, Graham C, Nobre P, Wylie K. Psychological and interpersonal dimensions of sexual function and dysfunction. *J Sex Med.* 2016;13(4):538–71.

120. European Sexual Medicine Network. Memorandum of understanding for the implementation of the cost action European Sexual Medicine Network. Brussels: European Sexual Medicine Network; 2018.
121. de Oliveira L, Carvalho J. Women's sexual health during the pandemic of COVID-19: declines in sexual function and sexual pleasure. *Curr Sex Health Rep.* 2021;3:1–13.
122. Stephenson KR, Meston CM. Differentiating components of sexual well-being in women: are sexual satisfaction and sexual distress independent constructs? *J Sex Med.* 2010;7(7):2458–68.
123. Pescatori ES, Giammusso B, Piubello G, Gentile V, Farina FP. Journey into the realm of requests for help presented to sexual medicine specialists: introducing male sexual distress. *J Sex Med.* 2007;4(3):762–70.
124. Hayes RD, Dennerstein L, Bennett CM, Fairley CK. What is the “true” prevalence of female sexual dysfunctions and does the way we assess these conditions have an impact? *J Sex Med.* 2008;5(4):777–87.
125. Santos-Iglesias P, Mohamed B, Walker LM. A systematic review of sexual distress measures. *J Sex Med.* 2018;15(5):625–44.





# Diagnosis of Male Sexual Dysfunction

# 2

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## Abstract

Sexual behavior is influenced by biology, psychology, interpersonal relationships, and culture. The investigation and diagnosis of sexual dysfunctions require an exploratory and holistic approach where the health professional includes the whole patient together with their interactions with others (Levine, *J Sex Med* 4:853–54, 2007; Lipshultz et al., *Management of sexual dysfunction in men and women: An interdisciplinary approach*, 2016). In this chapter, we describe the essential concepts in diagnosing male sexual dysfunctions. We demonstrate the basics in history-taking presenting general principles in the communication process and present the central components in the physical examination.

## Setting the Scene

Investigating a patient's sexual problems might take place in a wide variety of settings whether it be long-term sexual therapy or a doctor's consultation in a hospital outpatient clinic. It is therefore important to create a comfortable setting shielded from external disturbances so the patient feels safe and has the fundamental sense of time and respect [1]. Also, make room for a possible partner since the partner can play an active role in the treatment process. For example, men with erectile dysfunction (ED), who are treated with pro-erection medication, may not always return to a completely fulfilled and satisfying sexual relationship. The partner's role is the best predictor of maintaining pleasurable sexual experiences [2].

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Clearly emphasize confidentiality for example by directly expressing that the communication between the patient and health professional is confidential and protected. It may be particularly relevant with younger patients [3].

Sexual health can greatly impact the overall quality of life and is one of the most intimate and vulnerable aspects of human life. Accordingly, health professionals must maintain a supportive and non-judgmental attitude and be aware of social or cultural biases that one might have when investigating sexual problems. Be open and receptive to the patient's own experiences, wants, and needs both vocally and nonverbally. Managing sexual problems is a collaborative effort that embraces the patient's perspectives, thoughts, feelings, expectations, and values and in addition, includes cultural and ethnic facets, as well as religious views [4].

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## Sexual History Taking

For most individuals, sexuality is a highly private matter, and patients may find it difficult to seek treatment or disclose sexual concerns. It is important to address such concerns especially during consultations for conditions or treatments that might affect sexual health. The health care professional can ease the interview by using open, inviting, generalizing, and appreciative questions such as:

- We ask about sexual health because we experience that patients going through the same condition as you have felt changes in their intimate and sexual lives. Is it alright for me to ask questions about your sexual life?
- In your current situation, I can imagine that it may affect your sexual life. What is your experience?

By openly addressing sexual matters, health professionals demonstrate acknowledgment of the importance of sexuality in the patient's life and their willingness to discuss it professionally. Actively state that problems and thoughts related to topics such as sex life and relationships are normal and is a routine aspect of health care [5].

In sexual medicine, people who do not identify with the gender they were assigned at birth may seek professional help due to a sexual problem relating to their gender identity. Examples include patients expressing reflections or doubts regarding gender identity both during sex and out of a sexual context and/or if the patient considers or undergoes gender-affirming surgery. Gender identity is subjective and as a health professional, you can only listen to and observe the patient's self-perception and experiences. The patient may understand gender in various ways. Some trans people and nonbinary people are satisfied and pleased with their bodies, while others experience discomfort [6]. The patient's sex and gender identity can be relevant information to access during a consultation in several situations. Ask about the patient's sex and gender identity when clinically relevant while simultaneously assuring the professional reason for doing so. For example, when assessing the risk of developing cancer in the reproductive system. As each patient

is unique, a health professional should never make assumptions about sexual orientation or behavior before conducting a full sexual history [7].

Sexual history taking is usually overlooked or rushed, yet it is a crucial part of therapy. The health professional should strive towards taking a full history for a thorough understanding of the patient's issues. However, the sexual history can never be complete because the information given varies depending on the specialty of the health professional, the issue, and the patient's motivation to talk about the problem [8]. By being aware of the general structure of the dialogue, you limit the likelihood of any areas being neglected. First, align expectations to the consultation at the very beginning and establish an agenda when taking the sexual history. What are the patient's viewpoints and expectations, and what do you expect you can accomplish in the time frame? Then, let the patient describe the current problem in their own words and explore the issue with questions like:

- How big is the problem for you?
- How has it evolved?
- How long has it been going on?
- How much does it affect the patient and partner?
- What else happened in the patient's life around this time?

Simultaneously, special attention should be paid to the biological and psychosocial factors when interviewing the patient. A comprehensive bio-psychosocial evaluation is essential for a successful diagnostic process. Mental or relational problems may cause physical symptoms, while physical problems can have psychological implications. Even if the problem mainly is psychological, the physical examination may alleviate fear or anxiety of an underlying disease. Note the patient's demeanor and speech during the consultation as it can be indicative of anxiety or depression.

A systematic history taking that covers all relevant elements of the patients' lives reduces the risk of overlooking important factors and it usually reveals that biological and psychosocial issues are inextricably intertwined. The bio-psychosocial evaluation may reveal underlying comorbid medical issues and can help distinguish between possible organic and psychogenic causes in the etiology of a patient's sexual dysfunction [9].

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## The Bio-Psychosocial Approach

To fully and openly understand and treat a patient's sexual problem, information regarding the following four domains of the patient's life should be collected. Unlike a medical examination, a therapeutic evaluation is less transparent and needs the healthcare professional to explore various facets of a patient's life to understand the root of the problem. This includes individual, relational, familial, and sociocultural aspects [10, 11]. However, depending on the scenario, the healthcare professional should weigh the various factors or leave them out entirely. For example, there is a strong and clear correlation between ED following prostatectomy, and a

comprehensive familial history taking in this situation would be irrelevant. Likewise, an extensive physical examination of a younger person with a primary mental condition may lead to an unnecessary sense of morbidity.

When diagnosing and evaluating a patient's sexual problem, it is important to recognize during the interview whether the problem exceeds the health professional's abilities. In such cases, the patient needs to be referred for the appropriate help [9].

## **Individual**

The diagnosis process begins with gathering general information about the patient. Secondly, the biological and psychological background is explored including a full medical history, current medication, chronic, and recent medical conditions. Information about previous surgeries should be included especially in relation to the pelvic area. It is important to note if the patient is using herbal or other natural substances to enhance their performance and overall sexual satisfaction. Psychological well-being should then be explored with a focus on sexuality and their current relationship [12].

## **Relational**

Identify the current state of the relationship and how the patient and their partner interact with each other not only in relation to sexuality but also in relation to other problems other than sexual issues for example conflict management and communication styles. Establish an overview of the commitment level and if there are any incongruent levels of sexual desire. Most often, sexual issues affect a relationship, and a relationship affects a couple's sex life [12, 13].

## **Family History**

To establish a thorough foundation of information for the later therapeutic process, it is important to investigate the patient's familial history. This includes information about sex education, sexual attitudes, and any history of trauma, abuse, or sexual health problems [12].

## **Sociocultural Context**

Explore the patient's culture, religion, and other significant experiences growing up. The patient's socio-cultural background can affect their sexual attitudes, practices, and behavior. Ask the patient if any earlier experiences have had an impact on them as an adult [12].

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## Physical Examination

As with the medical history taking it is crucial to create a comfortable environment for the physical examination. It is often deeply private and for some a great cause of psychological discomfort, shame, and embarrassment. Therefore, informing the patient of what is going to happen during the physical exam and aligning expectations prior to the actual exam is necessary.

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### The Role of the Physical Examination

The extent of the examination should reflect the tentative diagnosis derived from the patient's sexual- and medical history. Even though the physical examination may not directly identify the specific etiology or cause of sexual dysfunction [14], the physical findings can help confirm or deny any tentative diagnoses and differentiate between differential diagnoses. In addition, the physical examination can provide valuable information of any underlying conditions that may be linked to the patient's sexual problem.

In fact, men with sexual dysfunction have a high prevalence of comorbidities such as diabetes, metabolic syndrome, lower urinary tract symptoms (LUTS) hypertension, dyslipidemia, and cardiovascular disease (CVD) [15–18], which all require treatment if they are not already being treated. As an example, ED is strongly linked to CVD and often precedes CVD by a couple of years opening a window for early preventive treatment that could reduce any future and potentially fatal cardiovascular events [18].

It also seems that there is a higher prevalence of sexual comorbidities in patients with sexual dysfunction, that is when a man with one sexual dysfunction such as premature ejaculation is also suffering from ED, although the etiology of this is not known [19]. A general physical assessment should therefore almost always be conducted, whereas more specific testing should only be performed if indicated by specific findings from the medical history or physical examination.

Finally, the physical examination can help provide information on medical history that the patient may have not thought of during the initial history taking. This could be a patient who complains about ED, about not being able to attain a sufficient erection but is not able to elaborate further when inquired. The physical examination may reveal phimosis that is so tight it results in insufficient tumescence leading to ED.

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### General Health Assessment

The physical examination should start with a general health assessment. This should include height, weight, BMI or waist circumference, blood pressure, and heart rate. Together with the patient's medical history, this will indicate the need for risk stratification for CVD. There are many risk prediction tools available [20] and they are

easily accessible at <https://u-prevent.com/>. Healthcare workers evaluating patients with ED should always assess this risk and refer the patient to his general practitioner or a cardiologist when relevant.

Next, the general physical attributes should be assessed including secondary sexual characteristics such as deepening of the voice, bodily and facial hair, muscle mass, and fat distribution. Lack of bodily and facial hair, gynecomastia, and female fat distribution can be signs of hypogonadism and would require further lab-testing to confirm and distinguish between primary-, secondary-, or adult-onset hypogonadism.

A general abdominal examination will reveal any possible hernias or any signs of previous abdominal/pelvic surgery that the patient may have omitted in their medical history.

The neurological state of the perineal region and lower limbs can sometimes be relevant for evaluation. If neurological deficiencies are suspected, then a more thorough evaluation should be conducted including testing of the perianal reflex involving nerves that arise from the S2-S4 segment. The reflex is elicited by stroking the skin around the anus which results in a contraction of the anal sphincter. Another test is the bulbocavernosus reflex that tests the nerves arising from the S3-S4-segment. Here the glans of the penis is squeezed causing the anal sphincter to contract.

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## Genital Exam

As with the general assessment, a genital exam should always be conducted to a variable extent at some point in men with sexual dysfunction.

Initially evaluating the degree of pubic hair growth, penis, and testes size using the Tanner scale [21].

Examine the penis for any abnormalities starting with visual examination and moving on to palpation. If beginning distally, start by noting any edema or reddening of the foreskin on uncircumcised patients as seen in balanitis. Observe any ulcers or nodules and then progress to retract the foreskin to check for phimosis and frenulum breve, stop if it becomes too painful/tight. Alternatively, ask the patient to do it themselves. Then check the glans for ulcers, scars, nodules or chancre, rashes or any signs of infection or visible discharge, and different meatus placements. In hypospadias the orifice is located on the ventral surface of the shaft, most often distally on the ventral side of the glans then midshaft and proximal [22]. Most will have had surgery performed as a child but not all and it may be the cause of embarrassment leading to sexual dysfunction.

The best view of the meatus to check for discharge is achieved by gently compressing the glans distally which opens the meatus. It is also worth noting any foul odor as this could imply an infection.

Go on to check the shaft and base of the penis for reddening, edema, and if relevant, different urethral meatus placements.

Some patients will present with edema of the shaft/base of the penis which can have different etiologies ranging from infections to more rare causes as reactive