

The DSM Diagnostic Criteria for Hypoactive Sexual Desire Disorder in Men

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ABSTRACT

Introduction. Hypoactive Sexual Desire Disorder (HSDD) is one of two sexual desire disorders in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM) and is defined by two criteria: A—"persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity" and B—"marked distress or interpersonal difficulty."

Aim. This paper reviews the prevalence and correlates of low desire in men and qualitative and quantitative research on the experience of sexual desire in men and women.

Methods. A literature search of Medline, PudMed, and PsychInfo was used to identify any publication on low desire in men.

Main Outcome Measure. The strength of empirical findings was used as a basis for making proposed revisions to the diagnostic criteria for HSDD in men.

Results. The dilemma of whether desire and arousal can be reliably differentiated in men is discussed, and parallels to the literature in women are drawn. Finally, I consider three options for the diagnosis of low desire in men for DSM-5. Option 1 proposes that the DSM-IV-TR name and criteria are preserved for men in DSM-5. Option 2 proposes that the recently proposed criteria for Sexual Interest/Arousal Disorder in women are also adopted for men, which would result in one gender-neutral category. Option 3 proposes that the criteria for Sexual Interest/Arousal Disorder also be applied to men, with a minor modification to one criterion (i.e., that absent or reduced genital and/or nongenital physical changes not be included as a criterion); this diagnosis would then be applied only to men.

Conclusions. The evidence supporting each of these proposals is presented and critiqued. It is concluded that the proposal for DSM-5 should be made on the basis of field testing of new criteria. **Brotto LA. The DSM diagnostic criteria for hypoactive sexual desire disorder in men. J Sex Med 2010;7:2015–2030.**

Key Words. Hypoactive Sexual Desire Disorder; Sexual Interest; Sexual Desire; DSM Diagnostic Criteria

Background

Compared to the published scientific literature on low sexual desire in women, very little has been written about the parallel experience in men. Hypoactive desire in men has most frequently been considered within the literature on hypogonadism, where reduced sexual interest is a well-documented symptom of low androgen levels and testosterone supplementation among hypogonadal men with low desire is an effective treatment [1,2]. Levine, Hasan, and Boraz [3] suggested that there may be five overlapping categories of etiology for low desire: (i) a pattern of no pathological significance; (ii) a symptom of another, more fundamen-

tal psychiatric disorder; (iii) a symptom of relationship alienation; (iv) a symptom of a physical abnormality; and (v) a symptom of hypoactive sexual desire disorder (HSDD). Comparisons have been made between sexual desire in women vs. men and, contrary to earlier theories about gender differences, more recent theorists [4,5] purport that there are likely more *within-gender* than *between-gender* differences; if correct, this has implications for the diagnostic classification of desire disorders.

With the upcoming revision of the *Diagnostic and Statistical Manual of Mental Disorders, fifth edition* (DSM-5), due to be published in 2013, a reevaluation of whether or not problems related to

low sexual desire in men are expressed in the same manner as in women is needed. The goal of this article is to review the available literature on the prevalence, description of, and associated features of low sexual desire in men. The article will conclude with the presentation of three possible options for how HSDD in men might be considered in DSM-5. Given that a similar review on hypoactive sexual desire in women has already been published [6], this article will make direct comparisons to the proposed new criteria outlined in this earlier review. It is important to note at the outset, however, that any recommendation for change in the diagnostic criteria for men will be based on relatively little data, compared to women where the evidence for change was stronger because more research has been carried out on women's sexual desire. Ultimately, the adoption of any significant change in diagnostic criteria should be based on the best available data infused with sound clinical judgment. Moreover, it is highly advisable, if a more radical change is adopted for DSM-5, that the change is based on the positive results of field testing across a variety of independent sites.

Prevalence of Low Desire in Men

In their study of 100 "normal couples," Frank, Anderson, and Rubinstein [7] found that over 80% reported happy and satisfying sexual and marital relations, but 16% of the husbands reported lack of interest in sex. Since then, a number of population-based studies have compared the prevalence of sexual symptoms in men and women and attempted to identify correlates of such difficulties. The National Health and Social Life Survey (NHSLS) involved in-person interviews with 1,419 American men (and 1,749 women) aged 18–59 years who were asked dichotomous (yes/no) questions about the prevalence of seven different sexual symptoms [8]. Participants must have had at least one sexual partner in the past year, which limited the subsample to 1,249 men. The prevalence of low desire ranged from 14% (for 18–29 year olds) to 17% (for 50–59 year olds). Married men were less likely than never married or divorced men to have desire problems, and there was no association between ethnicity (categorized in this study as white, black, and Hispanic) and low desire. Men in the oldest cohort (age 50–59 years) were three times more likely than men in the younger cohorts to experience low desire. In terms of health-related indicators, men who consumed

alcohol daily, were in poorer health, and experienced emotional problems or stress were two to three times more likely to experience low desire. By comparison, the proportion of men who responded with a "yes" to the probe about trouble maintaining or achieving an erection ranged from 7% (for 18–29 year olds) to 18% (for 50–59 year olds).

In the National Survey of Sexual Attitudes and Lifestyles (NATSAL), in which 11,161 British men and women aged 16–44 years participated in a computer-assisted self-interview, lack of interest in sex was the most prevalent problem in men, reported by 17.1% of those who had at least one heterosexual partner in the past year [9]. However, persistent lack of interest in sex (lasting at least 6 months in the previous year) was reported by only 1.8% of the male subsample. By comparison, 5.8% of men reported difficulty achieving or maintaining an erection for at least 1 month and 0.8% reported this complaint had lasted at least 6 months in the last year.

Using a random cross-sectional design and computer-assisted telephone interviews with 876 Australian men aged 18–59 years, the prevalence of lack of interest in sex lasting "several months or more" ranged from 19% (youngest cohort aged 18–29 years) to 16% (aged 50–59 years) [10]. After premature ejaculation (PE), low sexual interest comprised the second most common sexual problem reported by men. Erection complaints were comparably far less common; 3% of men aged 18–29 years and 11% of men aged 50–59 years reported this difficulty. Across all age groups, 7% of men reported not finding sex pleasurable for several months or more over the past year. Interestingly, whereas 41.8% reported experiencing at least one sexual symptom for several months or more over the last year, only 2.4–8.1% of this group had sought treatment for the problem. Notably, distress was not measured in this study; however, the authors attempted to approximate distressing symptoms by requiring that the complaint be present for "several months" over the past year.

In the nationally representative Swedish survey of 1,475 men aged 18–74 years, sexual desire was assessed by asking participants, in face-to-face interviews, the frequency of decreased "interest in sex." Any respondent who answered that the symptom had occurred in the last 12 months "quite often/nearly all the time/all the time" was categorized as having a sexual "disability." Similar to the reported rates from the NHSLS and NATSAL, low sexual interest in men was the most

frequent sexual complaint (16% of men). Moreover, although the prevalence was significantly lower for men in the youngest age group (6% in those aged 18–24 years), 41% of men aged 66–74 years reported decreased interest in sex—a rate that was comparable to that for women in the same cohort [11]. In this study, there was significant comorbidity between sexual dysfunctions in men as well as their partners, such that 45% of men with low sexual interest also had erectile difficulties, 26% had early ejaculation, 39% had partners with insufficient lubrication, and 24% reported having a female partner with orgasm difficulties [12]. This is one of the few studies that examined the comorbidity of sexual complaints in men, and it raises the possibility that low desire in men may play an etiological role in other sexual difficulties.

In another Scandinavian study of 10,458 Danish men and women aged 16–67 years recruited randomly through a national register, participants took part in individual interviews during which sexual desire was assessed with two questions [13]. One question asked “How often do you have sexual desire?”, with response options “never,” “rarely,” “occasionally,” and “often”; the second question asked “If you compare your sexual desire with your sexual desire five years ago, is it higher or lower now?” with response options “much higher,” “moderately higher,” “unchanged,” “moderately lower,” and “much lower.” Sexual desire decreased with age, such that 72% of men aged 16–24 years “often” had sexual desire, whereas only 14% of men aged 67 years or older reported this; the respective figures for women were 50% and 4%. With increasing age, men were also more likely to report a change in sexual desire over the last 5 years, although there was no change in the age group 45–66 years reflecting back on the past 5 years. An analysis of correlates of sexual desire among those aged 16–66 years revealed that, for men, younger age, being married/cohabitating, more education, higher socioeconomic status, not having emotional problems, not being anxious or depressed, physical activity, higher alcohol consumption, good self-rated health, no nervous system diseases, not having diabetes, and not taking medications with sexual side effects were all associated with having adequate sexual desire. Because this study was aimed at measuring the *presence* of desire, distress was not assessed, and, therefore, estimates of HSDD in men could not be provided. Erectile difficulties were also not assessed in this study.

In computer-assisted telephone interviews with 742 American men aged 40–80 years, frequent lack

of sexual interest was reported by 3.3% of men and periodic lack of desire by 4.8% of men [14]. This represented the third most common sexual complaint in men, after PE (4.7% frequent and 7.0% periodic) and erectile dysfunction (ED; 6.5% frequent and 5.9% periodic), respectively. Lack of physical activity had an odds ratio (OR) of 2.13, prostate disease had an OR of 2.5, and men with depression had an OR of 3.19 greater risk of having low sexual interest. In fact, depression was associated with the highest OR for predicting low desire in men compared to all the other sexual complaints. Age was unrelated to desire complaints but was strongly predictive of erectile complaints. Interestingly, having low desire in men was not predictive of help seeking behavior, whereas having an erection problem was associated with a high probability of seeking treatment [14].

Focusing specifically on middle-aged and older men internationally, the Global Study of Sexual Attitudes and Behaviors studied 13,618 men aged 40–80 years from 29 countries. A measure of symptom severity was included by asking participants *how often* the symptom had occurred during the last 12 months, with response options of “occasionally,” “sometimes,” or “frequently” [15]. Among the 11,205 men who had had intercourse at least once in the past year, the prevalence of frequent lack of sexual interest ranged from 1.3% in Southern Europe to 3.1% in the Middle East. Lack of interest in sex was significantly associated with older age, poorer health, thinking about sex infrequently, depression, and, not surprisingly, infrequent sexual activity.

Another study of sexuality in middle- and older-aged men was the Massachusetts Male Aging Study, an observational cohort study of health in a population-based sample of men [16]. The researchers examined within-person changes in sexual function among 1,156 men who participated at baseline (in 1987–1989) as well as at follow-up (in 1995–1997). Sexual desire was assessed by asking: “How frequently do you feel sexual desire? This feeling may include wanting to have sexual experience (masturbation or intercourse), planning to have sex, feeling frustrated due to lack of sex, etc.” Options were 0 (none) to 6 (more than once per day). Men were aged 40–70 years at follow-up, with 97% of the sample white and 77% married. The mean reported frequency of intercourse was more than once per week, and at both time points, men reported feeling desire slightly more than once per week. Changes from baseline were associated with age; men aged 40–49 years had the smallest decline

in desire as well as all other sexuality variables (e.g., erectile ability, ejaculation frequency, sexual satisfaction), and larger decreases in sexual parameters were observed with each successive decade [16]. Both erection frequency and masturbation frequency also significantly declined with age.

HSDD in Men

The cited studies on the prevalence of low desire in men do not provide estimates of the prevalence of HSDD as per the criteria outlined in DSM-IV-TR. The DSM-IV-TR diagnosis of HSDD requires that two criteria be met: (i) Criterion A: “persistently or recurrently deficient (or absent) sexual fantasies and desire for sexual activity;” and (ii) Criterion B: “the disturbance causes marked distress or interpersonal difficulty” [17]. Rates of low desire with accompanying distress in men have not been established. Based on the finding in women that less than half of those reporting low desire also experienced distress [11,18,19], one might speculate that the approximate rate of HSDD in men is between 1% and 20%, depending on age, country, and method of assessment. In a multisite study of 906 participants (374 men, mean age 48.8 years and 532 women, mean age 37.3 years), recruited for a pharmaceutical study, 30% of the men met criteria for HSDD as a primary diagnosis, according to DSM-III criteria [20]. This required a 6-month duration of: (i) subjective sexual arousal less than or equal to once every two weeks; (ii) frequency of self-initiated sexual activity less than or equal to once every two weeks; and (iii) absence or marked decrease in the frequency of sexual fantasies. Of these men, 47% had a secondary ED diagnosis and 32% reported decreased subjective sexual arousal. Although there are no published data on the onset of desire problems in men, expert opinion seems to be that the acquired and situational form of HSDD (as opposed to lifelong and generalized) is the most common subtype for men [21].

Factors Associated with Low Desire in Men

Prevalence studies on low desire in men have mostly found a positive correlation with age. There have also been efforts to identify physiological and hormonal correlates. For example, in a study of 108 male outpatients seeking treatment in an ED clinic (mean age 59 years; range 33 to 79 years), half scored in the low sexual desire range on a validated questionnaire. Among this group, there

were no significant differences in level of sexual desire among men who had low vs. those who had normal testosterone levels, leading the authors to conclude that “neither total nor free testosterone is a reliable indicator of sexual drive among men with erectile dysfunction” (p. 720) [22]. In a more extensive study, Corona et al. examined a consecutive series of 1,647 men attending an outpatient clinic for sexual dysfunction for the first time [23]. Participants took part in a structured 13-item interview (the SIEDY—Structured Interview on Erectile Dysfunction) [24]; low desire was assessed with one item: “Did you have more or less desire to make love in the last three months?” A self-report measure of psychiatric symptoms was completed as well as a physical exam, serum hormone assays, and penile color Doppler ultrasound before and after prostaglandin E1 intracavernous (i.e., penile) injection. Interestingly, the association between HSDD and low testosterone was significant only in the youngest quartile of men (ages 17–42 years), whereas in the intermediate age group (43–62 years), there was no link between testosterone and any sexual parameters. On the other hand, men with HSDD were more likely to have depressed mood as well as hyperprolactinemia, suggesting that these factors may exert a greater influence on men’s desire than testosterone. The authors speculated that the significant association between testosterone and desire in the youngest age group might have been due to the fact that other (medical) correlates were less relevant at that age. It is also possible, however, that the association was not evident among the older men because of the method of assessing desire; substantial changes in a 3-month period may be less likely among older men than in younger men, the latter of whom are more regularly sexually active.

Treatments which increase testosterone have variable effects on men’s sexual desire. In one double-blind, randomized, controlled trial of 207 elderly men with baseline low-normal testosterone (all men were below the 50th percentile of testosterone values) receiving oral testosterone for 6 months, there were no significant improvements in sexual fantasies, desire for sex, or frequency of sexual behavior [25]. In the same trial, there was a significant increase from baseline to 6 months assessment point in bioavailable and free testosterone but no significant change in total testosterone with treatment. However, in a different double-blind randomized controlled trial (RCT) comparing testosterone gel (Testim) with a testosterone

patch (Andropatch) and no placebo arm, Testim resulted in a dose-dependent increase in sexual desire, whereas Andropatch had no significant effect on sexual desire [26]. Similarly, treatment of HIV-infected men with low sexual desire in a small ($N = 13$) pilot study of letrozole, which inhibits the aromatization of testosterone to estradiol, thereby raising testosterone levels [27], led to a significant improvement in dyadic desire (i.e., desire for sex with a partner). A review of testosterone efficacy in hypogonadal men suggests that, overall, treatment does result in a significant increase in sexual desire, although effects on partnered sexual activity are less consistent given that the latter is influenced by partner-related factors [28]. Measures of sexual arousal, including penile rigidity and the nocturnal penile tumescence response, are also restored when hypogonadal men receive testosterone [28].

In an analysis of 428 men seeking treatment for ED in an Italian outpatient sexual dysfunction treatment clinic, there was no association between HSDD symptoms and other hormones (follicle stimulating hormone [FSH], luteinizing hormone [LH], thyroid stimulation hormone [TSH]) or testis volume [29]. These findings suggest that hormonal (i.e., testosterone) mechanisms do not solely account for men's desire and its decline. However, the presence of ED in this sample also may have influenced the relationship between low desire and these biological measures. There was also no association between men's low desire symptoms and prostate specific antigen (PSA), blood pressure, lipid profile, glycemia, or any parameters from echo color Doppler imaging. Moreover, there were no differences in HSDD status among men who did and did not show a positive erectile response to prostaglandin E₁ (PGE₁), and no relationship between low desire and the ability to obtain and maintain an erection. Interestingly, the only correlation between desire and erectile ability in this study was a significant association between presence of HSDD and ability to have nocturnal/morning erections. This discordance between reported symptoms of low desire and laboratory values parallels what is seen in women with HSDD [30–36]; however, given that this study was based on men with ED seeking treatment, conclusions about HSDD must be made tentatively.

In the Corona et al. [29] sample of male outpatients seeking treatment for sexual dysfunction, psychological symptoms were more predictive of low desire than hormonal/physical markers. For example, 42.9% of those with a past history of

psychiatric symptoms had moderate or severe loss of desire, compared with only 15.9% of those without such a history. On the Mental Health Questionnaire [37], free floating anxiety, obsessive compulsive traits, somatization, and depression (but not phobic anxiety) were related to HSDD. On their structured interview (SIEDY), men with HSDD had greater stress at work, more disturbed domestic relationships, and had a higher "relational component," defined as having a partner with an illness that negatively affects sexual activity, having a partner with low desire, and/or having a menopausal partner.

This strong association between mood and sexual desire was also found in an earlier study that compared 22 men with a DSM-III diagnosis of inhibited sexual desire vs. a control group of 19 men without low desire [38]. A structured interview which assessed current and lifetime psychopathology revealed that 55% of the men with low desire had a history of major depression, compared with only 32% of the men in the control group; there were no significant group differences in anxiety or personality disorders. Furthermore, 88% of the men with a history of depression developed the desire complaints concurrently or shortly after the onset of their depression, leading the authors to conclude that both inhibited desire and depression may arise from the same underlying condition [38].

The relationship between mood and sexual desire in men is complex and not necessarily linear. For example, in the Zurich Cohort Study, a longitudinal study of 591 men and women aged 20–35 years, depression was significantly associated with lack of sexual interest; however, this was more marked among women than men [39]. Roughly equal proportions of men responded to depressed mood with increased and decreased sexual desire. In an effort to explore this further, Bancroft and colleagues [40] conducted a mixed-methods study of nondepressed heterosexual men to explore the relationship between mood and sexual interest. They used the Mood and Sexuality Questionnaire to assess what typically happens to sexual interest and erectile functioning when men are depressed or anxious. An increase in trait depression raised the odds of increased sexual interest during negative mood states by 23%. Being stressed or anxious had an even greater effect on increasing desire. In a qualitative follow-up study [40], 43 heterosexual men were interviewed; 12% reported increased sexual interest when depressed, whereas 51% reported a

decrease. These effects were magnified when the man was stressed or anxious instead of depressed. The authors concluded that men may be using sex as a mood regulator, that depressed men may use sex in order to feel validated (and thus raise their mood), and that happiness may be derived from making a partner happy during sexual activity. Similar findings were reported in a separate study of gay men [41]. In the proposed diagnosis of hypersexual disorder in men, using sexual activity to regulate a depressed or anxious mood has also been recognized as one important function of this behavior [42].

Is Low Desire in Men Experienced in the Same Way in Women?

Although Masters and Johnson's sexual response cycle [43], later revised by Singer Kaplan [44] and Lief [45] so that it included sexual desire, was thought to apply generically to both men and women, research has demonstrated fundamental differences in men and women's desire. Hyde [4] argued that gender differences on many psychological variables tend to be inflated, but acknowledged that sexuality is one domain where some gender differences are large and show no sign of narrowing. From a meta-analysis, Hyde concluded that there were significant gender differences for incidence of masturbation and attitudes about sex in casual, uncommitted relationships.

In one clinical study of 44 men and 22 women who sought treatment for HSDD, the men were significantly older (mean age 50 years) than the women (mean age 33 years) [46]. The authors attributed this age difference to the likelihood that women are more likely to seek treatment for desire problems at an earlier stage. Although both groups were equally likely to experience a secondary sexual dysfunction; for men, it was most likely to be ED, whereas for women, comorbid problems related to subjective sexual arousal were most common. Women also reported significantly more psychological symptoms, had greater stress, and had greater sexual relationship dissatisfaction than men. Interestingly, men's desire was less affected by relationship discord or dissatisfaction.

Beck, Bozman, and Qualtrough [47] explored how men and women defined sexual desire. They studied 144 college students to identify which indices participants used to determine their level of sexual interest, using the following definition of desire: "a subjective feeling state that may be triggered by both internal and external cues, and that

may or may not result in overt sexual behavior" (p. 446). Overall, 91% of men and 52% of women reported experiencing desire several times per week. Eighty-two percent of women and 60% of men reported engaging in sexual activity without sexual desire, and among women older than 25, nearly all (97%) said they had engaged in sexual activity without desire. Significantly fewer men (71%) in this age group reported having had sex without desire [47]. This gender difference held, but was less marked, among younger participants. Also, men reported that fantasies, genital arousal, and sexual daydreams served as "guideposts" for their desire, whereas women less commonly reported these cues. That 60% of the men reported engaging in sexual activity without sexual desire suggests that for men (like for women), initial desire may not be the sole reason for engaging in sexual activity. Because this was found among a young college-age sample of men, one might speculate these findings to be even more robust among an older (community) sample of men given the age-related decline in desire.

Men and women also differ in how sexual desire may be used to define their "sexual peak." Across three studies [48], men were more likely to define their sexual peak as the period in their lives when they experienced their highest level of sexual desire, whereas women were more likely to define their sexual peak according to when they experienced their highest level of sexual satisfaction. Women's definition of their sexual peak was unrelated to their peak period of sexual desire. Interestingly, for both men and women, their self-defined sexual peak did not necessarily correspond to the period when sexual activity was most frequent [48], indicating that sexual activity may not be strongly related to desire or satisfaction.

Regan and Berscheid [49] conducted a study of 142 college students to examine beliefs about the nature of sexual desire. Specifically, they questioned whether men and women concurred with the definitions commonly employed by professionals, and whether they perceived their sexual desire as being aimed at a particular "goal." A total of 86.8% described desire as a motivational state, 25.7% described it as an emotional state, and 6.6% viewed it as cognitive (i.e., thoughts, fantasies). Only 4.4% conceptualized desire as physiological and 2.2% as behavioral. There was only one difference between men and women in their descriptions of desire: more women than men viewed sexual desire as a physiological state. There were

also gender differences in the reported goal of sexual desire, with more men than women reporting that the goal was sexual activity [49]. The authors concluded that a single, common understanding of sexual desire does not exist. Just as women's reported experiences of desire do not conform to one universal sexual response cycle [50], it is likely that men similarly have different patterns and expressions of their sexual desire.

Baumeister, Catanese, and Vohs [51] used a definition of sex drive that focused on sexual motivation, otherwise defined as a "craving for sexual activity and sexual pleasure" (p. 244) to explore gender differences in desire. Notably, their definition did not consider desire for nonsexual reasons (e.g., desire for procreation or some other nonsexual goal). Using this arguably narrow definition of desire, these authors reviewed the evidence on the strength of sexual drive and gender and concluded that there were a significant number of gender differences in desire. For example, men thought about sex more, and even had more unwanted and intrusive thoughts of sex than women [52], but both genders reported the same "indicators" of desire (e.g., sexual daydreams, presence of genital arousal). Men also had more sexual fantasies and more "spontaneous desire/arousal" (not defined by the authors) than women. Regardless of relationship length or sexual orientation, men desired sex more frequently than women. Men also reported a higher number of desired sexual partners, more frequent masturbation, less willingness to forgo sex, an earlier emergence of sexual desire as an adolescent, and a greater likelihood of initiating sexual activity than women [51]. The authors concluded that men's desire is stronger than women's, both in frequency as well as in intensity, and that gender differences in sexual desire are likely due to both biological as well as sociocultural influences. A somewhat different conclusion was drawn by Wallen [53] in a review of sexual behavior and motivation in nonhumans. He observed that across a number of mammalian species, male sexual desire is relatively continuous, whereas female desire is discontinuous and cyclical [53], and he suggested that this discontinuous feature of women's sexual desire is partly responsible for the higher incidence of HSDD in women. What both perspectives have missed, however, is the enormous individual variability of desire *within* the genders.

The question about whether men's desire differs from women in terms of intensity and/or frequency is important for understanding whether

discrepant desire does, in fact, reflect an underlying sexual dysfunction in one of the partners. This question was explored by Regan and Atkins [54] who asked 335 men and 341 women to indicate whether or not they had ever experienced sexual desire (yes/no) and then to rate their overall level of sexual desire (from "very little" to "a great deal"). They were also asked about the frequency of their sexual desire (from "never" to "extremely often"). Men reported a significantly higher intensity of sexual desire compared to women (mean 6.91 out of 9 vs. 5.63, respectively), as well as a higher frequency of sexual desire overall (men's estimated weekly frequency of having sexual desire was 37 times vs. 8.67 times for women). The authors concluded that, despite gender differences in frequency and intensity, desire *is a* universal experience across individuals, it may fluctuate over time, and is dependent on contextual factors.

It is important to note that the observed gender differences in sexual desire may be influenced by individual psychological factors. For example, in a study of adolescent men and women, those who had lower self-esteem were more likely to report having had sexual intercourse because of intimacy-related reasons than "high self-esteem" young men [55]. This relationship between self-esteem and "intimacy" motivations for sex was not apparent among the adolescent women. These findings suggest that, even in young men in relatively short-term relationships, having sex "just because one is in the mood" is not a universal experience—contrary to cultural stereotypes of the "young man with an overabundance of sex drive."

In contrast to these quantitative studies, which have tended to highlight gender disparity, qualitative research suggests considerable overlap between men's and women's experiences of sexual desire. Graham and colleagues conducted a qualitative focus group study of 80 women, with the aim of exploring how women experience sexual desire and arousal, and what factors are responsible for "turning on and turning off" desire and arousal [56]. Women described a wide range of factors which affected sexual arousal, and reported that desire and arousal were often experienced simultaneously or, if separately, not in any fixed temporal sequence. In a parallel study using the same methodology, Janssen and colleagues [57] conducted focus groups with 50 men aged 18–70 years. As in the study carried out by Graham et al. [56], men reported a variety of cues that signified sexual arousal. In addition to erections, men described nongenital physiological signs (e.g.,

increased heart rate, tactile sensitivity, facial flushing, etc.). Just as women described lubrication occurring without subjective sexual arousal [56], men reported that genital arousal (e.g., erection) could occur independently of mental sexual arousal. For both men and women, the converse was also described, i.e., mental excitement without an accompanying erection or genital changes. The authors concluded that erection was not a necessary condition for sexual arousal in men [57]. In common with qualitative research in women [56,58], men expressed difficulty differentiating desire from arousal and described some situations in which desire preceded arousal and others in which desire followed arousal. Interestingly, men did not consider masturbation as being necessarily “sexual” and described it as occurring when “bored” or “home alone without a partner” and did not integrate masturbation into their views of themselves as sexual beings [57]. This is especially interesting given the findings from an earlier study in which men with HSDD were found to engage in masturbation significantly more often than men without HSDD [59].

In the study by Janssen and colleagues, men described the following broad categories of inhibitors and enhancers of sexual interest and arousal: (1) feelings about oneself; (2) partner’s sexual desire toward them; (3) partner attributes, including their physical and psychological attributes; (4) mood state; (5) feeling emotionally connected; (6) erotica—which could have a positive as well as a negative effect on sexual arousal; and (7) contextual variables, such as being outdoors, the season, and alcohol. On the basis of these themes, the authors concluded that men’s sexual arousal is complex and multifaceted, and that “men and women share a number of commonalities” (p. 262) [57]. They also argued that concerns raised about traditional models of sexual response (e.g., Masters & Johnson’s, and Kaplan’s) [43,60] being inappropriate for women [61–63] were also relevant to men.

Although a number of these described studies comparing men and women on the features, intensity, and frequency of sexual desire have been conducted on convenience samples of college students, their findings can be taken to be generalized to the larger population of men because of the respectable sample sizes and the effort on the part of the investigators to account for age-related findings. The combination of qualitative and quantitative research has provided information on such features of desire, plus the additional nuances

that characterize differences among men. Taken together, these studies comparing the genders suggest that whereas men may experience more frequent and intense sexual desire, *how* sexual desire is experienced may, in fact, be quite similar among men and women. Moreover, differences in the experience of desire *within* genders are likely greater than the differences *between* genders.

Can the Experience of Desire and Arousal be Differentiated by Men?

Beck et al. [47], in the study of college students discussed earlier, found a significant correlation between sexual desire and sexual arousal, as measured subjectively by the Sexual Arousal Inventory [64] ($r = 0.50$ for women and $r = 0.44$ for men). These authors concluded that sexual desire and arousal were part of the same sexual response process. However, in a study of male outpatients seeking treatment for ED [29], although over 40% of men reported some degree of HSDD (suggesting a relationship between men’s desire and arousal), the majority did *not* report HSDD symptoms. Moreover, there was no significant correlation between any of the subjective and objective parameters of ED with sexual desire. Low desire in men was similarly unrelated to any of the vascular components assessed with duplex sonography. The authors noted that arousal is “the cognitive and emotional component responsible for bringing males to the threshold for initiating the consummatory phase—feeling sexually excited—and includes penile erection” (p. 47) [65].

In Janssen et al.’s focus group study [57], younger men tended to rely more on erections as an indicator of sexual interest/arousal, whereas older men attended more to psychological and emotional indicators of sexual interest and arousal. Across all age groups, men talked about situations in which subjective and physiological excitement could be experienced separately. A recent community sample study of 205 Portuguese men found that attentional focus was a very strong predictor of dyadic sexual desire, leading the authors to conclude that sexual desire and sexual arousal are overlapping constructs since both depend on “the ability of an individual to process sexual information during sexual activity” [66].

Extensive data gathered to test the information processing model of sexual arousal also support the finding that not all men necessarily follow a linear progression in their sexual response cycle as outlined by Masters and Johnson and Kaplan [67].

Although there has been more recent attention to applying and testing incentive motivation principles to women's sexuality, this model was originally developed to describe men's sexual response. The information processing model postulates that the initial response to a sexual stimulus takes place outside of our consciousness, in a fast and automatic manner, and renders the sexual system receptive to further processing of sexual cues, while preparing an individual to respond with physical signs of sexual arousal. At some later point, when more resources are devoted to the processing of that stimulus, sexual arousal will be subjectively experienced and the individual may decide to continue focusing on the stimulus. At this point, an individual may become aware of their motivation as a desire to continue the experience for the sake of meeting their sexual needs. A critical component of this model is that the activation of sexual responses, at least at a central level, precedes the subjective experience. In other words, the model proposes that sexual arousal (and genital response activation) can precede desire [67]. Taken together, it is reasonable to conclude that genital arousal (i.e., erectile functioning) is experienced as relatively distinct from sexual interest; however, men describe overlap in their experience of *subjective* sexual arousal and desire.

Is Loss of Sexual Desire in Men Equivalent to Asexuality?

There has been increasing media and academic interest in asexuality, defined as the lifelong lack of sexual attraction [68,69]. Such individuals will describe limited, if any, sexual encounters, an inability to relate to others who pursue sexual activity, and little to no sexual desire [69–72]. The latter finding has raised concern that, perhaps, asexuality represents the polar low end of the sexual desire continuum, and therefore, individuals identifying as asexual might better fit within the category of HSDD. There has been strong opposition to this suggestion from the asexuality community on the Asexuality Visibility and Education Network (AVEN; <http://www.asexuality.org>)—the largest online community of asexuals which is involved in education and advocacy efforts. In fact, an AVEN DSM Task Force prepared a 75-page document which included interviews on seven academics with expertise in human sexuality, which concluded that the DSM-5 should explicitly exclude asexual individuals from receiving

a diagnosis of HSDD. Part of the rationale stems from the finding that asexuals are not distressed by their lack of sexual interest [72], unlike individuals with HSDD who are usually motivated to seek treatment to restore their low libido. Moreover, the AVEN community views asexuality as an identity, and feel that it is better placed within the different sexual orientations, and not as a sexual dysfunction [70]. Although data are extremely limited on the characteristics of asexual individuals, the available data do support this view of asexuality as not being a sexual dysfunction, and argue that a thorough assessment of the man presenting with low/no desire should be assessed to rule out asexuality.

Examining the Proposed DSM-5 Criteria of HSDD for Men

Brotto [6] and Graham [73] proposed that HSDD and female sexual arousal disorder be merged in DSM-5 as *Sexual Interest/Arousal Disorder*, and that a polythetic set of diagnostic criteria be adopted (e.g., major depressive episode in the DSM-IV-TR adopted a polythetic criteria list in that five of a possible nine criteria need to be met in order to have a depressive episode). These, along with a list of seven specifiers, are listed in Table 1. The goal of the next section is to critically evaluate each of the proposed criteria for women's sexual interest/arousal disorder regarding their relevance and applicability to men.

Proposed criterion A1 (absent/reduced interest in sexual activity) and criterion A2 (absent/reduced sexual/erotic thoughts or fantasies) are the same as criterion A in DSM-IV-TR [17], and also reflect common ways in which men express their sexual desire [47,49]. In a study of 13 men with inhibited sexual desire and 20 with ED, all of whom were seeking treatment, men with low desire had significantly fewer fantasies than men with ED or men in the "no problem" control group [59]; the content of the reported fantasies, however, was similar for all three groups. Interestingly, masturbation frequency was higher in men with low desire compared to the other two groups [59], leading the authors to conclude that masturbation may sometimes serve to reduce anxiety, and/or that inhibited sexual desire may be specific to a partner and may not be associated with decreased autoerotic activity. Thus, masturbation frequency should not be considered to be a proxy for sexual desire in men. Moreover, these data suggest that the assessment of criterion A1 for men in DSM-5

Table 1 Proposed criteria for Sexual Interest/Arousal Disorder for DSM-5

A.	Lack of sexual interest/arousal of at least 6 months duration as manifested by at least four of the following indicators: <ol style="list-style-type: none"> 1) Absent/reduced interest in sexual activity 2) Absent/reduced sexual/erotic thoughts or fantasies 3) No initiation of sexual activity and is not receptive to a partner's attempts to initiate 4) Absent/reduced sexual excitement/pleasure during sexual activity (on at least 75% or more of sexual encounters) 5) Desire is not triggered by any sexual/erotic stimulus (e.g., written, verbal, visual, etc.) 6) Absent/reduced genital and/or nongenital physical changes during sexual activity (on at least 75% or more of sexual encounters)
B.	The disturbance causes clinically significant distress or impairment <i>Specifiers:</i> <ol style="list-style-type: none"> 1) Lifelong or acquired 2) Generalized or situational 3) Partner factors (partner's sexual problems, partner's health status) 4) Relationship factors (e.g., poor communication, relationship discord, discrepancies in desire for sexual activity) 5) Individual vulnerability factors (e.g., depression or anxiety, poor body image, history of abuse experience) 6) Cultural/religious factors (e.g., inhibitions related to prohibitions against sexual activity) 7) Medical factors (e.g., illness/medications)
C.	The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition.

should focus on desire for partnered sexual interactions. The slight modification of criterion A2 from a previous (DSM-IV-TR) focus on “sexual fantasies” to the proposed focus on “sexual/erotic thoughts or fantasies” seems appropriate and justified by empirical data. A recent community study of 205 Portuguese men found that “lack of erotic thoughts” was one of the strongest predictors of men’s sexual desire [66]. Thus, criteria A1 and A2 of the proposed new criteria for sexual interest/arousal disorder in women do appear relevant for men with low desire, and I recommend that they be included in the definition of low desire in men for DSM-5. However, because desire for sexual activity is not the only way in which men experience their sexual desire, and because sexual peak for men is defined as the period of peak sexual desire independent of intercourse frequency, this suggests that other indices of desire are necessary in the diagnosis of HSDD in men.

Proposed criterion A3 states, “no initiation of sexual activity and is not receptive to a partner’s attempts to initiate.” After an extensive review of the literature, Baumeister et al. [51] concluded that men are much more likely than women to initiate sexual activity, and that this reflects higher levels of sexual desire in men. This assumes that initiation of sex reflects high desire and that lack of sexual initiation is characteristic of reduced/no sexual desire. There is, however, some evidence that having a female partner initiate sex is important to men. For example, in a study of 32 college-aged heterosexual men, all of whom were in relationships of at least 2 months duration, they indicated a desire for more egalitarian initiation with their partners. Men reported that initiation

by a female partner increased their sense of themselves as an “object” of their partner’s desire, and this further enhanced their own desire [74]. Although this was a sample of young men, the findings can be generalized to older men, and suggested that experiencing a decline in either willingness to initiate sexual activity or receptiveness to a partners’ invitation to sexual activity may be a symptom of reduced sexual desire in men. In summary, proposed criterion A3 seems applicable to men with low desire and I recommend that this be included in the criteria for low sexual desire in men.

Proposed criterion A4 indicates “absent or reduced sexual excitement/pleasure during sexual activity.” This criterion was added to reflect the overlap between subjective arousal and desire in women; this overlap has also been demonstrated in both quantitative [29,67] and qualitative [57] studies involving men. Although men could distinguish between their sexual desire and erectile functioning, the demarcation between sexual desire and subjective arousal/excitement was not clear [57]. Specifically, many men in the study by Janssen et al. [57] felt that desire and subjective arousal were synonymous. Further support for some overlap between desire and arousal in men is the comorbidity between desire and erectile difficulties (although not all men with ED also have HSDD). Thus, reduced sexual excitement or pleasure may be one indicator of reduced sexual desire in men, just as it is in women. Proposed criterion A4 therefore seems applicable to some men with low sexual desire.

Proposed criterion A5 states “desire is not triggered by any sexual or erotic stimulus (e.g.,

written, verbal, visual, etc.).” A wealth of data has emerged supporting the incentive motivation model of sexual response, which posits that a “competent sexual stimulus” is necessary for initiating the sexual response system [67,75,76]. Brotto [6] reviewed this literature for women, and there is also parallel support for this model in men [57,67,77]. Men identify a variety of triggers for their sexual desire and arousal and they describe a complex and diverse host of reasons why they choose to engage in sexual activity [78]. One potential gender difference relates to the finding that men are significantly more likely to report being motivated for sexual activity in response to visual cues compared to women [78], thus reinforcing the speculation that men’s healthy sexual response is triggered by sexual or erotic cues. Men as well as women may engage in sexual activity in the absence of initial awareness of sexual desire, but still experience the sexual encounter as satisfying. For example, in a study of 104 male and 96 female unmarried undergraduate students, all of whom were in a relationship, 26% of the men and 50% of the women reported engaging in consensual sexual activity (with their current partner) without sexual desire in the past 2 weeks [79]. There were no significant gender differences in the frequency of reports of having had sex without initial desire in the past year. Although the authors did not label the participants’ satisfying experiences as “responsive desire,” the descriptions provided strike a familiar chord with the descriptions given by women who are described in Basson’s model of sexual response. These women are said to sometimes, or perhaps often, begin a sexual encounter relatively neutral, but then experience physical and emotional satisfaction at some point during the sexual interaction [80–82]. According to Basson’s model, the absence of sexual desire at the beginning of a sexual interaction does not indicate a sexual dysfunction. Given the finding that men may be just as likely as women to engage in activity without an initial “desire for sex” but then have their desire triggered during sexual activity, this criterion also seems appropriate for men. In summary, a reduction in responsivity to sexual stimuli would reflect reduced sexual desire, and therefore, criterion A5 seems to be applicable to the experience of men with low sexual desire.

Criterion A6 notes that “absent or reduced genital and/or nongenital physical changes during sexual activity” may characterize sexual interest/arousal disorder in women. As documented in women [56,58], men have reported overlap in their

experience of physical arousal and sexual desire. However, psychophysiological testing also reveals that HSDD can be experienced as quite distinct from erectile responding [23,29]. Moreover, there is an extensive literature exploring the epidemiology, pathophysiology and treatment of ED (as reviewed by Segraves) [83], and to subsume ED under the general category of a sexual desire/arousal disorder may not be appropriate for etiological or treatment reasons. If the proposed criteria for sexual interest/arousal disorder are retained for men, it may be appropriate to add an additional qualifier to criterion A6 which indicates “if symptoms are also met for Erectile Disorder, then both disorders should be diagnosed.” Thus, for women, the presence of genital arousal impairment plus difficulties in subjective sexual excitement would lead to only one diagnosis (sexual interest/arousal disorder), whereas for men, the presence of both sets of symptoms would entail two diagnoses being given: sexual interest/arousal disorder plus ED.

Criterion B notes the presence of “clinically significant distress or impairment.” There are no data on rates of low desire with and without distress in men (unlike the case in women, where studies have compared prevalence of low desire in women with and without distress); thus, whether significant distress should be required in order to meet criteria for a desire disorder in men is difficult to establish. However, in order to rule out normative changes in sexual desire that may be related to transient life stressors or personal vulnerabilities, and could result in inflated rates of sexual dysfunction [84], I would argue that the distress criterion be retained in the diagnosis of low desire in men. Moreover, there are data indicating that men are much more likely to seek treatment for ED than for HSDD [14], raising the possibility that for a man to seek treatment for low desire, he would likely be experiencing significant distress. The suggested wording of criterion B would be: “The problem causes clinically significant distress or impairment” as is currently proposed for women [6].

For women, it was recommended that frequency and duration criteria be introduced [6,73] in order to minimize pathologizing of normal (i.e., adaptive) variations in sexual functioning [84]. Mitchell and Graham suggested that specifying such objective cutoff criteria is one way of reducing unnecessary false positives in sexual dysfunction diagnoses. In the international survey by Laumann et al. [15] of 11,205 sexually active men

aged 40–80 years, the prevalence of low desire lasting 2 months or more in the past year ranged from 12.5% to 28.0% (depending on which of the seven geographic regions were studied). However, when the analyses were restricted to those men who experienced the low sexual interest “frequently,” the prevalence dropped to between 1.3% and 3.1%. With the assumption that “occasionally” corresponds to an approximate frequency of 25%, “periodically” to 50%, and “frequently” as 75%, this finding lends support to the proposal that the low sexual interest must be experienced “on at least 75% or more of sexual encounters” [6,73]. The findings from the British NATSAL survey that the prevalence of male low desire lasting 6 months or longer was significantly lower (1.8%) than low sexual desire lasting at least 1 month (17.1%) [9] lends support to the proposal that the diminished interest in sex be experienced on at least 75% of sexual encounters for a duration of at least six months (as was proposed for women).

Regarding the list of specifiers that may be coded dimensionally for women (see Table 1), the recommendation here is that these are also retained for men. Differentiating an exclusive psychogenic etiology, as was done with DSM-IV-TR [17], is difficult (if not impossible) for men (as it is for women) [6]. It is proposed that this specifier (i.e., due to psychological factors/due to combined factors) be dropped in DSM-5. An illustration of the overlap between organic and psychogenic causes comes from a study of hyperprolactinemic men with sexual desire and ejaculation difficulties, many of whom had sexual problems that were situational (e.g., dysfunction exacerbated by psychological difficulties) [85]. All of the men in this study experienced some improvement with sex therapy, which was provided before the diagnosis of hyperprolactinemia was made, suggesting a complex biopsychosocial interaction of factors that maintained the sexual problem. Thus, separation by presumed etiology is erroneous and not useful for clinical decision-making. For ED, it has been similarly proposed that the differentiation of exclusive psychogenic vs. biogenic factors cannot be made, as this assumes knowledge about etiology which often does not exist [83]. In the proposal for *Sexual Interest/Arousal Disorder* in women [6], it was suggested that the clinician rate the extent to which “medical factors” are relevant; this would allow for the possibility that a psychological factor(s) is also contributing to the etiology, and allows the clinician to rate the degree to which he/she believes

that medical factors are contributing. The retention of Criterion C, however, which indicates “The sexual dysfunction is not better accounted for by another Axis I disorder (except another Sexual Dysfunction) and is not due exclusively to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition,” should be retained for instances in which it is clear that the lack of interest is completely due to medical conditions or substances. In such cases, the disorder would be labeled “Sexual Interest/Arousal Disorder in Men due to a General Medical Condition” or “Substance-Induced Sexual Dysfunction.”

Regarding the remaining specifiers proposed for women (i.e., partner factors; relationship factors; individual vulnerability factors; and cultural/religious factors), I propose that these be also retained in the diagnosis of low desire for men given that there is empirical data affirming their importance [86,87]. In an extensive review of sexual dysfunctions in gay men, Sandfort and de Keizer [83] identified a number of significant correlates of sexual problems such as relational influences, mood, alcohol use, self-directed homophobia, interpersonal problems, attitudes, lack of adequate sex education, and trauma resulting from early life experiences in accounting for the low sexual desire in gay men [88] (many of which are likely also relevant to heterosexual men). I propose that these specifiers be coded on a dimensional scale to designate the degree of involvement of that particular domain to the presumed etiology. Lifelong vs. acquired seems to be a useful specifier as this distinction may point to etiological or prognostic factors that could influence treatment decisions. The situational vs. generalized specifier can be helpful in some instances for specifying if a man experiences low desire only in certain situations, but not others (situational), or if his lack of sexual interest is experienced in all sexual situations (generalized). This specifier can also be problematic, however, in that the situational low desire might be considered adaptive in some situations, and therefore not indicative of “dysfunction.” For example, the phenomenon of “misdirected sexual desire” has been discussed anecdotally as accounting for some cases of low desire in gay men [87]. This describes the situation when a “closeted” gay man experiences societal pressure to have sexual attractions for an opposite-sex partner and where resultant sexual desire for an opposite-sex partner is understandably low; however, desire toward a same-sex partner might

be much higher. Also, because many men with HSDD continue to masturbate despite low desire [57], this suggests that all forms of HSDD are situational.

Considering Alternative Options for Low Desire for Men in DSM-5

Overall, the literature on men's sexual desire is limited, particularly when compared to the parallel literature in women. Moreover, there appears to be two distinct research samples studied within this literature: one on older men seeking treatment for sexual dysfunction and one based on college samples. However, despite the relatively small literature, some conclusions can be drawn about men's desire which may serve to inform how low desire should be classified within DSM-5. Based on this review of the relevant literature, there are three options on how to conceptualize low desire in men and each will be considered in turn. *Option 1* is to retain the DSM-IV-TR criteria for HSDD and to rename the disorder as "HSDD in men." This is the most conservative approach and would preserve the Masters and Johnson/Kaplan/Lief sexual response cycle on which HSDD was based. Although there are relatively little data on low sexual desire in men compared to the evidence base for women, there are sufficient data to indicate that the status quo is not sufficient and may lead to the unfortunate situation of "false positives," i.e., labeling a man with a desire disorder if he does not fantasize sexually, or if he only sometimes experiences sexual desire at the outset of a sexual encounter but otherwise has a healthy sexual response. However, as is the case for women, it is likely that a low desire for sex in the absence of other indicators may *not* be indicative of pathology for men. Therefore, expanding from monosymptomatic to polythetic criteria for men's low desire seems very appropriate and suggests two additional options for placement in DSM-5.

Option 2 is to adopt the proposed criteria for sexual interest/arousal disorder, as per recommendations by Brotto [6] and Graham [73], for both men and women. This reflects the findings that desire is expressed in a multitude of ways (e.g., desire for sex, frequency of fantasizing, frequency of initiating sex, frequency of being receptive to sex), the overlap men report in sexual desire and subjective sexual arousal, and findings from the incentive motivation model that sexual desire/arousal is a "triggered" experience in response to sexually competent stimuli. The sixth criterion

(A6) indicates difficulty with genital or nongenital physical arousal. There are limited data which support the inclusion of this criterion: there is a high level of comorbidity between low sexual desire and impaired genital arousal in men in some studies, but not all. However, there are also data indicating that a host of physiological and physical parameters tested may not significantly differentiate men with and without low desire. If this option was retained and A6 was included, this would need to be clearly differentiated from difficulties in erectile functioning. Thus, criterion A6 might refer to reductions in skin sensitivity or signs of autonomic arousal; however, recurrent episodes of erectile failure causing distress would qualify an individual for a full diagnosis of ED.

Given that criterion A6 presents some confusion about the boundary between impairments in genital or nongenital response and ED, *Option 3* is to adopt the proposed sexual interest/arousal disorder criteria but to delete A6 and require that only three of the five symptoms of low desire/subjective arousal be met. This would result in male- and female-specific forms of sexual interest/arousal disorder.

Ultimately, the results of DSM-5 field trials across a variety of international centers will allow the best option to be made clear. Moreover, it is clear that more research aimed at understanding the characteristics and correlates of low desire in men, with and without the accompanying symptom of distress, is needed.

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