Definitions of women's sexual dysfunction reconsidered: advocating expansion and revision

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In light of various shortcomings of the traditional nosology of women's sexual disorders for both clinical practice and research, an international multi-disciplinary group has reviewed the evidence for traditional assumptions about women's sexual response. It is apparent that fullfillment of sexual desire is an uncommon reason/incentive for sexual activity for many women and, in fact, sexual desire is frequently experienced only after sexual stimuli have elicited subjective sexual arousal. The latter is often poorly correlated with genital vasocongestion. Complaints of lack of subjective arousal despite apparently normal genital vasocongestion are common. Based on the review of existing evidence-based research, many modifications to the definitions of women's sexual dysfunctions are recommended. There is a new definition of sexual interest/desire disorder, sexual arousal disorders are separated into genital and subjective subtypes and the recently recognized condition of persistent sexual arousal is included. The definition of dyspareunia reflects the possibility of the pain precluding intercourse. The anticipation and fear of pain characteristic of vaginismus is noted while the assumed muscular spasm is omitted given the lack of evidence. Finally, a recommendation is made that all diagnoses be accompanied by descriptors relating to associated contextual factors and to the degree of distress.

Key words: definitions, women's sexual dysfunction, sexual disorders

INTRODUCTION

In recent years, it has become increasingly apparent that the American Psychiatric Association's Diagnostic and Statistical Manual (DSM-IV-TR)[1], and the International Statistical Classification of Disease and Related Health Problems (ICD10)[2], and even recent modification of the definitions of female sexual dysfunction sponsored by the American Foundation of Urologic Disease[3] are unsatisfactory. This stems in part from the problematic conceptualization of women's sexual response cycle underlying those definitions. Criticisms have ranged from the heterosexism apparent in the definitions to the continued misguided attempt to create a parallelism between the sexual response cycle of men and women and the ensuing definitions of dysfunction[4–7].

In an attempt to address the various deficiencies of the traditional nosology of women's sexual disorders for both clinical practice and research, an international multi-disciplinary group was convened to review and question the validity of traditional

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assumptions about women's sexual response. Over the course of one year, the committee formulated modifications and elaborations of existing definitions of women's sexual dysfunction. Many subsequent revisions were made, facilitated by three meetings, and ongoing electronic communication especially once the new formulations were piloted by some of the authors. It is recognized that the ultimate validity and reliability of the proposed modifications must be tested formally in both clinical and research settings over the coming months and years.

The traditional models of women's sexual response, as described by Masters and Johnson (1970)[8] and amended by Kaplan (1976)[9] are based on a model more characteristic of men than of women, with their inherent linearity and sequential stages of desire, arousal and orgasm. There is an unfounded assumption that desire always precedes arousal, which precedes orgasm. Women's self-report and research data challenge these assumptions as well as the concept that women's dysfunctions are discrete and non-overlapping. In fact, the comorbidity of women's sexual dysfunctions is well documented[10–18]. It is often clinically important to assess which component was primary and how comorbidity increased over time.

Having been based on a flawed model of function, the definitions of women's sexual dysfunction have been unsatisfactory. They do not reflect women's actual sexual experience. For instance, regarding sexual arousal, the DSM-IV-TR definition of female sexual arousal dysfunction is entirely focused on the woman's genital response to the exclusion of any report of subjective sexual arousal, excitement, pleasure or satisfaction. In fact, the only reference in any of the diagnostic systems to women's sexual pleasure is in a phrase found in ICD10 where a condition called 'sexual ahedonia' is described whereby 'sexual responses occur normally and orgasm is experienced but there is a lack of appropriate pleasure'. Finally, in the current diagnostic systems, there is an unintentional, but unfortunate tendency to pathologize what, for many women, are normative and life cycle changes in sexual interest and response.

This review challenges six fundamental aspects of women's sexual function and dysfunction as portrayed by Masters and Johnson[8], and Kaplan[9], which underlie the existing definitions of dysfunction. Proposed modifications and descriptors of the definitions of dysfunction follow. The overall objective of this committee was to document the inaccuracies and limitations of the existing definitions, and to encourage the researching of further data to support, refute or modify these revisions and to test their usefulness and validity in the clinical setting.

EXISTING BELIEFS ABOUT WOMEN'S SEXUAL RESPONSE

Organic dysfunction can be meaningfully separated from psychogenic dysfunction

Both the DSM-IV-TR and the ICD10 definitions assume it is possible to distinguish between organic and psychogenic etiologies of sexual problems. For instance, ICD10 differentiates 'organic' vaginismus from 'psychological' vaginismus. In fact, in most instances, the precise pathogenesis of sexual dysfunction is unclear and multiple psychological, interpersonal and organic contributions are involved. Furthermore, research evidence suggests that psychological and organic influences are not necessarily separate entities. There are many examples in other areas of medicine illustrating the reciprocal influence of mind and body.

We believe that instead of assuming that as knowledge increases, we will be able to identify more organic causes of sexual dysfunction in women, rather that with increased knowledge, we will better understand the interplay between physical and psychological processes.

Awareness of internal feelings of sexual desire characterized by sexual thoughts or sexual fantasies is the primary trigger for sexual behavior

While empirical data are scarce, clinical observation suggests that women more routinely recall or report internal feelings of desire in terms of sexual thoughts and fantasies in new as opposed to established, relationships. However, early on in relationships, there are many deliberate potent sexual cues and triggers potentially relevant to those seemingly 'spontaneous' internal feelings of sexual desire. Novelty, uncertainty and sometimes, even secrecy can further increase sexual interest. Women's sexual motivation, even at these times appears highly complex. In relationships of longer duration, the reasons motivating sexual interaction remain highly varied and include many that are partially or totally non-sexual, for example, a wish to experience tenderness/appreciation

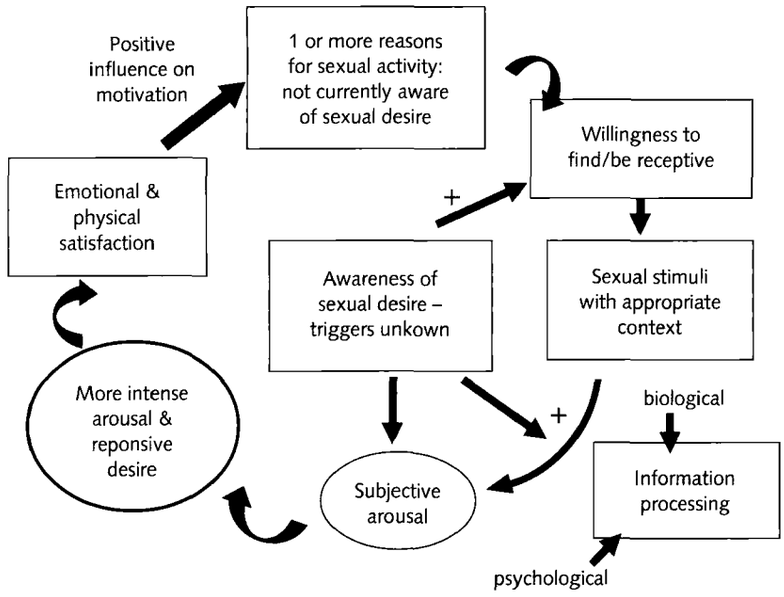

Figure 1 Women's sexual response cycle: sexual arousal may precede sexual desire. Reproduced with permission from the American College of Obstetricians and Gynecologists[29]

for the partner or a need to confirm one's desirability. In fact, some reasons for engaging in sex are not positive but may be based on a wish to avert a negative outcome, for example, to avoid a partner's petulance or anger.

Research evidence from nationally representative community samples of adult women confirms the finding of infrequent spontaneous sexual thinking in the majority of sexually healthy women in longer-term relationships[19–21].

Fantasies, a marker of sexual desire in many systems including DSM-IV-TR, may, in fact, serve as a deliberate means of creating arousal and reinforcing desire. Data suggest women fantasize as a means to better focus on their sexual feelings and to avoid distractions during sexual activity[21].

Sexual desire necessarily precedes sexual arousal

As discussed in a previous paper, it is often the case that arousal precedes desire[22]. Data are emerging on the wide variety of motives women may have for agreeing to, or instigating, sexual activity[23–28]. The willingness to be sexual, leads to both a deliberate attempt to become aware of subjective and physical feelings of arousal as well as greater engagement in the sexual situation. These processes then facilitate sexual desire and a wish to continue the sexual acts. On the other hand, without the reinforcement of increasing sexual arousal, desire is not triggered and further sexual exchange may be avoided. Alternatively, sex may continue but be experienced without pleasure and often without further subjective arousal.

A different model of women's sexual response has been described, showing that arousal and desire coexist and reinforce each other (Figure 1). Comorbidity of arousal and desire may be the rule rather than the exception.

Women's sexual arousal is identified primarily by genital vasocongestion, vaginal lubrication and awareness of genital throbbing and tingling

In fact, women's sexual arousal includes various components including sexual excitement – a sense of being sexually awakened. There is heightened awareness of the external sexual stimuli that are causing the sexual excitement.

There is also variable awareness of physiological changes in the body including vasocongestion of the genitalia and breasts. Genital vasocongestion may be rather minimally and imprecisely directly recognized by the woman. For many, but not all, healthy women, direct awareness (tingling, throbbing, fullness) is not proportional to increased vaginal engorgement as measured by vaginal photoplethysmography[30]. However, it is awareness of genital arousal that is the focus of the definitions of DSM-IV-TR and ICD10.

Enhanced sensations stemming from caressing of engorged genitalia represents an indirect appreciation of physical arousal, not mentioned in any diagnostic system.

Vaginal lubrication has been the traditional hallmark of women's arousal despite the fact that it appears to be an immediate 'reflexive' response to any sexual stimuli-whether desired and enjoyed or not[31]. Moreover, the correlation between subjective arousal and vaginal lubrication has not been adequately assessed.

We note that subjective arousal varies more as a function of the woman's appreciation of, and comfort with the sexual stimuli themselves and their context, rather than necessarily changes in her genitals[30]. The poor correlation between objective measures of increased vaginal congestion in response to erotic stimuli and subjective arousal has been frequently, (but not invariably), observed in sexually healthy women[30,32-34], in women complaining of absent arousal[35,36] and in women with dyspareunia[37].

Subjective arousal is influenced by the thoughts and emotions it engenders. For instance, there is research to suggest that women complaining of poor arousal, their degree of anxiety in response to an erotic stimulus actually correlates with psychophysiological measures of genital congestion[18,35,36].

Brain imaging in sexually aroused women is in keeping with previous psychophysiological findings that their subjective arousal does not necessarily correlate with genital response. In the imaging studies, there is uptake in areas corresponding to cognitions, emotions, motivations and in areas organizing and perceiving autonomic reflexes. Of note, there is minimal correlation between uptake in areas organizing ANS reflexes and the women's subjective experience of arousal[38].

Women's sexual response is essentially stable and invariant across time and circumstance

It is becoming increasingly apparent as Kinsey[39] noted in 1953, that women's sexual response is discontinuous across the reproductive and sexual life cycle. It is strongly influenced by the context of any actual or potential sexual interaction. It may be affected by normal reproductive events including menstrual cycle, pregnancy, postpartum and menopause. It may also be affected by minor and major medical conditions. It is also dependent on many psychological factors including the interpersonal relationship[11,13,20,40-43]. As Bancroft has recently observed, it may be adaptive at times for women to be sexually avoidant or disinterested[19]. Data exist on the normative and gradual lessening of sexual interest and response with both natural menopause and age[40,42,44]. A lack of sexual arousal/desire may be entirely normative at certain junctures in a woman's life. It is imperative that the diagnoses of female sexual dysfunction take into account the context of the woman's life at the time of diagnosis.

All women experience distress about alterations or limitations in their sexual response

While many women report a considerable amount of distress when they experience sexual difficulties[19,42], reports of subjective distress may vary depending on a variety of factors. Whether or when to diagnose a woman as having a sexual dysfunction when she experiences no personal distress about her response is a source of ongoing controversy. Lack of response (or interest) which is not problematic to the woman has little clinical but some epide-miological relevance[10].

In light of all of the above points, we are proposing the following modifications and elaborations of existing definitions of women's dysfunction. The dysfunctions rarely occur alone and influence and compound each other as illustrated in Figure 2.

SEXUAL DISORDERS

Women's sexual interest/desire disorder

'Absent or diminished feelings of sexual interest or desire, absent sexual thoughts or fantasies and a lack of responsive desire. Motivations (here defined as reasons/incentives), for attempting to become sexually aroused are scarce or absent. The lack of interest is considered to be beyond a normative lessening with life cycle and relationship duration'.

The word 'interest' is preferred given the aforementioned relative infrequency of desire being the reason/incentive for engaging in sexual activity. However, for practical purposes of literature review, the combination is chosen. The definition reflects the data which show a paucity of sexual thoughts and fantasies may be within the broad normative range. The additional lack of responsive desire is essential to the diagnosis of dysfunction.

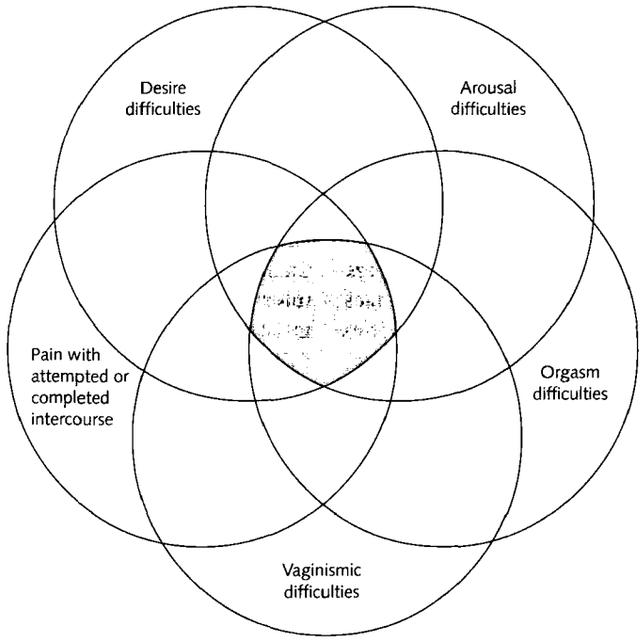

Figure 2 Schematic for understanding the complexity of women's sexual dysfunction. Components of women's sexuality overlap significantly. The dark gray area in the middle of the schematic represents the co-occurrence of all types of dysfunction and is not uncommon in clinical practice.

Subjective sexual arousal disorder

'Absence of or markedly diminished feelings of sexual arousal (sexual excitement and sexual pleasure) from any type of sexual stimulation. Vaginal lubrication or other signs of physical response still occur'.

The evidence to date is that the genital vasocongestion demonstrated by the majority of women with loss of subjective arousal, is comparable to that of healthy women. Given women differ in their awareness of these genital changes, recognition of a 'subjective arousal disorder' is advocated.

Genital sexual arousal disorder

'Absent or impaired genital sexual arousal. Self-report may include minimal vulval swelling or vaginal lubrication from any type of sexual stimulation and reduced sexual sensations from caressing genitalia. Subjective sexual excitement still occurs from non-genital sexual stimuli'.

A woman diagnosed with the genital subtype of arousal disorder indicates she can still be subjectively aroused by for instance, viewing an erotic film, or pleasuring her partner, being kissed or receiving breast stimulation. She complains of the marked loss of intensity of any genital response including orgasm. Awareness of throbbing/swelling/lubrication is absent or markedly diminished. This clinical picture has been described by the following groups of women:

1 Women with autonomic nerve damage[45].
2 Some women with estrogen deficiency – although many will still have a genital vasocongestive response that allows sexual sensations from vulval stimulation – many women report insufficient lubrication[46,47].
3 Some postmenopausal estrogen replete women with demonstrable lack of vasocongestive response[48].
4 Some postmenopausal estrogen replete women for whom there is no evidence of physically impaired congestion to date[48].

However, we must emphasize that this is a clinical diagnosis based on the woman's report. There may or may not be demonstrable physical pathophysiology. Despite many women disclaiming genital swelling, pleasurable sensations from direct stimulation of their genitalia or awareness of lubrication, it is highly possible that they may be reflexively genitally congesting[31]. However, most clinicians have no means of confirming or refuting this observation. We also know little of the underlying pathophysiology of loss of sexual quality of sensations despite engorgement.

Combined genital and subjective arousal disorder

'Absence of or markedly diminished feelings of sexual arousal (sexual excitement and sexual pleasure), from any type of sexual stimulation as well as complaints of absent or impaired genital sexual arousal (vulval swelling, lubrication)'.

This is the most common clinical presentation. It is usually comorbid with lack of sexual interest. Again, research suggests many women with this presentation may still be genitally vasocongesting in a healthy manner[31,36]. Note it is the lack of subjective excitement from any type of sexual stimulation that distinguishes these women from those with genital arousal disorder.

Persistent sexual arousal disorder

'Spontaneous, intrusive and unwanted genital arousal (e.g., tingling, throbbing, pulsating) in the absence of sexual interest and desire. Any awareness of subjective arousal is typically but not invariably unpleasant. The arousal is unrelieved by one or more orgasms and the feelings of arousal persist for hours or days'.

Since the publication of more articles on this poorly understood syndrome[49] and with access to the Internet and email, it has become apparent that this condition may not be as rare as previously thought. This provisional definition is offered in order to facilitate investigation of the prevalence and etiology of this little acknowledged syndrome.

Women's orgasmic disorder

'Despite the self-report of high sexual arousal/excitement, there is either lack of orgasm, markedly diminished intensity of orgasmic sensations or marked delay of orgasm from any kind of stimulation'.

A major difficulty with past definitions of orgasmic disorder was that the criterion of high or 'adequate' arousal was often ignored. Studies of women diagnosed with DSM-IV female orgasmic disorder report that high percentages of these women were also diagnosed with female sexual arousal disorder as per DSM-IV[17]. However, a DSMIV diagnosis of orgasmic disorder precludes one of arousal disorder. The assessment of arousal is critical in making the diagnosis. It is hoped that by changing the sentence structure this misuse of the definition will lessen.

Dyspareunia

'Persistent or recurrent pain with attempted or complete vaginal entry and/or penile vaginal intercourse'.

The experience of women who cannot tolerate full penile entry and the movements of intercourse because of the pain, needs to be included in the definition of dyspareunia. Clearly, it depends on the woman's pain tolerance and her partner's hesitancy or insistence. A decision to desist the attempt at full entry of the penis or its movement, within the vagina, should not change the diagnosis.

Vaginismus

'Persistent difficulties to allow vaginal entry of a penis, a finger, and/or any object, despite the woman's expressed wish to do so. There is variable involuntary pelvic muscle contraction, (phobic) avoidance and anticipation/fear/experience of pain. Structural or other physical abnormalities must be ruled out/addressed'.

The presence of a 'vaginal spasm' has never been documented despite the inclusion of this spasm in earlier definitions of vaginismus[50]. Reflexive involuntary contraction of the pelvic muscles as well as thigh adduction, contraction of the abdominal muscles, muscles in the back and limbs, associated with varying degrees of fear of pain and of the unknown, typically precludes full entry of a penis, tampon, speculum or finger. However, discomforting or painful vaginal entry may occur.

Sexual aversion disorder

'Extreme anxiety and/or disgust at the anticipation of/or attempt to have any sexual activity'.

Many clinicians feel the syndrome of extreme anxiety/panic associated with activation of the autonomic nervous system is a form of phobic reaction. However, the sexual context and sexual repercussions warrants its inclusion as a sexual dysfunction.

CONTEXTUAL DESCRIPTORS

Given that women's sexuality is contextual, we are reluctant to diagnose a woman as having a sexual dysfunction when the primary problem appears to be the 'sexual context' in which sexual exchange occurs. We realize that we are combining diagnoses and possible etiological factors, but by so doing, the focus is moved away from the woman to

her relationship and environment. She is reporting that dysfunction is present – however, factors other than the woman's own sexuality need to be highlighted. Agreeing with Schover *et al.*[51] who described a multiaxial problem-oriented diagnostic system in 1982, we again strongly recommend the inclusion of descriptors within the diagnosis as these have such important therapeutic implications. The descriptors may or may not eventually prove to be etiologically important – there is often considerable uncertainty. The following descriptors appear to be most salient:

1 Negative upbringing/losses/trauma (physical, sexual, emotional), past interpersonal relationships, cultural/religious restrictions[11,52–55].

2 Current interpersonal difficulties, partner sexual dysfunction, inadequate stimulation and unsatisfactory sexual and emotional contexts[10,20,40,41,56].

3 Medical conditions, psychiatric conditions, medications or substance abuse[45,57–59].

LIFELONG OR ACQUIRED, GENERALIZED OR SITUATIONAL

Whether the disorders are lifelong or acquired, situational or generalized, should be indicated.

DISTRESS SCALE

The degree of distress that women report from apparently similar dysfunctions is highly variable, but has important implications for diagnosis and treatment. We recommend, as a minimum, the use of the following distress scale: none, mild, moderate or severe.

The use of validated measurement of the distress may be preferable[60]. Sexual distress should be distinguished from non-sexual distress and from depression. The degree of reported distress may have implications for the woman's motivation for therapy and for prognosis.

CONCLUSIONS

Since it is impossible to specify with any degree of precision when a sexual problem or complaint should be diagnosed as a 'dysfunction', it is crucial that the clinician's judgment be taken into account in addition to the women's report of distress. Contextual and interpersonal factors must be appraised in order to make a complete diagnosis. We are using the word 'dysfunction' to mean simply lack of healthy/expected/normal response/interest. The use of this word does not necessarily imply any pathology within the woman.

The phrase 'ongoing difficulties with', might be more accurate than 'dysfunction', but cumbersome and not in keeping with psychological and medical terminology. Given the documented co-morbidity, often several diagnoses will apply. Thus, although the definitions of women's sexual dysfunctions have become somewhat longer and more complex, we believe that this reflects the clinical realities of women's sexuality. Even when contextual factors are largely responsible for the woman's suboptimal sexual functioning, the apparent dysfunction still warrants clarification i.e., diagnosis. Her reporting distress necessitates comprehensive assessment and treatment. We trust these newer definitions and descriptors will facilitate clinical and research assessment and management and avoid any inappropriate pathologizing of the woman. Moreover, we hope that these definitions foster an ongoing biopsychosocial approach.

REFERENCES

1. American Psychiatric Association. *DSMIV-TR: Diagnostic and Statistical Manual for Mental Disorders*. 4th edn. Washington, DC: American Psychiatric Press, 2000
2. World Health Organization. *ICD 10: International Statistical Classification of Diseases and Related Health Problems*. Geneva: World Health Organization, 1992
3. Basson R, Berman J, Burnett A, *et al.* Report of the International Consensus Development Conference on female sexual dysfunction: Definitions and classifications. *J Urol* 2000;163: 888–93
4. Leiblum S. Commentary: Critical overview of the new consensus-based definitions and classification of female sexual dysfunction. *J Sex Marital Ther* 2001;27:159–66
5. Bancroft J. Commentary: Conceptualizing women's sexual problems. *J Sex Marital Ther* 2001;27:95–103
6. Basson R. Commentary: Are the complexities of women's sexual function reflected in the new consensus definitions of dysfunction? *J Sex Marital Ther* 2001;27:105–12
7. Meston CM. Commentary: Receptivity and personal distress: considerations for redefining female sexual dysfunction. *J Sex Marital Ther* 2001;27:179–82
8. Masters WH, Johnson V. *Human sexual response*. Boston: Little, Browne & Co. 1966
9. Kaplan HS. Hypoactive sexual desire. *J Sex Martial Ther* 1979;3:3–9
10. Sjögren Fugl-Meyer K, Fugl-Meyer AR. Sexual disabilities are not singularities. *Int J Impot Res* 2002;14:487–93

11. Hartmann U, Heiser K, Rüffer-Hesse C, *et al.* Female sexual desire disorders: Subtypes, classification, personality factors, a new direction for treatment. *World J Urol* 2002;20: 79–88
12. Basson R, McInnes R, Smith MD, *et al.* Efficacy and safety of sildenafil citrate in women with sexual dysfunction associated with female sexual arousal. *Gend Based Med* 2002;11:367–77
13. Cyranowski JM, Andersen BL. Schemas, sexuality, romantic attachment. *J Personality Soc Psychol* 1998;74:1364–79
14. Derogatis LR, Schmidt CW, Fagan PJ, *et al.* Subtypes of anorgasmia via mathematical taxonomy. *Psychosomatics* 1989;30:166–73
15. Segraves KB, Segraves RT. Hypoactive sexual desire disorder: Prevalence and comorbidity in 906 subjects. *J Sex Marital Ther* 1991;17:55–8
16. Rosen RT, Taylor JF, Leiblum SR. Prevalence of sexual dysfunction in women: Results of a survey study of 329 women in an outpatient gynecological clinic. *J Sex Marital Ther* 1993;19: 171–88
17. Meston CM. Validation of the female sexual function index (FSFI) in women with female orgasmic disorder and in women with hypoactive sexual desire disorder. *J Sex Marital Ther* 2003;29:39–46
18. Trudel G, Ravart M, Matte B. The use of the multi axis diagnostic system for sexual dysfunctions in the assessment of hypoactive sexual desire. *J Sex Marital Ther* 1993;19:123–30
19. Bancroft J, Loftus J, Long JS. Distress about sex: A national survey of women in heterosexual relationships. *Arch Sex Behav* 2003;32:193–204
20. Cawood HH, Bancroft J. Steroid hormones, menopause, sexually and well being of women. *Psychophysiol Med* 1996;26:925–36
21. Garde K, Lunde I. Female sexual behaviour: The study in a random sample of 40-year-old women. *Maturitas* 1980;2:225–40
22. Basson R. The female sexual response: A different Model. *J Sex Marital Ther* 2000;26: 51–65
23. Lunde I, Larson GK, Fog E, *et al.* Sexual desire, orgasm, and sexual fantasies: A study of 625 Danish women born in 1910, 1936 and 1958. *J Sex Educ Ther* 1991;17:111–15
24. Hill CA, Preston LK. Individual differences in the experience of sexual motivation: Theory and measurement of dispositional sexual motives. *J Sex Res* 1996;33:27–45
25. Galyer KT, Conaglen HM, Hare A, *et al.* The effect of gynecological surgery on sexual desire. *J Sex Marital Ther* 1999;25:81–8
26. Weijmar Schultz WCM, van de Wiel HBM, Hahn DEE. Psychosexual functioning after treatment for gynecological cancer and integrated model, review of determinant factors and clinical guidelines. *Int J Gynecol Cancer* 1992;2:281–90
27. Regan P, Berscheid E. Belief about the states, goals and objects of sexual desire. *J Sex Marital Ther* 1996;22:110–20
28. Klusmann D. Sexual motivation and the duration of partnership. *Arch Sex Behav* 2002; 31:275–87
29. Basson R. Female sexual response: the role of drugs in the management of sexual dysfunction. *Obstet Gynecol* 2001;98:350–3
30. Laan E, Everaerd W, van der Velde J, *et al.* Determinants of subjective experience of sexual arousal in women: Feedback from genital arousal and erotic stimulus content. *Psychophysiology* 1995;32:444–51
31. Everaerd W, Laan E, Both S, *et al.* Female sexuality. In Szuchman LT, Muscarella F, eds. *Psychological perspectives of human sexuality*. New York: John Wiley & Sons Inc., 2000
32. Meston CM, Heiman JR. Ephedrine-activated physiological sexual arousal in women. *Arch Gen Psychiatry* 1998;55:652–6
33. Meston CM, Gorzalka BB. The effects of immediate, delayed and residual sympathetic activation on physiological and subjective sexual arousal in women. *Behav Res Ther* 1996;34:143–8
34. Brotto L, Gorzalka B. Genital and subjective sexual arousal in postmenopausal women: Influence of laboratory induced hyperventilation. *J Sex Mar Ther* 2002;28S:39–53
35. Morokoff PJ, Heiman JR. Effects of erotic stimuli on sexually functional and dysfunctional women: Multiple measures before and after sex therapy. *Behav Res Ther* 1980;18:127–37
36. Laan E, van Driel E, van Lunsen RHW. Seksuele reakties van vrouwen met een seksuele opwindingsstoornis op visuele seksuele stimuli [Sexual responses of women with sexual arousal disorder to visual sexual stimuli]. *Tijdschrift voor Seksuologie* 2003;27:1–13
37. Wouda JC, Hartman PH, Bakker R, *et al.* Vaginal plethysmography in women with dyspareunia. *J Sex Res* 1998;35:141–7
38. Karama S, Lecours AR, Leroux JM, *et al.* Areas of brain activation in males and females during viewing of erotic film excerpts. *Hum Brain Mapp* 2002;16:1–13
39. Kinsey A. *Sexual Behavior in the Human Female*. Bloomington: Indiana University Press, 1953
40. Dennerstein L, Lehert P, Burger H, *et al.* Factors affecting sexual functioning of women in the midlife years. *Climacteric* 1999;2:254–62
41. Hill CA. Gender, relationship stage, and sexual behaviour: The importance of partner emotional investment within specific situations. *J Sex Res* 2002;39:228–40
42. Fugl-Meyer AR, Sjögren Fugl-Meyer K. Sexual disabilities, problems and satisfaction in 18 to 74-year-old Swedes. *Scand J Sexology* 1999;2: 79–105
43. Sprecher S. Sexual satisfaction in premarital relationships: Associations with satisfaction, love, commitment, and stability. *J Sex Res* 2002;39:190–6
44. Kontula O, Haavio-Mannila E. *Sexual pleasures. Enhancement of sex life in Finland*. Aldershot, UK: Dartmouth Pub. Co., 1995:1971–92
45. Sipski M, Rosen R, Alexander CJ, *et al.* Sildenafil effects on sexual and cardiovascular responses in women with spinal cord injury. *Urology* 2000;55:812–15
46. Wilbur JE, Miller AM, Montgomery A, *et al.* Sociodemographic characteristics, biological factors and symptom reporting in midlife women. *Menopause* 1998;5:43–51
47. Barentsen R, van de Weijer PH, Schram JH. Continuous low dose estradiol released from a vaginal ring versus estriol vaginal cream for urogenital atrophy. *Eur J Obstet Gynecol* 1997;71: 73–80

48. Basson R, Brotto L. Sexual psychophysiology and effects of sildenafil citrate in estrogenized women with acquired genital arousal disorder and impaired orgasm. *Br J Obstet Gynecol* 2003; 110:1014–24
49. Leiblum S, Nathan S. Persistent sexual arousal syndrome in women: a not uncommon but little recognized complaint. *Sex Relationship Ther* 2002;17:191–8
50. Reissing ED, Binik YM, Khalifé S, *et al.* Vaginal spasm, pain and behaviour: An empirical investigation of the diagnosis of vaginismus. *Arch Sex Behav* (In press)
51. Schover LR, Friedman JM, Weiler SJ, *et al.* Multiaxial problem-oriented system for sexual dysfunctions: an alternative to DSM-lll. *Arch Gen Psychiatry* 1982;39:614–19
52. Katz RC, Gipson M, Turner S. Brief report: Recent findings on the sexual aversion scale. *J Sex Marital Ther* 1992;18:141–6
53. Ernst C, Földényi M, Angst J. The Zurich study: Sexual dysfunctions and disturbances in young adults. *Eur Arch Psychiatry Clin Neurosci* 1993;243:179–88
54. Öberg K, Fugl-Meyer KS, Fugl-Meyer AR. On sexual well being in sexually abused Swedish women: Epidemiological aspects. *Sex Relationship Ther* 2002;17:229–341
55. Mackay J. Global sex: Sexuality and sexual practices around the world. *Sex and Relationship Ther* 2001;16:71–82
56. Barber MD, Visco AG, Wyman JF, *et al.* Sexual function in women with urinary incontinence and pelvic organ prolapse. *Obstet Gynecol* 2002;99:281–9
57. van Lankveld JJDM, Grotjohann Y. Psychiatric comorbidity in heterosexual couples with sexual dysfunction assessed with the composite international diagnostic interview. *Arch Sex Behav* 2000;29:479–98
58. Kristensen E. Sexual side effects induced by psychotropic drugs. *Dan Med Bull* 2002;49: 349–52
59. Kennedy SH, Dickens SE, Eisfeld BS, *et al.* Sexual dysfunction before antidepressant therapy in major depression. *J Affect Disord* 1999;56:201–8
60. Derogatis LR, Rosen R, Leiblum S, *et al.* The female sexual distress scale: Initial validation of the standardized scale for assessment of sexually related personal distress. *J Sex Marital Ther* 2002;28:317–30

Current knowledge on this subject

- Women's sexuality is highly contextual
- Sexual desire is an uncommon reason/incentive for women's initiation of, or agreement to sexual activity
- Sexual desire is often experienced after subjective sexual arousal, the two then combining and each reinforcing the other
- Women's sense of subjective sexual arousal is often poorly correlated with the degree of genital vasocongestion
- Lack of subjective arousal despite apparently normal genital vasocongestion is common

What this study adds

- Revised and expanded definitions of women's sexual dysfunction are proposed which reflect the evidence-base research on the nature of women's sexual function and dysfunction
- The inclusion of descriptors re-context and re-degree of distress is strongly recommended