Comprehensive Textbook of

SEXUAL MEDICINE

Second Edition

Editors

Nilamadhab Kar MD DPM DNB MRCPsych
Consultant Psychiatrist
Black Country Partnership NHS Foundation Trust
Wolverhampton, United Kingdom

Gopal Chandra Kar MD LLB
Professor and Head of Psychiarty
Institute of Medical Sciences and Sum Hospital
Bhubaneswar, Odisha, India

JAYPEE BROTHERS MEDICAL PUBLISHERS (P) LTD

New Delhi • London • Philadelphia • Panama

Contents

Section 1 Basics of Sexuality

Section 6 Evaluation and Management

Section 7 Related Medical Topics

Section 8 Sexual Abuse

Section 9 Social and Cultural Issues Relevant to Sexuality

Section 10 Legal Aspects

CHAPTER 23

Sexual Dysfunctions in Psychiatric Disorders

Jisu Nath, Somnath Sengupta

INTRODUCTION

People who suffer from psychiatric disorders can have a range of difficulties with their relationship and sexual function. Presence of sexual dysfunctions impairs the quality of life of such persons. In clinical practice patients may not voluntarily disclose these problems and, yet such problems can seriously influence their compliance with medications. The 2001 Oscar winning American film, 'A beautiful mind', based on the life of John Nash, a Nobel Laureate in Economics portrays this delicate subject brilliantly.[1]

Human sexuality in itself is a broad subject and has many aspects. For the purpose of simplicity we have considered four aspects or domains, namely—identity, relationship, behavior and physiological functions. Problem may occur in one or more of these domains (**Fig. 23.1**). For example, patients with borderline personality disorder can have intense problem with their sexual identity. Similarly, ability to form relationship and the degree of satisfaction with it is a huge area that can be compromised in people with psychiatric disorders. Then, there are some sexual behaviors which are clearly inappropriate or risky, such as masturbation in public in patients with challenging behavior. Finally, there are specific deficits in physiological function (i.e. sexual disorders) that can affect people with common and severe mental illness, e.g. erectile dysfunction. However, this distinction may not be clear cut and there is often considerable overlap in these areas, which reflects the complexity of sexual difficulties.

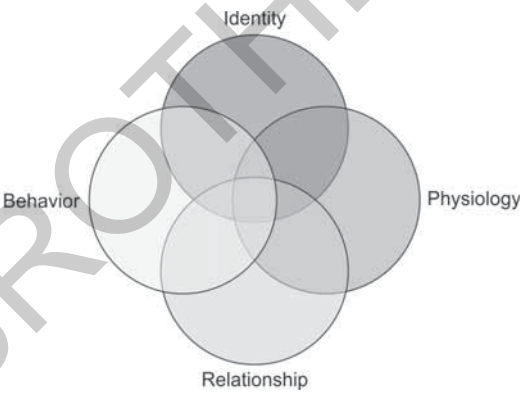

Figure 23.1 Domains of sexual dysfunctions

The fundamental point in understanding the various dysfunctions is that sexuality is a highly complex area of human behavior in which biological, psychological and sociological factors all play a role simultaneously. The focus in this chapter is on clearly identifiable specific sexual 'disorders'.

NEUROANATOMY OF SEXUAL BEHAVIOR

Biologically, the nervous system and various endocrine hormones play a crucial role in mediating sexual behavior. Limbic system is the most important part of the brain implicated in this function (**Fig. 23.2**). Neuroanatomically, the

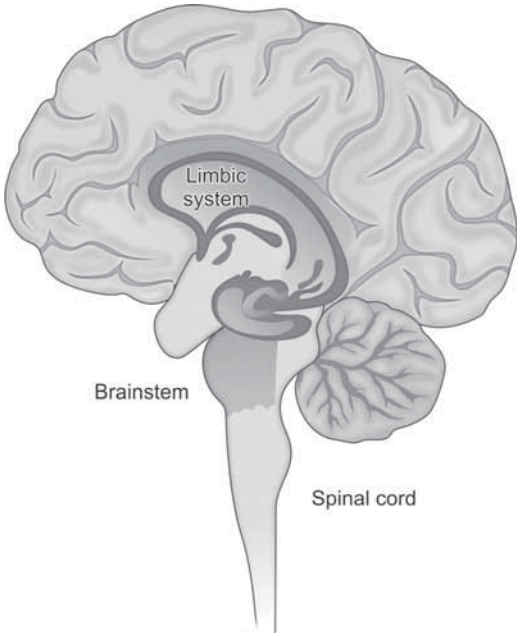

Figure 23.2 The limbic system

BOX 23.1 ICD-10 Categories of sexual dysfunction

N48.4 Impotence of organic origin

F52 Sexual dysfunction, not caused by organic disorder or disease

- F52.0 Lack or loss of sexual desire
- F52.1 Sexual aversion and lack of sexual enjoyment
- F52.2 Failure of genital response
- F52.3 Orgasmic dysfunction
- F52.4 Premature ejaculation
- F52.5 Nonorganic vaginismus
- F52.6 Nonorganic dyspareunia
- F52.7 Excessive sexual drive
- F52.8 Other sexual dysfunction, not caused by organic disorder or disease
- F52.9 Unspecified sexual dysfunction, not caused by organic disorder or disease

limbic system, consisting of the hippocampus, amygdala, hypothalamus and the related parts control the basic drives, such as aggression, emotion and sexuality. It has been found that electrical stimulation of hypothalamus and septum provokes aggression, flight or sexuality. Input (electric signals) to these structures comes directly from the hippocampus and amygdala. They in turn receive information from another part of the brain called the sensory association cortex.[2]

Damage to limbic system can lead to a behavioural condition called the Kluver-Bucy syndrome. This condition is characterized by hypersexuality, hyperphagia and other difficulties. Amygdala, which functions as a site for emotional memory, has important role in generating painful memories through hippocampus in individuals who has history of sexual abuse during early developmental phase.[2] This has implications for disorders related to trauma such as post-traumatic stress disorder (PTSD).

Prevalence and frequency of such sexual dysfunctions in psychiatric population can very from study to study. In a recent European multicentre study in patients with psychotic illness half of the males and over one third of the females have been found to have sexual dysfunctions.[3]

It is also worth remembering that definitions and classifications of sexual dysfunctions may change over time as new consensus emerges. From a mental health or psychiatric point of view classifications, such as the International Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) may be more relevant. The four major categories of sexual dysfunctions include disorders of sexual desire or interest, arousal, orgasm, and sexual pain **(Box 23.1)**.[4]

MECHANISM OF SEXUAL DYSFUNCTION

Impairment in sexual function has been noted in various psychiatric disorders. Both qualitative and quantitative changes can occur in any phase of the sexual response cycle. At times, more then one sexual dysfunction may be associated with a particular psychiatric condition. On the

other hand, a sexual dysfunction can lead to a secondary psychiatric disorder. An example is depression developing following erectile dysfunction and feeling of inadequacy. Many sexual disorders have psychiatric etiology or they themselves constitute specific behavioral disorder, such as the paraphilias.

The exact origin of sexual dysfunction in various psychiatric disorders may be difficult to trace. The association can be complex; be it causative, consequential or coexisting. Three main factors can be mentioned to postulate the association (**Box 23.2**).

Reduced libido in depression is a common symptom and an example of sexual dysfunction resulting from a direct link with the psychiatric disorder. Temporal lobe epilepsy can be a common causative factor for psychiatric disturbance as well as sexual dysfunction. Finally, pharmacological agents used for treatment of psychiatric disorders can cause a variety of dysfunctions, such as trazodone induced priapism and selective serotonin reuptake inhibitor (SSRI) induced delayed ejaculation.

BOX 23.2 Types of associations between sexual dysfunctions and psychiatric disorders

- Direct link—the dysfunction is a direct result of a condition
- Common cause—dysfunction due to a common causative factor
- Medications—drugs to treat psychiatric condition resulting in a dysfunction

Dopamine antagonists such as antipsychotic drugs used for treating psychotic conditions can cause prolactin level to rise. This is because dopamine normally has an inhibitory effect on release of prolactin in pituitary gland. Consequent hyperprolactinemia can cause a range of sexual and reproductive problems in both women and men (**Fig. 23.3**).[5]

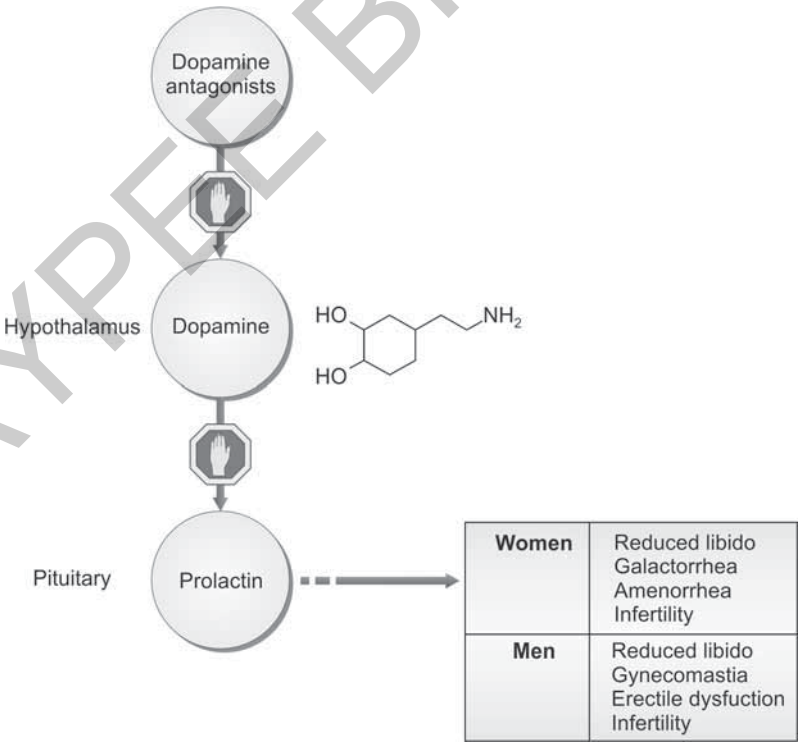

Figure 23.3 Consequences of dopamine blockade and hyperprolactinemia

Tumors in pituitary region can also cause sexual dysfunctions by the same mechanism. There may be additional symptoms, such as headache and visual disturbance due to pressure on the adjacent area. A brain scan can usually detect such a lesion and differentiate them from benign rise in prolactin due to antipsychotics.

Finally, the autonomic nervous system plays an important role in sexual functioning by its role in areas such as excitation of genital nerves and lubrication through parasympathetic activity. Damage to these nerves and associated blood vessels can cause sexual dysfunction as in pelvic injury.

Psychological and interpersonal factors also operate in origin of many sexual dysfunctions. Even in otherwise pure 'organic' sexual disorders, secondary psychological disturbances may set in, compounding the clinical presentation and necessitating psychological and behavioral therapy. According to Arentewicz and Schmidt, four partner dynamic processes can be recognized during psychotherapeutic intervention in such patients (**Box 23.3**).[6]

In **delegation** the 'normal' partner has some unconscious personal interest in the sexual disorder of the affected partner. The unaffected partner may use or need the disorder to neutralize his or her own problem or to feel superior. **Arrangement** takes place when the sexual disorder is used between the partners to satisfy mutual needs, e.g. a man having erectile dysfunction and his wife having vaginismus. In **turning against the partner** the disorder is used as a weapon against the partner to dominate in a conflicting situation. This may be seen as a passive-aggressive behavior in the context of physical relationship. Similarly a sexual disorder may be misused to cover conflict in intimacy and distance between the partners in **ambivalence management,** e.g. hypersexuality in excessive distance from a partner and erectile dysfunction to create distance in cases of over intimacy.

BOX 23.3 Psychodynamic factors in sexual dysfunctions

- Delegation—for unconscious personal interest
- Arrangement—to satisfy mutual needs
- Turning against the partner—to dominate in a conflicting situation
- Ambivalence management—to avoid intimacy and create distance

PSYCHIATRIC DISORDERS

Most psychiatric disorders can be associated with various sexual dysfunctions (**Table 23.1**). Sometime the issue is a socially inappropriate or risky sexual behavior that needs clinical attention and care. Depression and schizophrenia are the main disorders where research has been conducted most to understand sexual dysfunctions and their impact.

TABLE 23.1 Psychiatric conditions that can be associated with sexual dysfunctions

Common	• Anxiety disorders • Mood disorders — *Depression* — *Bipolar disorder* • Schizophrenia • Eating disorders • Personality disorders • Somatoform disorders
Developmental	• Intellectual disability • Autistic spectrum conditions
Substances	• Alcohol • Opioids • Cocaine • Cannabis • Stimulants
Neuropsychiatric	• Acquired brain injury — *Head injury* — *Stroke* • Neurodegenerative disorders — *Dementia* • Epilepsy • Klein-Levin syndrome • Kluver-Bucy syndrome

Anxiety Disorders

Anxiety is a key factor in origin and maintenance of many sexual dysfunctions in psychiatric disorders. Performance anxiety in the context of male erectile dysfunction is well known. Performance anxiety is to be understood in the context of interpersonal conflicts and not as an anxiety disorder *per se*. Also research data are scanty in this group of disorders and generalization is difficult. In Zurich Cohort Study, in men and women between age 20 and 35, loss of sexual interest was more prevalent in patients with generalized anxiety disorder, but not in panic disorder, agoraphobia, or social phobia.[7] However, a study in 2001 found that patients with panic disorder had comparatively higher rate of sexual dysfunctions than patients with social phobia. Sexual aversion was more common in panic disorder, whereas premature ejaculation was common in social phobia.[8] On the other hand, in a recent study, social phobic individuals were not more prone to report sexual problems than normal individuals despite reporting the severest levels of social anxiety.[9] Patients with PTSD can have a range of impaired sexual functioning and treatment with SSRI antidepressants has been associated with them.[10,11] In some men with PTSD, a comorbid erectile dysfunction can arise from the index major trauma damaging the pelvic nerves and vessels of urethra.

Mood Disorders

Reduced libido is a well known symptom that may arise in the context of gloomy mood in depression. In patients with severe depression this may be well pronounced. On the other, hand erectile dysfunction can be caused by antidepressants (particularly SSRI) used for the treatment of such disorders. It is important to take detailed history to find out the exact nature and origin of sexual dysfunction in depressed patients. The relation between sexual desire and depression is influenced by many factors. Besides the most obvious factor of severity of depressive episode, factors such as gender, age and sociocultural factors are found to be important in a recent study.[12] Low desire or reduced libido is the most prevalent dysfunction reported in patients with depression. The fact that patients with mood disorders have understandably increased chance of having sexual dysfunctions when compared to normal population is demonstrated in a recent multicentre study.[13] In this study, lifetime prevalence of sexual dysfunctions has been found to be increased in the desire, excitement and orgasm phases of depressed patients when compared to control subjects. Almost half of unipolar and bipolar patients (ranged 40% to 48.8%) endorsed the dysfunctions in 3 items of the questionnaire the authors used in the study.

It is to be noted that depressed patients can also report increased sexual desire sometime. This is particularly seen in patients with atypical features or reverse neurovegetative signs, such as hypersomnia and hyperphagia.

There is plenty of literature available on sexual dysfunction and antidepressants used for treatment of depression. Some studies focus on the specific role of the drugs whereas others focus on all the factors that may have an affect on sexual function. Among the antidepressants, SSRI group of antidepressants such as fluoxetine can cause a variety of sexual dysfunctions through diverse mechanisms when compared with non-SSRI.[14] Increasingly sexual dysfunctions due to antidepressants are being reported in female patients. Presence of sexual dysfunction can contribute to treatment non-adherence and improvement in sexual functioning should be considered as an important outcome in treatment of such patients.

Patients with bipolar disorder during their hypomanic or manic episodes can have increase in sexual activity and promiscuity. Increased confidence, disinhibition, euphoria and increased desire are all that can contribute to increased sexual activity in the hypomanic or manic episode.

Psychosis

Poor quality of life for patients who suffer from a psychotic illness, such as schizophrenia has been known from the time of mental asylums.

In growing recognition of this, mental health and social sciences literature have devoted topics on sexuality in patients with psychotic illness.

A variety of factors including medications have traditionally contributed to impairment in sexual function in patients with chronic psychotic illnesses. It is important here to consider two groups of patients, those who have an acute and short duration of a psychotic illness, which may be episodic with good interepisodic recovery, compared to those who have a chronic and often intractable course. Sexual dysfunctions in the acute group are usually reversible with clinical improvement in the psychotic symptoms. Patients with chronic schizophrenia, on the other hand have diminished sexual desire and poor interpersonal relation due to anhedonia and asociality, which are likely to be persistent and refractory to treatment. In addition, there are patients who have inappropriate and challenging sexual behaviour in care settings that requires careful multiprofessional approach.

In a recent study most areas of sexual function have been found to be impaired among patients with schizophrenia, especially among institutionalized patients. In comparison to just one tenth of the males and half of the females in non- institutionalised patients, over two-third of the males and over half of the females in institutions had sexual dysfunctions.[15]

Patients with schizophrenia and other psychotic disorders can have sexual themes in their delusions and hallucinations. Sexual delusions may present as delusional jealousy or forced sexual behavior by others. Erotomania is a type of delusion in which the affected person believes that another person, usually a stranger or famous person, is in love with him or her. Erotomanic delusion can be seen in patients suffering from schizophrenia or mania. Sexual hallucinations involve various unpleasant or erotic sensations in the genitalia variously described by patients as touch, burn, and hot, cold or shock-like pain. Excessive sexual fantasy and related behaviour in patients with psychosis can be a risk factor for sexual offending for those who have a prior forensic history.

Personality Disorders

The personality disorders begin in early adulthood and are manifested by long-standing significant and extreme character deviation across multiple situations. Patients with antisocial personality disorder often show sexual promiscuity. They often use sexual activity to dominate and overpower their partners and victims of rape and molestation. These persons frequently show poor marital adjustment and high divorce rates. Passive-aggressive personality disorder patients frequently show lack of willingness to initiate sexual activity and paradoxically may attribute their feelings to the partners.[16] Similarly people with borderline personality disorders (also known as emotionally unstable) can have issues with their sexual identity and relationship difficulties. They may also have specific sexual dysfunctions in the context of comorbid depression and use of SSRI antidepressants. History of sexual abuse is an important contributory factor in development of sexual dysfunction through sexual traumatization in some patients.[17]

Eating Disorders

Growing evidence suggests that Binge eating disorder (BED) is probably the most common eating disorder. In a recent study, patients with BED have been found to have significant impairments in several areas of sexual functioning, as evident by low score on female sexual function index (FSFI), compared to those who do not have BED. The impairment has been associated with high levels of emotional eating, impulsivity, and shape concerns in this patients.[18]

The underlying distorted body image in anorexia nervosa may result in a negative attitude towards sex and masturbation. Comorbid depressive symptoms can contribute to diminished libido and orgasm. In chronic anorexia nervosa a reduction in sex steroids can lead to regression of secondary sexual characteristics accompanied by decreased libido, decreased sexual fantasies and in men, impotence.

Somatoform Disorders

In somatoform disorders, patients present with physical symptoms that are medically unexplained despite thorough examination and tests. The symptoms may be just one as in conversion disorder, multiple as in somatisation disorder or include pain, i.e. pain disorder. Stress and psychological factors may be implicated in their origin. These disorders demonstrate the interface between body and mind and include common clinical conditions such as irritable bowel syndrome and may include more controversial fibromyalgia and chronic fatigue syndrome.

Patients with somatisation disorder may have a range of sexual dysfunctions, such as low desire and dyspareunia (pain during intercourse).

Developmental Disorders

In patients with learning disability a range of sexual issues may come to attention. They may include simple relational issues or more specific sexual behavior in severely impaired individuals. It is also known that many people with learning disability have autistic spectrum conditions and comorbid physical conditions such as epilepsy. Individuals who have specific genetic conditions can have reproductive and fertility problems as a result of hypogonadism. Few examples of such conditions are Turner's syndrome, Noonan's syndrome, Klinfelter's syndrome, Prader-Willi syndrome, and Laurence-Moon syndrome. Literature is scanty about specific sexual dysfunctions in this group of population. However, it is worth remembering that people with learning disability can have comorbid anxiety, depression or psychosis that may be treated with medications, such as antidepressants and antipsychotics.

Psychoactive Substances

Alcohol and various illicit compounds are known to affect sexual function. Whereas commonly alcohol is disinhibiting and may increase confidence, facilitating physical contact and sex among people in certain environments; in large amount it can impair performance. In those people who have more serious and chronic conditions such as alcohol dependence, it can cause sexual dysfunctions in different ways (**Box 23.4**).

Descriptive studies focusing on sexual dysfunction in alcohol dependent have shown high prevalence of sexual dysfunctions in male patients with alcohol dependence. In a study in one hundred consecutively admitted male patients with alcohol dependence in special unit for addiction treatment in India, seventy two patients were found to have one or more sexual dysfunction.[19] The most common were premature ejaculation, low sexual desire and erectile dysfunction. The sexual dysfunctions in alcohol dependence are likely to be reversible.

Opioid drugs, such as heroine have physiological effects on sexual functions. Acute opioid use may cause disinhibition facilitating sexual behavior and in opioid withdrawal spontaneous ejaculation may occur. These effects are well known to individuals who use them regularly. High prevalence of sexual complaints has been noted in male patients who receive buprenorphine and naltrexone treatment in clinic settings for opioid dependence.[20] Premature ejaculation again is the most common of all dysfunctions reported.

The reason why some cocaine addicts believe that it causes high sexual desire can be as a result of stimulating the mesolimbic dopaminergic system in the brain, which can also result in spontaneous orgasm. Chronic cocaine use causes

BOX 23.4 Possible mechanism of sexual dysfunctions in alcohol dependence

- Direct stimulation or depression of the central nervous system
- Altered hormonal changes due to impaired metabolism by the liver
- Peripheral neuropathy affecting the nerves associated with sexual acts and
- Secondary to alcohol induced psychosis and cognitive disorders

erectile and ejaculatory dysfunction resulting in impotence and infertility. In women it may cause menstrual problems, galactorrhea, infertility and low orgasm. This may be due to interference with dopamine, which inhibits prolactin secretion and thus leads to hyperprolactinemia. However, as with any drug environmental factors may be important that determine changes in sexual behavior in people who consume cocaine.[21]

Many cannabis users report improvement in sexual act after cannabis use, probably because of its disinhibitory action, time distortion and heightening of sensory awareness.

Neuropsychiatric Conditions

Patients who damage their brain following stroke can have a variety of neurological signs and functional impairments. Some of them may also have psychiatric manifestations depending upon location of the stroke and its nature. Sexual disorders after stroke are thought to be due to both organic (i.e. lesion localization, premorbid medical conditions, and medications) and psychosocial factors (i.e. fear of recurrences, loss of self-esteem, role changes, anxiety, and depression),[22] however, for some unexplained reason left hemispheric lesions seemed to play an important role in post-stroke sexual dysfunctions in a group of patients.[23] A recent survey in Korea found that sexual desire, erectile function, and ejaculatory function were all impaired after stroke in males.[24] A lack of sexual desire was the major cause of an absence of sexual intercourse in the patients. The specific locations of the lesions, such as the left basal ganglia and right cerebellum, were thought to be associated with sexual desire and ejaculation disorder, respectively. Overall, it appears that there is no particular brain structure or location specific for the sexual dysfunctions. Female patients with stroke can have sexual dysfunctions through mechanisms, such as low desire and poor lubrication.

Among neurodegenerative disorders dementia is the most common affecting mostly elderly population. Behavioral disturbances in addition to memory problems are common in dementia. Specific sexual dysfunctions have not been researched extensively in such population but sexual functioning has been to some extent. Review of literature suggests that 7–25% of demented patients exhibit inappropriate sexual behavior. They mainly comprise of sexual talk and inappropriate sexual acts, such as touching or masturbation.[25] Frontotemporal dementia (FTD) is known to manifest sexual disinhibition more commonly than any other type of dementia. In patients with FTD, atrophy in temporal lobe structures comprising of limbic system and nucleus accumbens have been associated with sexual disinhibition.[26]

Comorbid depression, which may be common in dementia can result in sexual dysfunctions such reduced libido. Similarly drugs used to treat psychiatric and behavioral disturbances in dementia can also cause sexual dysfunctions.

In persons with epilepsy, psychiatric symptoms and sexual dysfunction can coexist. Such dysfunctions could be related to various factors such as the epilepsy itself, side effects from antiepileptic medications and comorbid mental disorder such as depression.[27] Rarely, genital sensations and sexual actions may accompany or follow seizure activity. They were probably believed to be more common than actual. Recent literature shows that ictal genital automatisms are possible in seizures originating from temporal lobe and they cannot be attributed exclusively to frontal lobe seizures as thought earlier.[28] During automatism, undressing may occur which may be confused with exhibitionism.

Klein-Levin syndrome (KLS) is a hypothalamic disorder characterized by hyperphagia, hypersomnia and hypersexuality. Other behavioral features, such as mood changes and psychotic features may also be present in certain cases.

Assessment and Management

Adequate evaluation of sexual problem by detailed history taking and performing relevant tests (such as measurement of a hormone level)

is the first step in proper management of a sexual dysfunction. It is worthwhile to distinguish if possible, a primary sexual dysfunction, which is independent of a comorbid psychiatric illness from a secondary sexual dysfunction that has directly resulted due to a known psychiatric disorder or organic cause. Following the chronology of symptom historically is important in achieving this.

In early part of management, assessment is also required to determine the various psychosocial factors that can influence existence of an ongoing sexual dysfunction **(Box 23.5)**. Secondary psychological factors, mainly decreased self-esteem and performance anxiety need to be targeted to break the vicious cycle of 'sexual dysfunction → decreased self-esteem/ performance anxiety → sexual dysfunction.' On many occasions, simple education and explanation may improve the clinical situation. This is important where lack of knowledge and fear are the main reason of a sexual complaint.

BOX 23.5 Evaluation of sexual dysfunction

- Careful, gentle and sensitive approach
- Exploring relationship
- Medication and drugs history
- Mental and physical health
- Appropriate physical examination
- Relevant laboratory tests

Secondary sexual dysfunctions often ameliorate with resolution of the primary psychiatric illness, although it may take time, e.g. gradual improvement of libido in depression. Medications often need to be reviewed when they are responsible for a sexual dysfunction. Some of the pharmacological approaches useful in psychiatric practice are described in **Table 23.2**. If reduction or change of the medication is not possible or helpful then adjunctive treatment with a 5-phosphodiesterase inhibitor group of medications can be useful for erectile dysfunction. A range of treatment options are available and published in literature.[29,30]

Involvement of the partner is very important particularly in chronic irreversible sexual dysfunctions. Psychotherapy involving both the partners is helpful in such situation.

Patients with chronic and treatment resistant mental illness in institutional settings

TABLE 23.2 Pharmacological interventions in sexual dysfunctions associated with psychiatric conditions

General	• Review nonpsychiatric medications • Reduction of dose – of the offending medication • Drug holiday – stopping the offending medication a day or two prior to sexual act • 5-phosphodiesterase inhibitors – treatment with sildenafil, tadalafil or vardenafil • Addition of dopaminergic drugs – such as amantadine
Anxiety and depression	• Changing SSRI to non-SSRI antidepressant – such as bupropion, mirtazapine or reboxetine • Adjunctive treatment – such as bupropion or sildenafil
Psychosis	• Switching to prolactin sparing antipsychotic – e.g. switching risperidone to aripiprazole • Adjunctive treatment – such as sildenafil

can sometime present with difficult sexual behavior that needs clinical management within a broad care plan. Often these patients have associated learning difficulty, autistic behavior or personality disorder. Few examples of such behavior are inappropriate undressing, public masturbation and sexual touching. A range of steps may help tackling such issues and improve health and safety. They include psychoeducation to patients and setting limit and boundaries, staff training including awareness of relevant legislations and having clear policies in care home and hospitals.

Conclusion

Sexual functions are complex in nature involving biological, psychological and social factors. The anatomical and physiological basis of the most important mental functions also subserves the sexual functions in human beings. Occurrence of sexual dysfunctions in psychiatric patients is thus somewhat understandable. This relationship is usually causative or consequential and rarely coincidental. To determine the primacy of sexual disorders in psychiatric patients is a challenge to the clinicians.

There is still paucity of research on sexual problems in various mental disorders, especially in the areas of learning disability and dementia.

Professionals need to look into the sexual disorders in psychiatric patients with care and concern. It is an important area that affects quality of life and impedes recovery of patients. There is a great scope of clinical and biological research in this area to enhance our understanding of the prevalence and mechanisms underlying these disorders as well as to ensure more effective management of these problems occurring together.

References

1. A Beautiful Mind. [http://en.wikipedia.org/wiki/A_Beautiful_Mind_%28film%29]. Accessed on 10 July 2011.
2. Clark DL, Boutros NN. The brain and behaviour-an introduction to behavioral neuroanatomy, Blackwell Science; 1999.
3. Montejo AL, Majadas S, Rico-Villademoros F, Llorca G, De La Gándara J, Franco M, et al. Spanish Working Group for the Study of Psychotropic-Related Sexual Dysfunction. Frequency of sexual dysfunction in patients with a psychotic disorder receiving antipsychotics. J Sex Med. 2010;7: 3404-13.
4. Hatzimouratidis K, Hatzichristou D. Sexual dysfunctions: Classifications and definitions. J Sex Med. 2007;4:241-50.
5. Haddad PM, Wieck A. Antipsychotic-induced hyperprolactinaemia: mechanisms, clinical features and management. Drugs. 2004; 64:2291-314.
6. Kochott G. Sexual disorder. In: Contemporary Psychiatry, Specific Psychiatric Disorders. Volume 3. Henn F, Sartorius N, Helmchen H (Eds), et al. Springer; 2001:208-27.
7. Angst J. Sexual problems in healthy and depressed persons. Int Clin Psychopharmacol. 1998; 13(Suppl 6):1-4.
8. Figueira I, Possidente E, Marques C, Hayes K. Sexual Dysfunction: A Neglected Complication of Panic Disorder and Social Phobia. Archives of Sexual Behavior. 2001;30:369-77.
9. Munoz V, Stravynski A. Social phobia and sexual problems: A comparison of social phobic, sexually dysfunctional and normal individuals. British Journal of Clinical Psychology. 2010; 49:53-66.
10. Antičević V, Britvić D. Sexual Functioning in War Veterans with Posttraumatic Stress Disorder. CMJ. 2008;49:499-505.
11. Kotler M, Cohen H, Aizenberg D, Matar M, Loewenthal U, Kaplan Z, et al. Sexual Dysfunction in Male Posttraumatic Stress Disorder Patients. Psychother Psychosom. 2000;69:309-15.
12. Lourenço M, Azevedo LP, Gouveia JL. Depression and sexual desire: an exploratory study in psychiatric patients. J Sex Marital Ther. 2011; 37:32-44.
13. Dell'Osso L, Carmassi C, Carlini M, Rucci P, Torri P, Cesari D, et al. Sexual Dysfunctions and Suicidality in Patients with Bipolar Disorder and Unipolar Depression. J Sex Med. 2009;6:3063–70.
14. Corona G, Ricca V, Bandini E, Mannucci E, Lotti F, Boddi V, et al. Selective serotonin reuptake inhibitor-induced sexual dysfunction. J Sex Med. 2009;6:1259-69.

15. Acuña MJ, Martín JC, Graciani M, Cruces A, Gotor F. A comparative study of the sexual function of institutionalised patients with schizophrenia. J Sex Med. 2010;7:3414-23.
16. Kolodny RC, Masters WH, Johnson VE. Textbook of sexual medicine. Brown and Company 1979:299-319.
17. Schulte-Herbrüggen O, Ahlers CJ, Kronsbein JM, Rüter A, Bahri S, Vater A, et al. Impaired sexual function in patients with borderline personality disorder is determined by history of sexual abuse. J Sex Med. 2009;6:3356-63.
18. Castellini G, Mannucci E, Mazzei C, Lo Sauro C, Faravelli C, Rotella CM, et al. V. Sexual function in obese women with and without binge eating disorder. J Sex Med. 2010;7:3969-78.
19. Arackal BS, Benegal V. Prevalence of sexual dysfunction in male subjects with alcohol dependence. Indian J Psychiatry. 2007;49:109-12.
20. Ramdurg S, Ambekar A, Lal R. Sexual dysfunction among male patients receiving buprenorphine and naltrexone maintenance therapy for opioid dependence. J Sex Med. doi: 10.1111/j.1743-6109.2011.02219.x
21. Kopetz CE, Reynolds EK, Hart CL, Kruglanski AW, Lejuez CW. Social context and perceived effects of drugs on sexual behavior among individuals who use both heroin and cocaine. Exp Clin Psychopharmacol. 2010;18:214-20.
22. Calabrò RS, Gervasi G, Bramanti P. Male Sexual Disorders Following Stroke: An Overview. Int J Neurosci. 2011 Jul 27. [Epub ahead of print].
23. Kimura M, Murata Y, Shimoda K, Robinson RG. Sexual dysfunction following stroke. Comprehensive Psychiatry. 2001;42:217-22.
24. Jung JH, Kam SC, Choi SM, Jae SU, Lee SH, Hyun JS. Sexual dysfunction in male stroke patients: correlation between brain lesions and sexual function. Urology. 2008;71:99-103.
25. Black B, Muralee S, Tampi RR. Inappropriate sexual behaviors in dementia. J Geriatr Psychiatry Neurol. 2005;18:155-62.
26. Zamboni G, Huey ED, Krueger F, Nichelli PF, Grafman J. Apathy and disinhibition in frontotemporal dementia. Insights into their neural correlates. Neurology. 2008;71: 736-42.
27. Bóné B, Janszky J. Epilepsy and male sexual dysfunction: etiology, diagnosis and therapy. Ideggyogy Sz. 2006;59:148-52.
28. Mascia A, Di Gennaro G, Esposito V, Grammaldo LG, Meldolesi GN, Giampà T, et al. Genital and sexual manifestations in drug-resistant partial epilepsy. Seizure. 2005; 14:133-8.
29. Higgins A, Nash M, Lynch AM. Antidepressant-associated sexual dysfunction: impact, effects, and treatment. Drug Healthc Patient Saf. 2010; 2:141-50.
30. Zemishlany Z, Weizman A. The Impact of Mental Illness on Sexual Dysfunction. Balon R (Ed): Sexual Dysfunction. Adv Psychosom Med. Basel, Karger, 2008;29:89-106.