Errors in the recognition and diagnosis of sleep disorders

The lecture ‘Sleep Disorders – an Update for Psychiatrists’ was given by Professor Gregory Stores at the eighth Latest Advances in Psychiatry Symposium in London in March. Professor Stores discussed the fact that sleep disorders can often be misinterpreted as psychiatric disorders, and in this article, he provides more information on this often-neglected topic.

There are many important connections between sleep disorders and psychiatry, as follows:

- Sleep disturbance commonly causes psychological problems resulting from effects on emotional state and behaviour, cognitive function and performance at work or at school, family and social life, and quality of life in general. Severe, sustained sleep loss can even induce psychotic phenomena.
- Disturbed sleep (often to a severe extent) is a common feature of psychiatric disorders in all ages.
- Sleep disturbance, including circadian sleep-wake rhythm disturbance, can have a profound effect on the pattern and course of psychiatric disorders, and insomnia or hypersomnia can be the harbinger of the onset or recurrence of psychiatric disorders.
- Unwanted effects of certain psychiatric medications include sleep disturbance, which can be severe. Examples include insomnia caused by some SSRIs, and excessive sleepiness produced by sedating tricyclic drugs. Withdrawal from sedative-hypnotic substances can cause ‘rebound insomnia’. Detailed reviews of psychotropic drugs (and other medications) that induce insomnia or sleepiness have been published recently.

Some psychotropic drugs may also precipitate parasomnias. Certain antidepressants, lithium and zolpidem, as well as other CNS-depressant medication, have been reported to precipitate sleep-walking episodes or nightmares, and antidepressants may also increase periodic limb movements in sleep, decreasing its restorative value.

An acute form of rapid eye movement (REM) sleep behaviour disorder (RBD; see later) has been associated with intoxication with antidepressants and withdrawal from sedative-hypnotic abuse as well as alcohol.

- Sleep disorders can be misinterpreted as psychiatric conditions.

This last connection is the main subject of this article. It is chosen because it is not often considered in the literature despite its basic importance both in clinical practice and in psychiatric research.

Sleep disorders in neurology and general medicine

First, however, it is also appropriate to mention connections with clinical practice in neurology and other medical specialties in order to demonstrate the widespread relevance of sleep disorders and the importance of this for liaison psychiatric services.

- Most medical disorders in adults and children are complicated by sleep disturbance.
- Some sleep disorders are essentially medical in type, e.g. obstructive sleep apnoea (OSA), nocturnal epilepsy, and some cases of RBD, which can foretell the emergence of neurodegenerative disorders.
- Certain sleep disorders predispose to medical conditions. Night shift work disorder is linked with peptic ulcer, ischaemic heart disease and pregnancy problems. OSA can lead to hypertension and stroke and can exacerbate epilepsy.
- Some general medical drugs (for example those used in respiratory disease, cardiac disease, hypertension or Parkinson’s disease) are reported to cause sleep loss or disruption. Parasomnias may be triggered by beta-blockers and antiparkinsonian agents (nightmares) or by treatments for neurodegenerative disease (RBD).

Causes and consequences of misinterpretation

The subject of sleep and its disorders is seriously neglected. As long ago as the 16th century, Thomas Phaire, in the first English textbook of paediatrics, emphasised the basic biological importance of sleep by equating it to the need for food: ‘Slepe is the nourishment and food of a sucking child, and as much requisite as ye very teate, wherefore wha it is deprived of the naturall rest, all the hole body falleth in disteper...’

Despite this early assertion, it is only in comparatively recent times that sleep and its disorders has become the subject of any systematic, scientific enquiry. In fact, much is now established but little of this knowledge has found its way into public health education.
Misinterpretation of sleep disorders and the teaching and training of health professionals and others professionals to whose work such knowledge is relevant.

The consequences of this continuing widespread educational shortcoming, now increasingly recognised as a public health problem but at a slow pace, include the following:

• The general public often fail to see sleep disturbance as requiring professional advice. For example, only a minority of those with such a serious sleep disorders as OSA seek medical attention. Commonly, parents (especially those with children with neurodevelopmental disorders) think that sleep problems are inevitable and cannot be prevented or treated, which is not the case. As discussed later, parents may well interpret the consequences of partly biologically-based sleep disturbance in teenagers as ‘typical adolescent waywardness’.

• Teachers and educational psychologists encounter the school problems of some children and adolescents without necessarily realising that they are caused by the common problem (especially in adolescence) of inadequate sleep.

• Both GPs and specialist physicians, including psychiatrists, also might be unaware of the extent to which symptoms of sleep disorders can overlap with those of other conditions with the inevitable risk of, at least, diagnostic uncertainty.

Examples of misinterpretation

There are just three basic sleep problems or complaints. These are insomnia, excessive daytime sleepiness and parasomnias, ie unusual behaviours or experiences occurring on going to sleep, during sleep or when waking up.

However, there are nearly 100 officially recognised sleep disorders that are the possible underlying cause of an individual’s sleep problem. Collectively, such disorders are very common in all sections of the population. As appropriate advice and treatment depends on the cause of a sleep problem, it is essential to identify the sleep disorder in each case.

In the following sections, following some points about misinterpretation of sleep disorders in general, specific examples are given concerning the possible causes of the three sleep problems.

Sleep disorders underlying insomnia

Persistently not being able to sleep well (including not being refreshed by sleep) is likely to cause tiredness, fatigue, irritability, poor concentration, depression or impaired performance, perhaps leading to injuries or accidents at work or while driving. Of the various possible explanations for such changes, sleep disturbance may well be overlooked with failure to appreciate that, with an improvement in sleep (which is usually possible with the correct advice), such problems will often be resolved. Occupational groups at special risk of sleep disturbance and its harmful effects include some clinicians.

The features of individual sleep disorders in this insomnia category are open to misinterpretations of a more specific nature. The following are examples of this:

• Delayed sleep phase syndrome (DSPS) Difficulty getting to sleep until very late and problems getting up in the morning, as well as daytime sleepiness and sleeping in late at weekend, characterise DSPS. These features are easily misinterpreted as awkward, lazy or irresponsible behaviour, or the usual form of school refusal, especially in adolescents in whom DSPS is common. In teenagers, it is the result of a combination of normal pubertal biological body clock changes, which shift the sleep phase later, and alterations in lifestyle involving staying up late for study or social reasons. The risk that the fundamental cause of the problem will not be recognised is increased if alcohol or hypnotic drugs are taken in an attempt to get to sleep, or stimulants taken to try to stay awake during the day.

• Advanced sleep phase syndrome (ASPS) Because of body clock changes occurring in old age, there is a tendency to fall asleep in the evening (ASPS, opposite to the effect of body clock changes at puberty). The early morning waking when sleep requirements have been met should not be mistaken for the early morning waking associated with depression where the total amount of sleep is reduced.

• Jet lag is another circadian rhythm sleep-wake cycle disorder, which, like DSPS, causes both insomnia and excessive daytime sleepiness. These effects are usually short-lived, but travellers who frequently cross several time zones on each flight can develop chronic sleep disturbances with serious effects on mood, performance and physical well-being, the true cause of which may not be appreciated.

Excessive daytime sleepiness

Excessive sleepiness, whatever its cause, out of the many possibilities, is often misjudged as laziness, loss of interest, daydreaming, lack of motivation, depression, intellectual failure or other unwelcome states of mind. Sometimes, in very sleepy states, periods of ‘automatic’ behaviour occur, ie pro-
langed, complex and often inappropriate behaviour with impaired awareness of events and, therefore, amnesia for them. Such episodes can easily be misconstrued as reprehensible or disassociative behaviour, or prolonged seizure states. The paradoxical effect in young children of sleepiness causing overactivity has sometimes led to a diagnosis of attention deficit hyperactivity disorder (ADHD), inappropriately treated with stimulant drugs instead of treatment for the sleep disorder.

The following sleep disorders provide examples of the general tendency to misconstrue the cause of excessive sleepiness:

• **Shift work disorder**\(^\text{18}\) Over 20 per cent of employees work shifts. Night shift workers, in particular, suffer from inadequate and poor quality sleep because they are required to work when their body clock is telling them that they should be asleep. Their daytime sleep is usually shorter and of poorer quality than that previously obtained at night. This shift work disorder is associated with various forms of physical ill health. The psychological effects of inadequate or poor quality sleep, compounded by the disruptive influence of shift work on family and social life, are commonplace in shift workers.\(^\text{1}\)

These physical health issues and unfortunate psychosocial consequences can easily overshadow and distract from the true origins of the shift worker’s primary problems and lead to referral exclusively to medical or psychiatric services without advice about the underlying sleep disorder.

• **OSA**\(^\text{19}\), which affects about 4 per cent of men, at least 2 per cent of women, and perhaps 2 per cent of children, can cause excessive sleepiness, changes of personality and adverse effects on social life and performance at work, as well as intellectual deterioration to the extent that sometimes dementia is suspected. Only about a tenth of adults with OSA seek medical advice, probably because many others do not realise that their daytime problems are the result of their disrupted sleep. Those who have sought medical advice may well have been treated initially, before their sleep disorder was recognised, for the complications of their OSA (such as hypertension or depression) rather than the OSA itself.\(^\text{20}\) Clearly, early recognition of this treatable condition is highly desirable.

The same is true of OSA in children, the usual cause of which at this age is enlarged tonsils and adenoids. Their removal can improve the child’s sleep with the effect of, at least, lessening any learning and behaviour problems which, otherwise, are likely to have been attributed to the other, more usual causes. OSA, usually of more varied origins, complicates many forms of learning disability, notably Down syndrome.\(^\text{21}\)

• **Narcolepsy**\(^\text{22}\), characterised mainly by sleep attacks, as well as more general sleepiness, is not the rarity once supposed. Its prevalence in western societies is in the order of 0.02-0.05 per cent, which is only somewhat less than Parkinson’s disease or multiple sclerosis. Cataplexy, with recurrent loss of tone causing collapse or weakness of one part of the body or another, usually in response to strong emotion, is usually also present. This offers even more scope for mistakes as it can be misconstrued as syncope, epilepsy or attention-seeking behaviour. Other possible components of the narcolepsy syndrome (namely, hallucinations, which can be especially vivid, and sleep paralysis, as well as associated automatic behaviour) are also open to misinterpretation.

It has been reported that, in the year prior to the diagnosis being definitively made at a sleep disorders centre, narcolepsy had been considered in only 38 per cent of cases.\(^\text{23}\) Incorrect diagnoses had included other neurological disorders such as epilepsy and a variety of psychiatric problems, especially neurosis and depression. Neurologists had made the correct diagnosis in 55 per cent of the cases they had seen, internists in 23.5 per cent, GPs in 21.9 per cent and psychiatrists in 11 per cent. Paediatricians had failed to recognise the condition as narcolepsy in all the children they had seen, possibly because of the special difficulties that can be encountered in recognising the condition at an early age,\(^\text{24}\) but also because it is not usually realised that the onset of narcolepsy occurs before adulthood in at least a third of cases. Hypothyroidism and hypoglycaemia are other possible misdiagnoses of narcolepsy.

• **Kleine-Levin syndrome**\(^\text{25}\). The episodic, prolonged sleepiness in the Kleine-Levin syndrome, accompanied by often bizarre and out of character behaviour when the patient is awake, understandably causes confusion in the minds of those who are unfamiliar with the condition. Some people with this disorder have initially been thought to perhaps have encephalitis, a cerebral tumour, epilepsy, drug addiction or a psychiatric problem including conduct disorder.\(^\text{26}\)

**Parasomnias**

As it is not generally realised how complicated behaviour can be during sleep, the many different
types of parasomnias are perhaps at particular risk of being confused with other conditions and also with each other.

- **Sleepwalking and sleep terrors**
  The common, inherited conditions of sleepwalking and the related 'partial arousal disorders' (sleep terrors and confusional arousals) occur during non-rapid eye movement (NREM) sleep, mainly early in the night. While sleepwalking may involve calm walking about in a semi-purposeful confused manner, some sleepwalkers do much more complex things such as making themselves drinks or meals, following complicated routes outside the house, or even driving a car.

  People with agitated sleepwalking or sleep terrors appear to be very fearful and distressed and rush about and cry out as if escaping from danger. Other sleepwalkers develop an eating disorder with excessive weight gain due to the amount of food they consume while they are still asleep at night. Yet others behave in an aggressive or destructive way causing injury to themselves or other people. At times, sexual or other serious offences have been committed during a sleepwalking episode (and, indeed, some other sleep disorders). The young children who have confusional arousals may well be thought by their parents to be ill in some way because of the degree of behavioural disturbance involved, which is similar to that of sleep terrors.

  If it is not known that such complicated actions are compatible with still being asleep, it is likely to be assumed that the person was awake at the time and aware of what he or she was doing, and, therefore, responsible for what has happened. Alternatively, the episodes might be thought to be epileptic in nature, or the result of some other physical or psychiatric state. Guidelines have been suggested for the recognition of sleepwalking automatisms, mainly for medico-legal purposes.

- **'Isolated' sleep paralysis**
  Other than that associated with narcolepsy, which occurs briefly when going to sleep or on waking up, is not uncommon but often unreported unless it is frequent. Although benign, it can generate much anxiety and fear of having a stroke or other neurological problem.

- **Sleep-related hallucinations**
  (‘hypnagogic’ when falling asleep; ‘hypnopompic’ when waking up), involving various sensory modalities, are also common and can be frightening, especially to children. When combined with sleep paralysis, the experience can be so complicated and bizarre (including conversations with people or other beings, as well as feelings of threat and dread) that a psychotic process, especially of a schizophrenic nature, may well be suspected.

- **Rhythmic movement disorder**
  Parents of the many young children who bang their heads or roll about rhythmically at night may worry that this is a sign of an emotional problem or neurological disorder, particularly epilepsy. In fact, rhythmic movement disorder is also benign and usually remits spontaneously by the age of three to four years, although occasionally it persists into adult life.

- **Nocturnal frontal lobe epilepsy (NFLE)**
  A number of non-convulsive types of epilepsy are closely related to sleep including NFLE. These, like REM sleep behaviour disorder, are ‘secondary parasomnias’ in that they are or can be manifestations of a medical disorder. All can give rise to dramatic behaviour that is easily construed as some other type of night-time disturbance.

  This is particularly so in NFLE because the seizures can consist of movements such as kicking, hitting or thrashing, and vocalisations, which include screaming, shouting and roaring. Both adults and children with this condition are at serious risk of being misdiagnosed as experiencing other dramatic events such as sleep terrors or pseudoseizures (especially because even ictal EEGs can be unremarkable).

- **Nocturnal panic attacks**
  are another form of secondary parasomnia, this time being part of a psychiatric disorder. If panic attacks occur only at night, they might well be misdiagnosed as some other form of dramatic parasomnia such as sleep terror or nightmare. They are characterised by sudden awakening in a highly aroused state with dizziness, difficulty breathing, sweating, trembling and palpitations, as well as a fear of an impending and possibly fatal heart attack or stroke.

- **RBD**
  In this disorder, muscle tone is pathologically retained during REM sleep, allowing dreams to be acted out (most dreaming occurs during REM sleep). Violent dreams are likely to cause injury to the patient or bed partner.

  RBD has many causes or associated conditions, including a strong association with neurodegenerative disorders such as Lewy body disease, multiple system atrophy, Parkinson’s disease, and also with narcolepsy. There is also a link with some forms of medication, including antidepressants. Although mainly described in elderly males, it has also been reported at other ages, including children, and in women. The condition (which is eminently treat-
able, mainly with clonazepam, even in the presence of neurodegenerative disease) may well be confused with other dramatic parasomnias despite their different, distinctive features. Especially if the bed partner is attacked, a psychological motive may be wrongly suspected.

• Parasomnia overlap disorder

A combination of sleepwalking and night terrors, as well as RBD, known as parasomnia overlap disorder, has been described in some individuals.

Assessment

The risk of misdiagnosis can be lessened by being acquainted with the various sleep disorders including an awareness of their main characteristic features. A patient may have a combination of sleep disorder and other conditions of a different nature (and, indeed, more than one type of sleep disorder), especially in the elderly. Therefore, it is all the more important that each complaint and its cause, including the possibility of sleep disorder, are assessed thoroughly. Assessment needs to include a sleep history, which traditionally has been neglected.

Sleep history

The following outline illustrates the main clinical enquiries that should supplement usual history-taking schedules. A more detailed account is provided elsewhere; a modified approach is required in the case of children and adolescents. Three basic screening questions for any patient are:

• Do you have any difficulty getting off to sleep or staying asleep?
• Are you very sleepy during the day?
• Do you have any disturbed episodes at night?

The patient’s bed partner or other relative should also be questioned. Positive answers call for a detailed sleep history, essential elements of which are:

• The precise nature of the sleep complaint, its onset and its development.
• Medical or psychological factors at the start of the sleep problem or which might be maintaining it.
• Patterns of occurrence of the sleep problem including provoking or ameliorating factors, and differences in sleep patterns between weekdays and weekends.
• The sleeping environment, regularity of sleep habits and other aspects of ‘sleep hygiene’, i.e. practices that are conducive to sleep.
• Effects on mood, work, social life and other family members.
• Effects of past and present treatments for the sleep problem, and medications taken now or in the past for other conditions.
• Details of the patient’s typical 24-hour sleep-wake pattern, starting with evening events leading up to bedtime, time and process of getting to sleep, events during the night, time and ease of waking up, daytime sleepiness (including naps), as well as mental state and behaviour during the day.

• Estimation of the duration and soundness of overnight sleep.
• Features of particular diagnostic importance such as a combination of obesity, loud snoring or snorting and apnoic episodes (OSA), wide discrepancy between weekday and weekend sleep patterns (DSPS), sleep attacks and cataplexy (narcolepsy), repeated jerking at night (periodic limb movements in sleep), or violent dreams and behaviour during sleep (RBD).

Other aspects of assessment

A screening questionnaire for use with adults or younger patients can be a useful starting point in assessment. A structured sleep diary, recording day and night events for one to two weeks, may also reveal further valuable information.

Other potentially relevant details may be contained in the patient’s medical, psychiatric and social histories including occupational factors and also habits (such as caffeine, alcohol or nicotine consumption and use of illicit drugs) that might affect sleep. A family history of sleep disorders might also be revealing.

These enquiries should be accompanied by a review of sys-
tems, as well as physical and mental state examination. It is important to identify any neurological, general medical or psychiatric disorder likely to affect sleep, or physical anomalies of possible importance such as those that pre-dispose to OSA, especially obesity and nasopharyngeal abnormalities.

Clinical information from these sources may well be sufficient to at least provisionally formulate the problem correctly. In a proportion of cases, special investigations or referral to a sleep disorders service will be required.

Conclusions
For the reasons outlined in this article concerning the relevance of sleep disorders to clinical practice in psychiatry and other specialties, professional training in this field can be considered essential. Allied to an improved understanding by the general public (to aid which publications are now available)11,42 this would reduce the risk of inappropriate advice and treatment that inevitably follows misinterpretations of the types described.

How often such mistakes are actually made is not known but, until knowledge of sleep disorders on the part of both the public and professionals improve, they seem likely. The same can be said (although probably to a lesser extent) of psychiatric disorders being mistaken for sleep disorders about which even less is known, apart from occasional case reports.

Professor Stores is Emeritus Professor of Developmental Neuropsychiatry at the University of Oxford

References
34. Schenck CH, Boyl JL, Mahowald MW. A parasomnia overlap disorder involving sleepwalking, sleep terrors, and REM sleep behavior disorder in 33 polysomnographically confirmed cases. Sleep 1997;20:927-81.