

MANAGEMENT OF INSOMNIA

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ABSTRACT

Insomnia is a common problem and studies in Singapore and abroad have shown that up to a third of any population studied has experienced insomnia. There is also increasing awareness of insomnia as a health risk. Current views of the problem not only focus on the disturbed sleep pattern but also on the daytime consequences.

Younger adults tend to experience sleep latency problems and older adults, sleep maintenance problems. Sleep varies from person to person and according to age. There are no normative values to help in the diagnosis of insomnia but some features typical of insomnia have been noted. The aetiologies of insomnia are diverse and must be determined in the assessment of patients.

Treatment of insomnia is non-pharmacologic and/or pharmacologic therapy. There are an increasing number of studies on the various treatments and at present a combination of both types appears best in the long-term management of the problem.

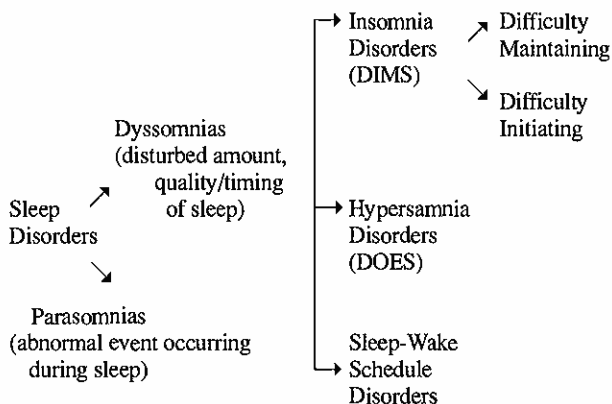
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INTRODUCTION

Insomnia has been defined as a subjective complaint of impairment in either the duration, depth or restorative qualities of sleep. In the Diagnostic Schedule of Mental Disorders (DSM IIIR) insomnia is classified under Dyssomnias (disturbed amount, quality or timing of sleep) and further categorised into difficulty initiating and/or difficulty maintaining (DIMS) sleep (see Fig 1)⁽¹⁾.

Fig 1 – Classification of Sleep Disorders (DSM IIIR)



Current views of the problem of insomnia emphasise the consequences of poor sleep. Hence in dealing with insomnia not only do we consider nocturnal disturbance of normal sleep pattern, but also adverse daytime consequences of the sleep disturbance. This has led to increasing awareness of insomnia as a health risk. The social consequences of poor sleep are numerous as well, from accidents and under-performance to under-achievement.

Incidence of Insomnia

Most American studies have found that the incidence of insomnia is in the range of 30% to 35%⁽²⁾. A National Institute of Mental Health study reported in 1990, found that of the one-third adult population with insomnia, 50% are serious cases. Of these, only 10% were given a prescription (1.7% of the population), 5% took an over-the-counter preparation (0.8%) and 85% were untreated⁽³⁾. Also, people sought treatment only after having insomnia for a long period. A Gallup poll in the late seventies in America showed that the average duration of symptoms was fourteen years prior to seeking treatment.

In Singapore, a general practice survey found that 8% to 10% of patients had insomnia. An elderly population survey revealed sleep problems in 25% of subjects. Of these, 19% had physical or mental illness⁽⁴⁾.

Studies have shown that women are more likely than men to seek help for sleep-related problems. Individuals aged eighteen to thirty usually present with sleep latency problems and those aged forty-five and over have sleep maintenance problems. The incidence of sleep disturbances increases with age. Other factors associated with increased incidence of insomnia include low socioeconomic status, poor education, chronic medical illness, recent life stresses and the use of alcohol⁽⁵⁾.

Aetiology

Insomnia can be due to many causes such as physical disorders, substances, circadian rhythm problems, psychological factors, poor sleep habits and environmental problems (Table I)⁽⁶⁾. Coleman et al found that psychiatric disorders were the single greatest cause of the insomnia diagnosis. Psychophysiological causes were next highest, followed by substance abuse (Table II)⁽⁷⁾. Primary sleep disorders such as sleep apnea, narcolepsy and nocturnal myoclonus are more common in old age and can affect up to 30% of elderly insomniacs⁽⁸⁾.

Duration of Symptoms

It is important to determine the duration of symptoms as treatment and outcome do depend on this. Transient symptoms of insomnia (ie few days duration) may result from recent situational stresses or emotional upsets such as grief and jet lag.

Short-term insomnia (duration of one to three weeks) is often associated with situational stress or serious illness. Long-term or chronic insomnia (duration of more than three weeks) usually

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involves complaints of months or years. Causes include most of those listed in Table I.

Table I – Causes of Insomnia⁽⁶⁾

1. Physical Disorders	Gastroesophageal reflex, arthritis, chronic pain, cardiac problems, conditions associated with pruritis, chronic lung disease, infections, urinary frequency, neoplasms.
2. Substances	Caffeine, nicotine, alcohol, substances of abuse.
3. Circadian Rhythm Problems	Shift work, jet lag, delayed sleep phase syndrome, advanced sleep phase syndrome.
4. Psychological Factors	Stress, psychopathology, nightmares, inactivity, major life changes.
5. Poor Sleep Environment	Noise, temperature, light, sleeping surface, bed partner.
6. Poor Sleep Habits	Extended time in bed, naps, irregular schedule, bed as a cue for arousal.

Table II – Aetiologies of the Insomnia Diagnosis⁽⁸⁾

Psychiatric Disorders	35%
Psychophysiological	15%
Drug and Alcohol Dependency	12%
Periodic Limb Movements	12%
No insomnia abnormality	9%
Other conditions	6%
Medical, toxic and environmental	4%

Features of Insomnia

There are no 'normative values' to distinguish insomniacs. Length of sleep varies from person to person. In a general adult population the average reported sleep duration is 7.5 hours per night on weeknights and 8.5 hours per night on weekends⁽⁹⁾. However research has revealed some interesting features of insomniacs.

- (1) EEG studies have shown that insomniacs take longer to fall asleep, have increased interrupted sleep and decreased sleep efficiency⁽¹⁰⁾. But these features are not unique as some 'normal' people without complaints of insomnia can have this pattern.
- (2) Monroe in a study to determine physiologic differences in insomniacs found they had increased autonomic and physiological activity (increased heart rate, body temperature and skin conductance)⁽¹¹⁾. This gave rise to the idea that insomniacs suffered from hyperarousal. However this hypothesis has not been replicated in subsequent research.
- (3) Psychological profiles of insomniacs have revealed higher levels of depressed mood and anxiety compared to normal subjects⁽¹²⁾.
- (4) Borkovec has suggested that increased cognitive activity in the form of worry about lack of sleep and inability to fall asleep is significant in insomniacs⁽¹³⁾.

Generally studies in sleep laboratories have revealed some significant features worth remembering. Most patients who complain of insomnia overestimate their actual time awake and

over-report sleep latency. Patients with obstructive sleep apnea are often unaware of their many sleep-time obstructive arousals, some of which may lower their arterial oxygen saturation levels to 50% or less⁽¹⁴⁾.

MANAGEMENT

The first step in management is proper evaluation. Every patient must be interviewed in detail to elicit a full medical history. The patient's sleep history must be determined. Information should be corroborated with a sleep partner if one is available.

Specific assessment includes a mental state examination as well as the sleep pattern, quality and daytime functioning. A physical examination must be done to determine the general health of the patient and to exclude underlying medical problems.

Following the first interview, the patient is asked to keep a Sleep Diary. These are useful self-reports to monitor the frequency of sleep problems and to determine the sleep pattern in the patient's own environment. Other tests that may be necessary include personality tests (eg MMPI) and symptom measures (eg Hamilton's Rating Scales for Anxiety, Depression).

Diagnostic evaluation with overnight observation using EEG and electromyogram are needed if a primary sleep disorder such as sleep apnea, narcolepsy or nocturnal myoclonus is suspected. Sleep apnea and periodic leg movement disorder may be suspected in a patient complaining of daytime sleepiness with a history of snoring or jerking leg movements.

Multiple Sleep Latency Testing (MSLT) developed at Stanford University Sleep Research Centre in the mid-1970s is widely used for the daytime evaluation of patients suspected of having narcolepsy or sleep apnea. The MSLT determines the time taken to fall asleep at four or five time points in a single day in a sleep inducing environment⁽¹⁵⁾.

TREATMENT

Treatment of insomnia can be broadly classified into non-pharmacologic and pharmacologic treatment. Non-pharmacologic treatment involves an educational as well as a behavioural component. Patients need to be given information about sleep and sleep hygiene. Individual sleep requirements must be discussed as well as changes in the nature and quality of sleep associated with ageing. Various non-pharmacological approaches have been found to be effective for treating insomnia.

- I Sleep Diaries provide feedback to the patient and reassurance on the severity and extent of the problem. They also reflect whether the treatment started is effective.
- II Sleep Hygiene refers to measures that help ensure good quality sleep and daytime alertness and consist of information and advice (Table III). Although many people are aware of the various factors that can interfere with sleep, few practise good sleep hygiene consistently.

Studies have shown that improved Sleep Hygiene can decrease subjective complaints of sleep maintenance insomnia. Although Sleep Hygiene may not produce major clinical gains, it is useful in that it advises and reassures the patient and provides the background for other treatment⁽¹⁶⁾.
- III Behavioural Therapy was developed because in the past it was thought that all insomniacs were hyperaroused. Generally the type of behaviour programme used must be individualised for the patient.

Table III – Sleep Hygiene Measures

1. Establish a regular sleep schedule. Regular arousal time strengthens circadian cycling. Curtailing time spent just lying in bed helps solidify sleep.
2. Establish a bedtime routine with a regular pattern of activities. These set the mood for sleep.
3. Maintain a proper sleep environment. The bedroom temperature should be comfortable and it should be dark and quiet.
4. Regular exercise helps deepen sleep. But exercise should not be too strenuous or late at night as this can lead to arousal.
5. Use the bedroom primarily as a place for sleep. Avoid activities associated with wakefulness (with the exception of sex).
6. A light snack may help as hunger disturbs sleep.
7. Avoid substances like caffeine and alcohol that can interfere with sleep. Warm milk and malty drinks help.
8. Stress and worry are major impediments to sleep. Put aside worries and thoughts about problems. Relax, read a book or listen to music before bed.

(a) Relaxation therapy is useful when somatic tension is high. Deep breathing, progressive muscle relaxation (Jacobsen), mental relaxation, are some of the relaxation based treatments used.

(b) Cognitive treatments have produced promising results especially in those who are muscularly relaxed. These include:

(i) Autogenic training in which patients use self-suggestions to generate feelings of heaviness and warmth in their extremities.

(ii) Training in thought stopping or imaging is useful in those patients with intrusive or ruminative thoughts at bedtime.

(iii) Patients who require active coping skills to overcome their negative expectations and fears at bedtime.

(c) Sleep Restriction Therapy is thought to be one of the most promising new behavioural treatments. It is based on the observation that many insomniacs have low sleep efficiency (ie they may lie in bed but are not actually sleeping).

To consolidate sleep, insomniacs are told to limit the time they spend in bed to just the number of hours of sleep they normally obtain. For those who have underestimated their actual sleeping time, there may be initial sleep deprivation. Patients are then advised to gradually increase the time in bed as sleep efficiency improves. This has been found to be useful in older patients in combination with sleep hygiene and stimulus control instructions.

IV Stimulus Control is a set of techniques to help the insomniac establish a consistent sleep/wake pattern, establish the bed and bedroom as cues for sleep and reduce their association with activities that might interfere with sleep⁽¹⁷⁾. Studies have shown it to be efficacious in sleep-onset insomnia (see Table IV).

V Paradoxical Intention is a method that focuses on the arousal, increased tension and performance anxiety associated with

Table IV – Stimulus Control Instructions

1. Lie down to sleep only when you are sleepy.
2. Do not eat, read, watch TV or think about problems in bed. Sexual activity is the only exception.
3. If you are unable to fall asleep after ten minutes, get up immediately and do something else. Return to bed only when sleepy.
4. If you still cannot sleep, repeat Step 3. Repeat this as often as necessary throughout the night.
5. Awake at the same time every morning irrespective of how much sleep you got during the night.
6. Do not nap during the day.

insomnia⁽¹⁸⁾. By trying hard to sleep, patients create a cycle that keeps them awake.

So the patient is instructed to lie in bed in a darkened room and keep his eyes open (ie remain awake) for as long as possible. This helps put the patient in a “win-win” situation, that is he either successfully completes the task or he falls asleep. This method has yielded mixed results; some studies have found it to be effective while others have not⁽¹⁹⁾.

VI Chronotherapy was developed for circadian rhythm disorders in which the patient's sleep/wake rhythm is out of phase. It is misplaced in the twenty-four hour clock at a time later than desired by the patient. The method involves progressively delaying sleep onset to reset the circadian clock to an earlier time. Usually a two-hour delaying interval is used. This procedure is time-consuming, taking a week to ten days to adjust. It also requires patients to cooperate fully as they have to adhere to a strict sleep/wake schedule.

Pharmacological therapy in Insomnia

There are guidelines for the use of hypnotics in insomnia. The National Institute of Mental Health Consensus Development Conference on Drugs and Insomnia has stated that “patients should be considered for sleep promoting pharmacotherapy when they are significantly troubled by the presence or the possibility of inadequate sleep, or when the physician is concerned about the deleterious impact of disturbed or inadequate sleep on the patients' health, safety and well-being”⁽³⁾.

The aim of hypnotic therapy is to improve sleep quality at night while ensuring good daytime functioning and alertness. The ideal hypnotic should therefore shorten the sleep latency period, increase sleep length, reduce the number of nocturnal awakenings, be free from side effects and not disrupt the sleep architecture.

In the past, barbiturates and chloral derivatives were used. Although effective, their clinical use was restricted by their toxicity, tendency to interact with and potentiate the sedative effects of other CNS depressants and their association with abuse and dependency. The benzodiazepines were introduced in the early sixties and proved, in comparison, to be safe and effective. However, over the years research and reports have increasingly shown that benzodiazepines can produce significant adverse side-effects. These include residual daytime effects (daytime sedation, poor concentration and performance decrements), anterograde amnesia and withdrawal symptoms (rebound insomnia and early morning insomnia)^(20,21).

All the currently available benzodiazepines are effective sleep inducers but they differ considerably in their pharmacokinetic and psychopharmacological profiles. The physician must be

familiar with these profiles to prescribe low doses of benzodiazepines with the most suitable profile to meet the needs of individual patients⁽²²⁾.

Guidelines from the Consensus Development Conference suggest transient and short-term insomnia can be resolved by appropriate use of short-term therapy⁽³⁾. A few nights of hypnotic therapy is appropriate in jet lag, insomnia related to acute stress and after an emotional shock. Short half-life hypnotics like Triazolam are useful in such cases. Once sleep is achieved intermittent drug use is advised with gradual discontinuation to prevent rebound. Vigilance is necessary to avoid a gradual slide into medium and long-term therapy.

Long-term insomnia of the psychophysiological type responds to combined behavioural and pharmacological therapy. Long half-life benzodiazepines such as diazepam are recommended intermittently as they are less likely to cause rebound. Sometimes a sedative antidepressant such as amitriptyline may be prescribed in low doses (10 mg or 25 mg at night). Those with depression and the older person with early morning waking and anxiety will benefit. Treatment can continue for three to four months. Those not responding must be re-evaluated. The present view is that benzodiazepines should not be prescribed long-term for chronic "idiopathic" insomnia⁽²³⁾.

New hypnotics are now available. These "third generation" hypnotics following the barbiturates and the later benzodiazepines are Zopiclone and Zolpidem. Zopiclone, a cyclopyrrolone, is a non-benzodiazepine hypnotic which binds at the same gamma-aminobutyric acid (GABA) macromolecular complex and appears to be well-tolerated by patients. Zolpidem is an imidazopyridine derivative which acts on omega receptors located on a separate protein subunit rather than the GABA binding site on the macromolecular complex. It is rapidly absorbed and has a mean elimination half life of 2-5 hours.

The new non-benzodiazepine group of drugs have been reported to maintain sleep architecture and are useful for patients with not only delayed sleep latency but also sleep maintenance difficulties. A study done in a group of local patients on the subjective efficacy of Zopiclone showed that the patients experienced and reported improved sleep latency, increase in their sleep duration, reduced night awakening and improved quality of sleep. Most importantly the patients did not complain of residual sedation or a "hang-over" effect⁽²⁴⁾. However a frequent side-effect is a metallic or bitter after-taste in the mornings. A single dose of Zopiclone 7.5 mg at night is usually effective, but if necessary up to two tablets (15 mg) may be prescribed at night. For elderly patients, caution is always necessary. Hence it is prudent to start at half the usual dose and increase slowly as necessary.

In the management of insomnia there are few studies comparing pharmacological and non-pharmacological treatment. One interesting study compares behavioural therapy (stimulus control and relaxation training) and Triazolam in persistent sleep-onset insomnia⁽²⁵⁾. Triazolam had an immediate effect but non-pharmacologic treatment showed improvement at three weeks.

However at one month behavioural treatment was more effective in maintaining treatment gains.

It is always advisable to start with the lowest recommended dose of any hypnotic and then adjust the dose as necessary in each case. Patients have to be questioned on follow-up about how the medication has helped them sleep and how they felt the next day. There are no 'rules' as to which hypnotic to use for which particular patients. But one must be aware of the pharmacokinetics of the hypnotics and assess each patient thoroughly to be able to meet the patient's needs with the most suitable hypnotic.

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