

UNIT NO. I

AN APPROACH TO INSOMNIA

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ABSTRACT

Insomnia, the most prevalent sleep complaint in the general population, is defined as the inability to obtain sleep that is sufficiently long or 'good enough' to result in feeling rested or restored the following day. Patients with insomnia often report difficulty in falling sleep, difficulty in maintaining sleep, such as having intermittent awakening during the night, or early morning awakening with inability to fall asleep again. Common perpetuating factors for insomnia are: poor sleep hygiene was established and continues; excessive worrying about sleep; much time and effort spent on 'trying' to sleep. Behavioural treatment of psychophysiological insomnia consists of education, cognitive restructuring, stimulus control procedures, sleep restriction and implementation of healthy sleep habits.

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DEFINITION

Insomnia, the most prevalent sleep complaint in the general population, is defined as the inability to obtain sleep that is sufficiently long or 'good enough' to result in feeling rested or restored the following day. Patients with insomnia often report difficulty in falling sleep, difficulty in maintaining sleep, such as having intermittent awakening during the night, or early morning awakening with inability to fall asleep again. Insomnia is a 24 hour problem. See Table 1.

CLASSIFICATION

Table 2 shows the classifications of insomnia. The criteria for distinguishing short-term insomnia from the chronic form are a subject of some debate, but a rough gauge describes transient insomnia as continuing for days to weeks, and chronic insomnia persisting for months or years. The 1997 revised edition of the International Classification of Sleep Disorders (ICSD) manual classified acute or transient insomnia as having a duration of no more than one week; sub acute or short-term insomnia was said to continue for one week to three months. Transient insomnia lasting days is often a result of acute and transient stress, but insomnia lasting longer than 3 months is considered chronic and has a number of different causes. Approximately 10% of adults experience persistent insomnia, which is associated with an increased risk of psychosocial and

occupational decline, cognitive impairments, accidents and an increased risk of the emergence of new psychiatric disorders. Risk factors for insomnia include advancing age, female gender, the presence of medical or psychiatric illness and engaging in shift work.

The proportion of the population with insomnia symptoms on most nights is between 10% and 40%, and 5% to 15% have insomnia symptoms and daytime impairment.

In 2002, Li and co-workers reported that 11.9% of Hong Kong Chinese adults suffered from frequent insomnia (at least 3 times per week) for the preceding month, with more female sufferers than male (14.0% vs. 9.3%). In parallel to other studies, insomnia sufferers in Hong Kong Chinese were found to share similar risk factors such as unemployment, lower socio-economic status (as reflected by types of residence), alcohol consumption, poor health and psychiatric disturbances.

CONSEQUENCES OF INSOMNIA

People with insomnia are heavy users of healthcare services, are impaired in the home and workplace, and have a poor quality of life. Insomnia is a burden for the patient and because insomnia is common, it burdens society. The toll of insomnia includes: depressed mood; emotional distress; irritability; daytime fatigue; loss of productivity; impaired cognition; and decreased enjoyment of interpersonal relationships.

Table 1 - Insomnia is a 24-Hour Problem**Night-time**

- Difficulty falling asleep
- Difficulty staying asleep
- Perception of light sleep

Daytime

- Fatigue, poor concentration
- Excessive sleepiness (especially acute insomnia)
- Excessive arousal (especially chronic insomnia)

Table 2 - Classification of Insomnia**According to Duration**

- Transient insomnia (several days' duration)
- Acute insomnia (up to 3 months' duration)
- Chronic insomnia (longer than 3 months' duration)

According to Possible Aetiology (AASM, 2005)

- Adjustment Insomnia (Acute Insomnia)
- Psychophysiological Insomnia
- Paradoxical Insomnia (Sleep State Misperception)
- Idiopathic Insomnia
- Insomnia due to Mental Disorder
- Inadequate Sleep Hygiene
- Behavioural Insomnia of Childhood
- Insomnia due to Drug or substance
- Insomnia due to Medical Condition

CAUSES OF CHRONIC INSOMNIA

All of the listed conditions (see Table 3) are common causes in the “Insomnia” category of the American Academy of Sleep Medicine International Classification of Sleep disorders (AASM, 2005). Other primary sleep disorders than these which cause sleep disruption include the sleep related breathing disorders (e.g., obstructive sleep apnoea), the circadian rhythm sleep disorders (e.g., jet lag and shift work disorder), the parasomnias (i.e., undesirable behaviours during sleep, e.g., sleepwalking) and the sleep related movement disorders such as restless legs syndrome.

Models of insomnia include the concepts of conditioning, hyperarousal, stress response, predisposing personality traits, and attitudes and beliefs about sleep. Common perpetuating factors for insomnia are: poor sleep hygiene was established and continues; excessive worrying about sleep; much time and effort spent on ‘trying’ to sleep. See Table 4. Animal models are used to identify neural systems that regulate arousal and sleep.

Some common causes of insomnia at night with daytime fatigue include:

- Psychophysiological insomnia
- Depression and anxiety
- Medication side effects (See Table 5)
- Sleep disordered breathing syndromes, including central and obstructive sleep apnoea
- Circadian rhythm disorders, e.g., jet lag and shift work disorder
- Restless legs syndrome

Psychophysiological Insomnia

As defined by the AASM, psychophy-siological insomnia encompasses poor sleep hygiene, sleep performance anxiety, maladaptive learned associations (See Table 6) between insomnia and the night-time setting and somatised tension or anxiety (AASM, 2005).

The name of this type of insomnia suggests an interplay of the mind and body. It is a chronic disorder characterised by heightened arousal and learnt sleep-preventing associations which result in patients being unable to sleep at night and consequently function poorly during the day.

Their difficulties are related to the inter-action of anxious thoughts and tense muscles. Over time, they develop attitudes and practices that perpetuate their inability to sleep as desired.

Table 3 - Mnemonic: Common Causes of Insomnia (‘INSOMNIAC’)

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|--------------------------------------|
| • Illness due to a medical condition |
| • Neurologic or psychiatric disorder |
| • Sleep disorder |
| • Overconcern about falling asleep |
| • Medications |
| • Noisy or unpleasant environment |
| • Idiopathic cause |
| • Anxiety |
| • Circadian rhythm disruption |

Table 4 - Factors that Commonly Perpetuate Insomnia

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| • Too much time in bed |
| • Variable retiring and rising times |
| • Unpredictability of sleep routine |
| • Concern about daytime deficits |
| • Napping, dozing, and nodding off |
| • Fragmentation of sleep |
| • Maladaptive conditioning |
| • Excessive caffeine consumption |
| • Excessive hypnotic and alcohol ingestion |

Table 5 - Drugs with Insomnia as a Side Effect

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| • Adrenocorticotrophic hormone |
| • Alpha-methylidopa |
| • Beta-blockers |
| • Bronchodilators |
| • Calcium-channel blockers |
| • Corticosteroids |
| • Some decongestants |
| • Monoamine oxidase inhibitors |
| • Oral contraceptives |
| • Phenytoin |
| • Stimulating tricyclics |
| • Stimulants eg. Modafinil, methylphenidate |
| • Some SSRIs |
| • Thiazides |
| • Thyroid hormones |

Table 6 - Maladaptive Behaviours That Can Compromise Sleep

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| • Engaging in stimulating activities up to bedtime |
| • Using the bedroom for activities other than sleep |
| • Inconsistent sleep-wake rhythm |
| • Watching the clock during the night |
| • Consuming foods that promote heartburn |
| • Excessive caffeine use |
| • Using alcohol habitually as a sleep aid |
| • Relying long-term on benzodiazepines for sleep |
| • Inadequate exercise |

It typically occurs during young adulthood (aged 20 to 40 years) and is substantially more common in women than in men. The diagnosis is usually made by history alone. However, if polysomnography (PSG) is performed, it may demonstrate features such as prolonged sleep onset latency, fragmented sleep, and early morning awakening. Frequently patients may exhibit the opposite, or “reverse first night effect,” in which they actually sleep better in the sleep laboratory than in their home, probably secondary to breaking the vicious cycle of insomnia by changing the sleep environment.

Behavioural treatment of psychophysiological insomnia consists of education, cognitive restructuring, stimulus control procedures, sleep restriction and implementation of healthy sleep habits.

Paradoxical Insomnia (Sleep State Misperception)

By definition, a person with sleep state misperception syndrome perceives that he is getting fewer hours of sleep than he actually

is. The International Classification of Sleep Disorders (ICSD) suggests PSG as a means to demonstrate normal duration and quality of sleep (AASM, 2005). For such individuals the total sleep duration characteristically exceeds 6.5 hours. Objective documentation of total sleep time can be reassuring for some patients. However, some insomnia sufferers will demonstrate improved sleep efficiency during laboratory PSG. Thus, the use of objective testing such as PSG should be individualized.

Sleep state misperception syndrome is a controversial diagnosis which assumes that current standards of PSG recording of sleep are the definitive measure of sleep, which may not be the case, because PSG is a relatively crude measurement. If it were possible to accurately record deeper brain structures, abnormalities for those patients who do have a different experience of sleep might be detected, even though by standard PSG criteria they appear to be sleeping normally. The physician may work with the patient from a CBT (cognitive behavioural therapy) framework, trying to help them focus more on the hours of sleep that they feel they are getting. Daytime relaxation techniques can minimise arousals at night.

As the understanding of this sleep disorder and sophistication of sleep diagnostic technology increase, some of these patients may eventually be diagnosed with more specific sleep disorders. An association has been suspected between sleep state misperception and anxiety disorders, but little evidence of this exists to date.

Inadequate Sleep Hygiene

Inadequate sleep hygiene refers to insomnia due to daily living activities inconsistent with the maintenance of good quality sleep. Poor sleep hygiene practices and commonly seen in almost all causes of insomnia, and this diagnosis should be reserved for patients in whom these practices are the predominant cause of the problem. Arousing factors include excessive caffeine, frequent naps, vigorous exercise close to bedtime and stressful or exciting work at night. Factors that disturb sleep continuity consist of falling asleep with the TV or radio on, alcoholic drinks (resulting in the need to urinate at night), environmental factors (such as noise, uncomfortable ambient temperature, uncomfortable bed, snoring or moving bed partner, light) and excessive time in bed (Table 4).

In our society, many people with demanding schedules stay busy right up to the time that they desire to fall asleep, continuing to tackle work or non-work activities well into the night. As a result, the body and mind are not in the relaxed state necessary for initiating sleep. Some people may need considerable time before they can relax sufficiently to fall asleep.

Caffeine is one of the most widely used stimulants, appearing in a growing number of beverages and foods.

Studies have shown increased arousals from sleep throughout the night even when 200mg of caffeine is consumed in the morning. Note that a typical single serving of coffee (smaller than a Starbucks™ short) contains 60 to 150mg caffeine, tea contains 20 to 50mg, chocolate contains 5 to 35mg and Coke™ contains 46mg of caffeine. See Table 7 for symptoms of excessive caffeine intake.

Secondary and Comorbid Insomnia

The American National Institutes of Health State-of-the-Science Panel concludes that the traditional concept of secondary insomnia is poorly understood and lacks adequate scientific basis. The traditional concept of secondary insomnia may do more harm than good. Once providers embrace the concept that A (primary condition) causes B (insomnia), “it would be foolhardy to squander health care resources to treat the insomnia directly” (Lichstein, 2006).

The Panel recommends using the term comorbid insomnia when insomnia co-exists with another condition that is salient to sleep disturbance. Medical and psychiatric disorders that are comorbid with insomnia should not be assumed to be the primary cause of the insomnia. Targeting both the insomnia AND the comorbid disorders in the treatment plan is recommended. Interestingly, after more than two decades of sleep research and sleep medicine, insomnia is once again considered a distinct nosological entity.

Although insomnia may be due to many underlying medical, psychiatric or psychological conditions, there is growing evidence that some insomnia is constitutional in nature. Many people with insomnia do not have any identifiable psychiatric or psychological problems. Furthermore, there is evidence that untreated insomnia is a risk factor for the development of psychiatric problems such as depression or substance abuse. Importantly, the relationship between insomnia and psychiatric conditions is bi-directional; depression may cause insomnia, and insomnia may cause depression.

Table 7 - Symptoms of Excessive Caffeine Intake

Cardiac

- Cardiac arrhythmias
- Palpitations
- Tachycardia
- Elevated blood pressure

Central Nervous System

- Anxiety
- Agitation
- Headache
- Insomnia
- Irritability
- Seizures

Renal

- Increased diuresis

There is convincing evidence that insomnia sufferers may be in a constant state of hyper-arousal. Many are actually less sleepy during the day than non-insomniacs as measured by objective daytime nap studies. And they also have an increase in metabolic rate across the 24-hour period. It has been proposed that persons with chronic insomnia may suffer from a more general disorder of hyperarousal that may be responsible for both the daytime symptoms and poor nocturnal sleep. Insomnia sufferers experience an overall increase of adrenocorticotrophic hormone and cortisol secretion. The increased arousal level shown in electroencephalogram (EEG) power-spectra studies could help explain the impairment of the perception of having slept experienced by many insomnia patients. Neuroimaging studies in insomnia lend further support to underlying physiological abnormalities.

Asking patients with sleep complaints to keep a sleep diary is a helpful approach in detecting underlying contributory factors of insomnia. In the evaluation of insomnia, PSG is indicated in patients who have symptoms of other specific sleep disorders, including sleep apnoea, periodic limb movements

in sleep (PLMS), narcolepsy or abnormal behaviours during sleep. Clearly, insomnia therapy should not simply focus on improving sleep but on reversing and preventing insomnia related morbidity.

CONCLUSIONS

In conclusion, insomnia is among the most common health complaints in medical practice and the most prevalent of all sleep disorders. It is associated with low quality of life, high absenteeism from work, increased health care costs, and physical and mental disorders. In many instances, insomnia is a symptom and not a diagnosis, for which specific causes should be sought and treatment given according to the cause(s) identified. Many causes are behavioural, or drug related. Sleep education and simple behavioural modifications are important in many cases. Overall management approaches aim to acknowledge distress, treat the primary cause, educate the patient about trigger factors, and establish good sleep habits. Sleeping pill use should be cautiously monitored.

LEARNING POINTS

- **Common perpetuating factors for insomnia are: poor sleep hygiene was established and continues; excessive worrying about sleep; much time and effort spent on 'trying' to sleep.**
 - **Behavioural treatment of psychophysiological insomnia consists of education, cognitive restructuring, stimulus control procedures, sleep restriction and implementation of healthy sleep habits.**
 - **The American National Institutes of Health State-of-the-Science Panel recommends using the term comorbid insomnia when insomnia co-exists with another condition that is salient to sleep disturbance.**
 - **Medical and psychiatric disorders that are comorbid with insomnia should not be assumed to be the primary cause of the insomnia.**
 - **The relationship between insomnia and psychiatric conditions is bi-directional; depression may cause insomnia, and insomnia may cause depression.**
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