Overview of Insomnia

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Chronic insomnia is highly prevalent and affects approximately 30% of the general population. Insomnia impairs daytime function and results in decreased quality of life. Despite its burden, insomnia continues to be inadequately identified, evaluated and treated in clinical practices. Several diagnostic criteria and classification systems exist for the evaluation of insomnia but there continue to lack a standardized definition of insomnia and guidelines for assessment. In recognition of this problem, research diagnostic criteria and practice parameters for insomnia has been formulated by the American Academy of Sleep Medicine.

Key Word : Insomnia

Introduction

Insomnia is the most common sleep disorder in the general adult population, and has become a major health-care concern over recent years. Approximately one third (33% to 50%) of the population reports one or more insomnia symptoms, and 10 to 15% suffers from chronic insomnia with daytime consequences. When chronic, insomnia is associated with daytime impairment, including decreased quality of life, increased risk for psychiatric disturbances, and impaired occupational performance. Despite these individual and societal risks, insomnia continues to be inadequately identified and treated by clinicians.

The purpose of this paper is to review (1) the recent insomnia definitions and classifications; (2) the assessment strategies used in the clinical evaluation of insomnia.

Definition of insomnia

The three most widely used diagnostic manuals for sleep disorders are the International Classification of Sleep Disorders, 2nd Edition (ICSD-2), the Diagnostic and Statistical Manual of Mental Disorders, fourth edition-text revision (DSM IV-TR), and the International Classification of Disease (ICD-10). Table 1 lists the eleven diagnostic categories of insomnia of the ICSD-2; among them, adjustment insomnia, psychophysiologic insomnia, and insomnia caused by a mental disorder are the most common types of insomnia encountered in sleep centers. The DSM IV-TR separates primary insomnia from other dyssomnias. The ICD-10 categorizes insomnia based on the underlying pathology: nonorganic insomnia and nonorganic disorder of the sleep-wake schedule. Duration of insomnia (at least 1 month of symptoms) is noted in ICSD-2 and DSM IV-TR; however, frequency of symptoms is noted only in ICD-10.

Table 1. ICSD-2 Categories of insomnia.

<table>
<thead>
<tr>
<th>Category</th>
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<tr>
<td>Adjustment insomnia (acute insomnia)</td>
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<tr>
<td>Psychophysiologic insomnia</td>
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<tr>
<td>Paradoxical insomnia</td>
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<tr>
<td>Idiopathic insomnia</td>
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<tr>
<td>Insomnia caused by mental disorder</td>
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<tr>
<td>Inadequate sleep hygiene</td>
</tr>
<tr>
<td>Behavioral insomnia of childhood</td>
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<tr>
<td>Insomnia caused by drug or substance</td>
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<tr>
<td>Insomnia caused by medical condition</td>
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<tr>
<td>Insomnia not caused by substance or known physiologic conditions, unspecified (nonorganic insomnia)</td>
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<td>Physiologic (organic) insomnia, unspecified</td>
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Table 2. ICSD-2 General criteria for insomnia.

1. A complaint of difficulty initiating sleep, difficulty maintaining sleep, or waking up too early or sleep that is chronically nonrestorative or poor in quality.
   In children, the sleep difficulty is often reported by the caretaker and may consist of observed bedtime resistance or inability to sleep independently.

2. The above sleep difficulty occurs despite adequate opportunity and circumstances for sleep.

3. At least one of the following forms of daytime impairment related to the nighttime sleep difficulty is reported by the patient:
   - Fatigue or malaise
   - Attention, concentration or memory impairment
   - Social or vocational dysfunction or poor school performance
   - Mood disturbance or irritability
   - Daytime sleepiness
   - Motivation, energy, or initiative reduction
   - Proneness for errors or accidents at work or while driving
   - Tension, headaches, or gastrointestinal symptoms in response to sleep loss
   - Concerns or worries about sleep

The three sleep disorder classification systems vary in their approach in defining insomnia, and the lack of standardized criteria pose a significant problem to the assessment, treatment, and research in insomnia. Recent efforts have been made to address this limitation by deriving a consensus definition for insomnia research. This definition also appears in ICSD-2 (Table 2). It delineates both general diagnostic criteria that apply to all insomnia disorders, as well as more specific criteria for each diagnosis.

The core of the insomnia diagnosis is a subjective complaint of inadequate sleep quality rather than polysomnographic evidence of poor sleep. Insomnia is defined as the subjective report of difficulty initiating sleep, difficulty maintaining sleep, waking up too early, or sleep that is chronically nonrestorative, or poor in quality of sleep that persist despite adequate opportunity for sleep, and that results in daytime impairment. Daytime outcome criteria distinguish clinically ‘insomnia disorder’ from ‘insomnia symptoms’.

Prevalence of insomnia

As a result of the heterogeneity among insomnia definitions, prevalence of insomnia vary widely, from 10% to 40%, depending upon the definition used. Studies of the prevalence estimated approximately 30% of the general population having one or more symptoms of insomnia, and 5% to 10% having a specific insomnia disorder.

Prevalence rates for chronic insomnia are generally higher in women and older adults. In women, insomnia is more prevalent with both the onset of menses and menopause. Other risk factors for insomnia also have been identified: depressed mood, snoring, low levels of physical activity, comorbid medical conditions, nocturia, regular hypnotic use, previous insomnia complaints, and high level of perceived stress. Age and gender are the most clearly identified consistent risk factors.

Comorbidities

The most common comorbidities associated with insomnia are psychiatric disorders. It is estimated that 40% of individuals with insomnia have a comorbid psychiatric problem. Among these psychiatric disorders, depression and anxiety are the most common in insomniacs. The nature of this relationship between insomnia and psychiatric disorders has yet to be established. Insomnia could be a preceding symptom of a depressive or anxiety disorder, or might exist as a separate, comorbid disorder.

Associations between insomnia and a variety of medical conditions have also been established. Insomniacs were found to report more heart disease, hypertension, chronic pain, and increased gastrointestinal, neurologic, urinary, respiratory difficulties. The converse was also shown to be true, in which subjects with hypertension, chronic pain, respiratory, gastrointestinal, and urinary problems complained of insomnia more often than non-insomniacs.

A variety of primary sleep disorders, such as restless legs syndrome, periodic limb movement disorders, and sleep-related breathing disorders (snoring, dyspnea, sleep apnea) are frequently comorbid with insomnia. This is especially true among the elderly.
Pathophysiology of insomnia

Insomnia is believed to be a disorder of hyperarousal experienced throughout the day and night. This arousal is currently explained by both cognitive and physiological models of insomnia.

The cognitive model suggests that worry and rumination about life stresses disrupt sleep, creating acute episodes of insomnia. Once the patient begins to experience sleep difficulties, worries from life events shift to worries about sleep itself, about the daytime consequences of not getting enough sleep.

Physiological arousal has been demonstrated through measurements of the whole body metabolic rate, heart rate variability, neuroendocrine measures, and functional neuroimaging: (1) insomnia patients have been found to exhibit higher metabolic rates than the healthy controls; (2) average heart rates were increased and variability was decreased in all stages of sleep in insomnia patients compared to healthy normal sleepers; (3) urinary and plasma levels of cortisol and adrenocorticotropic hormone (ACTH) were higher in poor sleepers; and (4) insomniacs showed greater cerebral glucose metabolism during sleep compared to healthy subjects.

Model of the evolution of insomnia

The evaluation of chronic insomnia is enhanced by a working model, developed by Spielman and colleagues, that takes into account the evolution of the insomnia disorder (Fig. 1). The model suggests that there are factors that initially predispose an individual to develop insomnia, factors that precipitate the insomnia episode, and factors that maintain the insomnia once it has developed.

Predisposing factors are inherent characteristics of the individual that increase susceptibility to insomnia. Predisposing factors alone do not cause insomnia but may decrease the threshold for its onset.

Precipitating factors are events that contribute to the initiation of insomnia. Stressful life events are the most common precipitants of insomnia.

Once initiated, perpetuating factors, such as (1) conditioned physical and mental arousal and (2) learned negative sleep behaviors and cognitive distortions, can maintain insomnia over time, even after the initial precipitating event has disappeared. These factors include behaviors to compensate for poor sleep (eg, napping, irregular sleep schedules), efforts to deal with the consequences of insomnia (eg, excessive caffeine intake), cognitive arousal before sleep, and negative sleep-related beliefs and attitudes (eg, worry about inability to sleep and daytime consequences caused by sleep loss, unrealistic sleep expectations).

Evaluation of insomnia

Practice parameters exist for the evaluation of chronic insomnia but no data demonstrate which assessment tools should be included in a systematic evaluation with respect to the validity of the diagnosis of insomnia. Given the multidimensional characteristics of insomnia, a thorough evaluation, including detailed history and physical examination, with sleep logs/diaries and structured questionnaires, is recommended to gather preliminary information about the nature of insomnia and its potential contributing factors. Information could be further supplemented by polysomnography, actigraphy, and other evaluation tools.
Sleep History

The sleep history should include the following components:

Insomnia complaints: Although chief complaints may vary widely, the nature of the complaint falls within a number of dimensions: inability to fall asleep, inability to stay asleep, early morning awakening, poor sleep quality, or a combination of these problems.

It is also important to define the duration (months, years, lifetime), frequency (nights per week or number of times per night), severity of the complaint, its effects on next-day functioning. Identification of precipitants, perpetuating factors, current treatments, and treatment responses is also needed.

Current sleep pattern: The patient’s typical sleep pattern should be reviewed during the interview: bedtime, rise time, sleep latency, number and duration of awakenings during the night, wake time, time spent in bed, and total sleep time. Frequency and duration of daytime naps are also important.

Comorbid conditions: Evaluation of psychiatric conditions, medical disorders, other sleep disorders, and substance used are important.

Daytime Function: Napping, daytime activities and consequences (fatigue, sleepiness, mood disturbances, cognitive difficulties), exacerbation of comorbid disorders should be evaluated in depth.

Reports from bed partners: Bed partner reports may also help to identify nocturnal signs, symptoms and behaviors associated with breathing-related sleep disorders (snoring, gasping), sleep related movement disorders (restlessness), parasomnias (behaviors or vocalization).

Numerous sleep questionnaires have been designed to provide assessment of sleep. The clinician may begin to evaluate the insomnia complaints with questionnaires and a sleep log before the patient’s first clinical visit. The following domains can be assessed with sleep questionnaires: sleep quality (with Pittsburgh sleep quality index), insomnia severity (with insomnia severity index), daytime sleepiness (with Stanford Sleepiness Scale, Epworth Sleepiness Scale), and mood disturbances (with Beck depression inventory, Beck anxiety inventory). Most of these scales can discriminate between good and poor sleepers, and demonstrate changes with treatment. Although they are clinically useful, there has been no systematic study into which combination of instruments best differentiates poor sleepers from normal sleepers.

Sleep logs and diaries

Subjective sleep diaries are the most commonly used tools in the assessment of insomnia in clinical settings. They are simple and economical for evaluating sleep/wake behavior over an extended period of time. Recorded over one to two weeks, they can help track a patient’s sleep/wake patterns and the patient’s perception of sleep disturbance. Sleep logs include entries for bedtime, wake time, sleep latency, number and duration of awakenings, sleep duration, naps, and various indices of sleep quality and daytime functioning.

Several studies comparing sleep diaries and polysomnography or actigraphy demonstrated a modest to low correlations between subjective reports and objective sleep measures. They suggest that patients who have insomnia underestimate total sleep time and overestimate sleep latency.

Physical and mental status examination

The physical examination may reveal risk factors for sleep apnea (obesity, increased neck circumference), signs of cardiac, respiratory, gastrointestinal, rheumatologic, and neurologic disorders. The mental status examination should focus on the patient’s mood, affect, level of alertness, memory, concentration.

Polysomnography

Polysomnography is not routinely used in the evaluation of transient or chronic insomnia or insomnia associated with psychiatric disorders. According to 2003 practice parameters
established by the American Academy of Sleep Medicine, polysomnography may be indicated in specific cases, such as when there is a suspicion for sleep-related breathing disorder, narcolepsy or periodic limb movement disorder, if initial diagnosis is uncertain, treatment fails, or arousals occur with violent behavior.  

**Actigraphy**

Actigraphs are small, watch-like devices worn on the wrist to record patient's movement. It helps to characterize rest-activity patterns and obtain objective measures when used in conjunction with a sleep diary and formal interview. When the patient is quiet and no movement is recorded, the patient is presumed to be sleeping.

The use of actigraphy has been reviewed in 2003 by the Standard and Practice Committee of the AASM, and the summary conclusions stated that: 1) actigraphy is not indicated in the routine diagnosis of any sleep disorder including insomnia; 2) actigraphy may be useful as an adjunct to other assessment procedures in the evaluation of insomnia; 3) actigraphy may be effective in assessment of sleep-wake patterns when such information is not reliably available by other means such as sleep logs.  

**Conclusion**

Insomnia is frequently encountered in the outpatient setting. Current evidence demonstrates that insomnia is often a chronic condition. Rather than reflecting an inevitable chronic course, this may reflect the fact that insomnia should be evaluated and adequately treated in its more acute stage. Insomnia is a complex and heterogeneous entity that requires a thorough assessment to arrive at a diagnosis and effective management.

**REFERENCES**