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Journal of Sleep Disorders & Therapy

Perspective

The Role of Sleep Environment in Conditioned Arousal and the Maintenance of Insomnia

Emily Nadine*

Department of Sleep Medicine, Stanford University School of Medicine, Stanford, USA

DESCRIPTION

Psychophysiologic insomnia is one of the most commonly encountered forms of chronic insomnia and poses significant challenges for both clinicians and patients. Often misunderstood or misdiagnosed, this condition sits at the intersection of psychological and physiological domains, characterized by learned sleep-preventing behaviors, heightened arousal, and excessive worry about sleep. Unlike transient or situational insomnia, which tends to resolve once the underlying stressor abates, psychophysiologic insomnia becomes a persistent cycle, self-sustained by maladaptive habits and cognitive distortions surrounding sleep.

Psychophysiologic insomnia often begins with a period of acute insomnia triggered by a stressful life event such as a bereavement, job loss, illness, or relationship conflict. During this time, the individual may experience significant difficulties falling or staying asleep. While most people naturally return to their baseline sleep patterns once the stressor resolves, those who develop psychophysiologic insomnia instead begin to form an association between their sleep environment and wakefulness or frustration. This conditioned arousal becomes a central feature of the disorder.

Cognitive arousal plays a major role in perpetuating this condition. Individuals with psychophysiologic insomnia often develop an excessive preoccupation with sleep, ruminating over their inability to fall asleep, calculating hours of lost sleep, or anticipating the consequences of poor sleep on the following day's functioning. This performance anxiety only increases physiological arousal heart rate may increase, cortisol levels may rise, and muscle tension may be heightened all of which are incompatible with sleep. The harder the person tries to sleep, the more elusive sleep becomes. This paradox is central to psychophysiologic insomnia: sleep, a process that is supposed to occur passively and involuntarily, becomes a goal that the individual actively and anxiously chases.

Moreover, maladaptive sleep behaviors become entrenched in daily life. To compensate for lost sleep, individuals may begin spending excessive time in bed, napping during the day, or altering their sleep-wake schedule in ways that disrupt circadian rhythms. These behaviors, although intended to alleviate fatigue, often worsen the sleep problem by further weakening the homeostatic and circadian drives for sleep. Sleep hygiene deteriorates, and the bedroom becomes a place of wakefulness and worry rather than rest and recovery.

The diagnosis of psychophysiologic insomnia relies heavily on clinical evaluation and detailed history-taking. Polysomnography, while useful in ruling out other sleep disorders such as sleep apnea or periodic limb movement disorder, is not required to diagnose this condition. Instead, clinicians must pay close attention to the chronicity of the symptoms, the presence of learned sleep-preventing associations, and the exclusion of other potential causes, including medication effects, psychiatric comorbidities, or underlying medical conditions.

Cognitive Behavioral Therapy for Insomnia (CBT-I) is widely regarded as the first-line treatment for psychophysiologic insomnia. Unlike pharmacologic therapies, which may provide short-term relief but fail to address the underlying causes, CBT-I targets the perpetuating factors maladaptive thoughts and behaviors that maintain insomnia. A typical CBT-I program includes sleep restriction therapy, stimulus control therapy, cognitive restructuring, relaxation training, and sleep hygiene education.

Sleep restriction involves limiting the time spent in bed to the average amount of time the patient reports sleeping, thus increasing sleep efficiency and strengthening the homeostatic drive. Over time, as sleep consolidates, the time in bed is gradually increased. Stimulus control aims to break the conditioned association between the bed and wakefulness by encouraging patients to get out of bed if they are unable to sleep within 15–20 minutes, using the bed only for sleep and intimacy, and maintaining a consistent wake time regardless of sleep duration.

Pharmacologic treatments, while not recommended as first-line therapy for chronic insomnia, may be considered in certain cases, particularly when immediate symptom relief is needed or when CBT-I is not accessible. However, caution must be

Correspondence to: Emily Nadine, Department of Sleep Medicine, Stanford University School of Medicine, Stanford, USA, E-mail: nadine@gmail.com

Received: 03-Feb-2025, Manuscript No. JSDT-25-37797; **Editor assigned:** 05-Feb-2025, PreQC No. JSDT-25-37797 (PQ); **Reviewed:** 18-Feb-2025, QC No. JSDT-25-37797; **Revised:** 25-Feb-2025, Manuscript No. JSDT-25-37797 (R); **Published:** 04-Mar-2025, DOI: 10.35248/2167-0277.25.14.625.

Citation: Nadine E (2025). The Role of Sleep Environment in Conditioned Arousal and the Maintenance of Insomnia. J Sleep Disord Ther. 14:625.

exercised, as long-term use of hypnotics can lead to dependence, tolerance, and rebound insomnia. Non-benzodiazepine hypnotics, melatonin receptor agonists, and low-dose antidepressants may be used selectively under medical supervision. These medications should ideally be used in conjunction with CBT-I to maximize outcomes and reduce long-term reliance.