

Sleep and Pain

Edited by Gilles Lavigne, Barry J. Sessle, Manon Choinière, and Peter J. Soja
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For the first time, a comprehensive book has been composed to cover the topics of both pain AND sleep and the interaction between them. It must have been a major challenge for the editors, since the aim was to cover the available knowledge from both the basic and clinical perspectives, which led to the development of a 2-part book with 21 chapters and 473 pages.

The first part, "The Science of Sleep and Pain," starts with an informative chapter on why and how we sleep, including the (neural) control of sleep and the role of sleep in maintaining several bodily functions. The current definition, classification, and consequences of pain are discussed together with the underlying peripheral and central mechanisms. These 2 chapters provide a good basis for anyone who is not familiar with 1 of the 2 conditions and consequently provide a basis for the subsequent chapters describing what is known about the influence of pain on sleep and vice versa. The next section focuses mostly on animal research, including the modulation of prethalamic sensory inflow during sleep in comparison with wakefulness, thus demonstrating that sleep and pain clearly influence each other. The thalamus is considered the site where nociception and neurotransmitters modulating sleep and wakefulness are integrated. Probably because it also deals with basic animal research, a chapter is then introduced on the neurochemical mechanisms mediating opioid-induced REM sleep disruption. The content is interesting and clearly also written for outsiders to the topic, but still it occurs as a "stand-alone" chapter, interfering with the impetus built up in the previous chapters. It might have been better to have kept it for the end of the first part of the book.

The following chapters report in a scholarly way on how experimental, acute, and chronic pain impact the sleep processes in both humans and animals. The influence of circadian rhythms on pain report and how the time of the day can interfere with measurement have serious implications for research and clinical practice. Impaired sleep quality and sleep deprivation interfere with diurnal pain perception: decreased sleep quality will enhance pain perception in almost every form, which eventually can lead to pain. Pain, in turn, disturbs sleep by inducing arousal and triggering all other neurobiological sequelae of stress. The chapter on pain imaging in relation to sleep confirms the notion that the 2 states involve opposing neural networks. Pain may result in increased arousal, while sleep is associated with deactivation of the pain neuromatrix. Only recent data illustrate that little or no cortical activation occurs in response to noxious stimulation during sleep. The last 2 chapters of this first part of the book nicely bridge the

gap to the clinical situation. First, electroencephalographic and polysomnographic recordings are explained and used to illustrate how sleep architecture and microstructure and phasic sleep-related events interact with clinical pain. The effects on electroencephalography and polysomnography induced by noxious stimulation in healthy controls demonstrate this interaction. Even more detail and information on macro- and microstructure of sleep is given in the final chapter, "Sleep Fragmentation and Arousal in the Pain Patient." A very interesting description of sleep alterations in various painful syndromes (both on the micro- and macro levels) is provided as well as some examples of parasomnias associated with pain during sleep.

In the second part, "Clinical Aspects of Sleep Disorders and Pain," the advantages and limitations of tools and methods for the investigation of sleep and pain interactions are first discussed. After a chapter on epidemiology of pain and sleep disturbances, the inter-relationship is illustrated in 2 important conditions: fibromyalgia and several forms of headache. Subjective and objective measures as well as therapeutic aspects are also covered. A subsequent chapter explains how breathing disorders such as obstructive sleep apnea may interfere with headache and bruxism, and restless leg syndrome and periodic limb movements during sleep are also discussed. In a separate chapter, attention is given to pain and sleep in the pediatric and geriatric populations. After a chapter on pain in dreams and nightmares, crucial clinical information is provided in chapters on the pharmacology of sleep and the alteration of sleep quality by medications and on the pharmacologic management of sleep and pain interactions. These are very informative chapters bearing much on daily clinical practice. To complement the pure pharmacologic approach, 2 chapters deal with psychological factors maintaining pain and sleep problems and methods for successful management of these factors by using cognitive behavioral treatment.

The editors should be complimented for succeeding in covering the state-of-the-art regarding the apparent but difficult "twin-interaction" of sleep and pain. Of course, both for basic researchers and clinicians, reading of "the other part" will need some effort and courage, but the chapters are written in a clear, concise, and digestible way. This book will be a landmark for everyone dealing with pain research and chronic pain patients. This statement is illustrated by the fact that the first 1,500 copies printed quickly sold out, prompting a second printing.

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