Sleep, Health, and Society

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KEYWORDS

• Sleep • Sleep disorders • Epidemiology • Social factors • Health • Disparities • Society

KEY POINTS

- Insufficient sleep and sleep disorders are highly prevalent in the population and are associated with significant morbidity and mortality.
- Adverse outcomes of insufficient sleep and/or sleep disorders are weight gain and obesity, cardiovascular disease, diabetes, accidents and injuries, stress, pain, neurocognitive dysfunction, psychiatric symptoms, and mortality.
- Exposure to sleep difficulties varies by age, sex, race/ethnicity, and socioeconomic status; significant sleep health disparities exist in the population.
- Societal influences, such as globalization, technology, and public policy, affect sleep at a population level.

CONCEPTUALIZING SLEEP IN A SOCIAL CONTEXT

Sleep represents an emergent set of many physiologic processes under primarily neurobiological regulation that impact many physiologic systems. As such, many advances have been made over the past several decades that have shed light on these neurobiologic mechanisms of sleep-wake,[1–4] with especially exciting work in the area of functional genetics/genomics[5,6] and molecular mechanisms of sleep-related regulation.[7–9] Still, the phenomenon of sleep exists outside the nucleus and the cell membrane—sleep is experienced phenomenologically. Sleep is a biological requirement for human life, alongside food, water, and air. Like consumption of food and unlike breathing air, achieving this biological need requires the individual to engage in volitional behaviors. Although many of these behaviors are genetically and intrapersonally driven (eg, it is not a coincidence that most people prefer to sleep at night, and that most humans sleep in a stereotypical posturally recumbent manner), there is still much variability in sleep behaviors and practices. Because of this, sleep is also socially driven, dictated by the environment, and subject to interpersonal and societal factors.

Sleep in most humans occupies between 20% and 40% of the day. Even prehistoric evidence suggests the importance of sleep in human life[10]; this is consistent with archaeological and historical accounts of sleep having a prominent and important role in even early human society. Sleep was a universal phenomenon that was inescapable and thus was incorporated in social structures. In this way, sleep became not just a set of physiologic processes, but one represented in sociocultural structures. Thus, the timing, environment, and constraints surrounding sleep across human societies began to differ between rich and poor, powerful and powerless, rural and urban, and so forth. As sociologist, Simon Williams, writes, "Where we sleep, when we sleep, and with whom we sleep are all important markers or indicators of social status, privilege, and prevailing power relations."[11]

Conceptualizing Downstream Consequences

The downstream consequences of insufficient sleep duration and/or inadequate sleep quality

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(including sleep disorders and circadian misalignment of sleep) are varied and impact many physiologic systems. Conceptualizing these is therefore difficult. One way to do so is to acknowledge domains of outcomes and recognize the overlaps and relationships among those domains. The recent position statement from the American Academy of Sleep Medicine and Sleep Research Society[12–15] broadly categorizes effects of insufficient sleep as pertaining to the following categories: general health, cardiovascular health, metabolic health, mental health, immunologic health, human performance, cancer, pain, and mortality.

Conceptualizing Upstream Influences: Social Ecological Models

Upstream social and environmental influences on sleep are also complex and overlapping and implicate many potential pathways. With this in mind, a social-ecological framework may be best suited to describe this relationship. The social-ecological model was originally developed to describe the complex ways that an individual's behavior related to their health is a product of influences at the individual level, but that the individual operates in the context of social structures that they are a member of, but these structures exist outside of the individual.[16] For example, an individual has genetic, psychological, and other reasons for consuming a healthy diet, but social structures that they are a part of but exist outside of that individual (like their neighborhood, which may have healthy food; their job, which may or may not have a cafeteria; their family, which may have other food restrictions, and so forth) play a role in that individual's behavior.

This model may also be appropriate for understanding sleep. At the individual level, factors that influence a person's sleep include that person's genetics, knowledge, beliefs, and attitudes about sleep, their overall health, and so forth. The individual level is embedded, though, within a social level, which includes the home (family, bedroom, and so forth), neighborhood, work/school, socioeconomics, religion, culture, race/ethnicity, and other factors. All of these factors influence sleep through the individual. Still, this social level is embedded within a societal level, which includes social forces that exist outside of things like work, family, and neighborhood, including globalization, geography, technology, public policy. These factors, at this high of a level, filter through the social structures that eventually come to bear on the individual. For example, as society embraced the Internet, it caused changes in jobs and families, which led to individual changes that play a role in sleep (such as social networking in bed or browsing the Internet late at night). Fig. 1 displays a social-ecological model of sleep, illustrating of sleep duration and quality are influenced by factors at the individual level, which is embedded within a social level, which itself is embedded within a societal level. Fig. 2 brings these models together, with sleep as the fulcrum (shown in Fig. 1) at the interface of upstream social-environmental influences (shown in more detail in Fig. 3) and downstream health and functional outcomes (shown in more detail in Fig. 2). This model brings all of these concepts

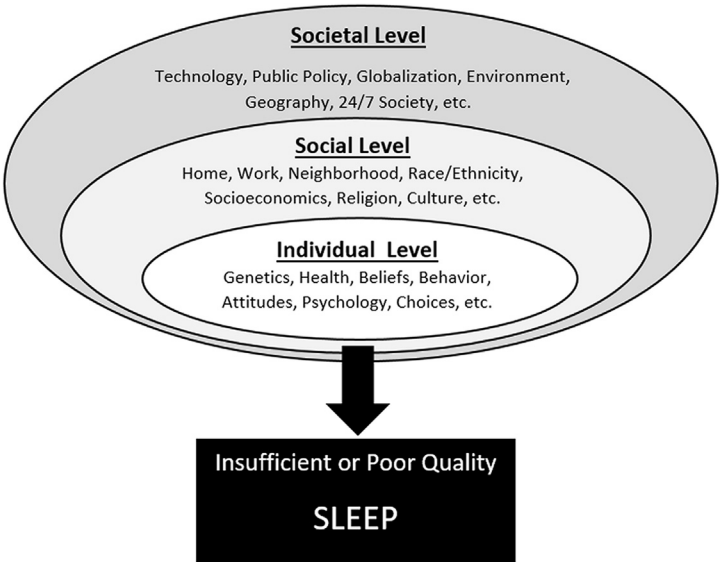

Fig. 1. Social ecological model of sleep.