Occupational Health and Sleep Issues in Underserved Populations

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KEYWORDS

- Sleep disorders • Sleep health disparities • Burden of occupational injury and illness
- Occupational hazards, injuries and illnesses in underserved worker populations
- Workers' compensation

KEY POINTS

- In the United States, substantial racial, ethnic, and socioeconomic disparities exist in sleep health.
- Poor sleep is associated with a wide range of health effects, and therefore, it is important that primary care physicians working in underserved communities are aware of this disparity and target this higher-risk group for focused evaluation and intervention.
- The workplace, home, and social environment, as well as diet and genetics among other factors, work together to affect an individual's health status.
- Workplace hazards impact one's overall health status, which in turn impact one's ability to obtain, perform, and tolerate work, as well as gain satisfaction from work.
- Primary care physicians should be familiar not only with the type of work an individual does but also with workplace hazards and their effects on individual's health and how to address them.

SLEEP DISORDERS: AN IMPORTANT PUBLIC HEALTH PROBLEM

Historical Background

Sleep and dreams have been a mystery and topics of writings by philosophers, writers, religious leaders, and scientists since the inception of the recorded history.[1] The Greeks and Romans personified sleep through their deities: Hypnos and Somus, respectively.[2] Hippocrates was likely the first writer in the ancient world to mention the importance of sleep in general health.[3] In 350 BC, the Greek philosopher, Aristotle,

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wrote about sleep and waking, whether they are a function of the body or the soul, and the significance of dreams.[4] Interestingly, in 360 BC, historical documents described obstructive sleep apnea (OSA), for the first time: Dionysius, the tyrant of Heraclea, died “chocking on his own fat.”[5] Similar writings about sleep and health are found in Egyptian, Indian, and Chinese ancient civilizations and early modern era.[6,7]

In 1836, Dickens wrote about OSA in his work the *Posthumous Papers of the Pickwick Club*, wherein he described “Joe the Fat Boy” as obese and sleepy and a snorer.[8] Thereafter, in 1956, Burwell and colleagues[9] described OSA as Pickwickian syndrome. Electroencephalography changes during sleep and rapid eye movement (REM) were described for the first time by Loomis and colleagues[10] and Aserinsky and Kleitman,[11] respectively. In 1957, Dement and Kleitman[12] identified the stages of sleep. In 1971, Konopa and Benzer[13] discovered the first circadian clock gene in Drosophila. Later in 1972, the suprachiasmatic nucleus (SCN) was discovered as the site of the body’s internal circadian pacemaker.[14] Clinicians, scientists, and researchers continue to work toward a greater understanding of the cause and pathophysiology of sleep disorders. Sleep Medicine is developing into an interdisciplinary field in which integration and coordination across the traditional medical specialties, other health care providers such as dentists, and between basic and clinical science are vital.[15]

Scope of the Problem

About 50 to 70 million Americans chronically suffer from a sleep disorder. Sleep-disordered breathing (SDB), including OSA, affects more than 15% of the population and causes excessive daytime sleepiness, injuries, hypertension, cognitive impairment, metabolic syndrome, and an increased risk of heart attack, stroke, and mortality. In children, SDB is associated with cardiovascular and metabolic risk factors, attention-related behavioral problems, and poor academic performance.[16]

Nationwide, 70% of adults report insufficient sleep at least once each month and 11% report such difficulties daily.[17] Nearly 70% of high school adolescents sleep less than the recommended 8 to 9 hours of sleep on school nights.[18] Short and long sleep duration are associated with up to a 2-fold increased risk of obesity, diabetes, hypertension, cardiovascular disease, stroke, depression, substance abuse, and all-cause mortality.[19]

Chronic insomnia is the most common sleep disorder and affects more than 20% of adults. It is a risk factor for depression, substance abuse, and impaired function.[20]

Chronic circadian disorders, including shift work syndrome, affect 20% of the US workforce and is associated with significant safety hazard, increased risk of cardiovascular disease, cerebrovascular disease, breast cancer, colorectal cancer, prostate cancer, obesity, diabetes, gastrointestinal disease, motor vehicle crashes, and difficulty adhering to work schedules.[21,22]

Restless legs syndrome affects 5% of adults and causes sleep onset and maintenance insomnia and subsequent daytime sleepiness.

Another less common disorder is narcolepsy with and without cataplexy affecting 0.05% and 3.9% of population, respectively.

In addition to its deleterious health consequences, the cumulative long-term effects of sleep disorders have a significant economic impact. Billions of dollars a year are spent on direct medical costs associated with doctor visits, hospital services, prescriptions, and over-the-counter medications.[17]

Sleep Health in Underserved Population

In the United States, substantial racial, ethnic, and socioeconomic disparities exist in sleep health. Many studies found that those with longer work hours and lower

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