Invited Commentary

Invited Commentary: How Much Do We Really Sleep?

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Sleep, ignorant of pain, sleep, ignorant of grief, may you come to us blowing softly, kindly, kindly come king.

(Sophocles (497–406 BC), playwright, Philoctetes, I. 827)

The beneficial effects of sleep have been recognized for over two thousand years, as documented by ancient Greek playwrights. However, until recently, this information has been overlooked by modern medicine and society. Spurred by the initial description of sleep apnea (1), interest and knowledge related to sleep medicine and sleep science have grown exponentially (2). Sleep disorders are highly prevalent in the general populace. It is estimated that 30–45 percent of Americans have a sleep complaint at any one time and that 10–15 percent suffer from chronic insomnia (2). The prevalence of obstructive sleep apnea in middle-aged women and men is 2 percent and 4 percent, respectively (3). Strong epidemiologic evidence now implicates obstructive sleep apnea as an independent risk factor for the development of hypertension and cardiovascular disease (4, 5). Furthermore, chronic sleep deprivation has been linked to glucose intolerance, obesity, and increased mortality (6–8).

A number of well-publicized tragedies have highlighted the impact of inadequate sleep and have shaped public policy. The Libby Zion case in New York City led to the adoption of limitations on the work hours of medical residents initially in the state of New York and subsequently nationwide (9). The accidental death of a young woman caused by a person who knowingly drove a motor vehicle while sleep deprived led to the passage of “Maggie’s Law” in New Jersey. This law provides criminal penalties for a sleep-deprived driver who causes a fatal accident after being awake for more than 24 hours (10). These cases are just two examples of the impact of sleep disturbances in our society. According to Dr. Richard Carmona, US Surgeon General, sleep disorders, sleep deprivation, and sleepiness affect 70 million Americans and result in $16 billion in annual health-care expenses and $50 billion in lost productivity (11).

Despite growing public and scientific acknowledgment of the importance of good and adequate sleep on public health, there are substantial gaps in our knowledge concerning the basic mechanisms underlying the genesis of sleep as well as identification of fundamental factors affecting sleep in the general populace. For example, although sleep is a biologic imperative, why we have a physiologic need to sleep remains a mystery (12). With respect to sleep and disease, the associations between sleep and a number of conditions such as diabetes, coronary heart disease, and obesity require further exploration. However, such investigations will require accurate estimates of sleep quantity and quality.

In this issue of the Journal, Lauderdale et al. (13) report that significant race and gender differences in sleep quality and quantity persisted after adjustment for several socioeconomic covariates, including income and education. These data highlight the requirement for future epidemiologic studies investigating associations between sleep and disease states to account for race, gender, and socioeconomic status. However, two other important findings from this study deserve comment. First, self-reported sleep duration was greater than actigraphic-determined sleep duration across all four race and gender groups. This finding suggests that reliance on self-report in epidemiologic studies may result in systematic overestimation of sleep duration, and perhaps other sleep parameters. Moreover, it clouds the interpretation of several previous studies linking self-reported sleep duration to obesity and excess mortality (6–8). Second, although there were significant race and gender differences, sleep duration and sleep efficiency in this cohort were remarkably lower than values reported in other studies (14). Of particular note are the mean sleep duration of 5.1 hours and sleep efficiency of 73.2 percent among African-American males. Although sleep scientists have generally accepted that the average sleep duration of Americans has been declining in parallel with our transformation to a frenetic 24-hour
society, most sleep clinicians would consider these values indicative of sleep deprivation even by current standards. It is unclear whether these findings are related to the use of actigraphy to assess sleep duration or are particular to this cohort located in a large northern metropolitan area. In either case, caution should be exercised before accepting these values as normative for all middle-aged African Americans and Caucasians.

As with most research, the findings by Lauderdale et al. (13) are an incremental improvement in our understanding of sleep in the general populace. Given the increasing evidence linking sleep disturbance to disease, further studies are needed to define normative values for sleep duration and to identify factors that affect them. In the meantime, all of us can only wish

Come Sleep! O Sleep, the certain knot of peace,
The baiting-place of wit, the balm of woe,
The poor man’s wealth, the prisoner’s release,
Th’ indifferent judge between the high and low.
(Sir Philip Sidney (1554–1586), poet, Astrophel and Stella, sonnet 39)

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REFERENCES


