

Perceived Insufficient Rest or Sleep --- Four States, 2006

Chronic sleep loss is an under-recognized public health problem that has a cumulative effect on physical and mental health. Sleep loss and sleep disorders can reduce quality of life and productivity, increase use of health-care services, and result in injuries, illness, or deaths (*1*). Epidemiologic surveys suggest that mean sleep duration among U.S. adults has decreased during the past two decades (CDC, unpublished data, 2007). An estimated 50--70 million persons in the United States have chronic sleep and wakefulness disorders (*1*). Most sleep disorders are marked by difficulty falling or staying asleep, daytime sleepiness, sleep-disordered breathing, or abnormal movements, behaviors, or sensations during sleep (*1*). To examine characteristics of men and women who reported days of perceived insufficient rest or sleep during the preceding 30 days, CDC analyzed 2006 Behavioral Risk Factor Surveillance System (BRFSS) data from four states (Delaware, Hawaii, New York, and Rhode Island). This report summarizes the results of that analysis. Among all respondents, 29.6% reported no days of insufficient rest or sleep during the preceding 30 days and 10.1% reported insufficient rest or sleep every day during the preceding 30 days. Rest and sleep insufficiency can be assessed in general medical-care visits and treated through effective behavioral and pharmacologic methods. Expanded and more detailed surveillance of insufficient rest or sleep (e.g., national estimates) might clarify the nature of this problem and its effect on the health of the U.S. population.

BRFSS is a state-based, random-digit--dialed telephone survey of the noninstitutionalized, U.S. civilian population aged ≥ 18 years, conducted by state health departments in collaboration with CDC (*3*). The median response rate (i.e., the percentage of persons who completed interviews among all BRFSS-eligible persons, including those who were not successfully contacted) among the four states asking the sleep question in 2006 was 46.6% (range: 41.0%--48.6%). The median cooperation rate (i.e., the proportion of all respondents interviewed among those contacted) for the four states was 72.2% (range: 65.0%--73.3%). The median response rate among all states in the 2006 BRFSS was 51.4% (range: 35.1%--66.0%).

In 2006, the question "During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?" was asked in the four states. Data from the four states were combined, and the number of days of perceived insufficient rest or sleep (0 days, 1--6 days, 7--13 days, 14--20 days, 21--29 days, and 30 days) was categorized. Analyses were stratified by race/ethnicity, age group, sex, education level, and employment status. Weighted prevalence estimates and 95% confidence intervals (CIs) were calculated using statistical software to account for the complex survey design.*

Differences with nonoverlapping CIs were considered statistically significant.

In 2006, 29.6% of respondents in the four states reported no days of insufficient rest or sleep during the preceding 30 days (Table). In Hawaii, 38.4% of respondents indicated no days of rest or sleep insufficiency during the preceding 30 days, which was significantly greater than the 27.7% of respondents in Delaware, 29.2% in New York, and 27.7% in Rhode Island. Responses categorized by race/ethnicity and sex were not significantly different. The prevalence of no days of insufficient rest or sleep increased with age; 44.7% of persons aged ≥ 55 years reported no days of insufficient rest or sleep, compared with 21.9% of persons aged 18--34 years. Retired persons (53.5%) were significantly more likely to report no days of insufficient rest or sleep than persons who were employed (24.0%), unemployed (32.9%), unable to work (24.6%), or otherwise employed[†] (28.1%). Finally, as education level increased, a smaller percentage of respondents reported no days of insufficient rest or sleep: 39.7% of adults with less than a high school diploma or General Educational Development certificate (GED) reported no days of insufficient rest or sleep, compared with 33.4% of those with a high school diploma or a GED and 26.3% of those with some college or a college degree.

On average, 10.1% of respondents reported insufficient rest or sleep every day during the preceding 30 days. Persons aged ≥ 55 years (7.3%) were significantly less likely to report 30 days of insufficient rest or sleep, compared with persons aged 18--34 years. Similarly, retired persons (5.5%) were significantly less likely to report 30 days of insufficient rest or sleep. Persons who were unable to work (24.8%) were significantly more likely to report 30 days of insufficient rest or sleep than employed (9.9%), unemployed (12.8%), or otherwise employed persons (10.6%).

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Editorial Note:

This report is one of the first to present state-level information on any sleep-related measure. The findings indicate that 29.6% of adult respondents in the four states reported no days of insufficient rest or sleep during the preceding 30 days, whereas 10.1% reported insufficient rest or sleep every day. Responses to this survey did not vary significantly when categorized by sex or race/ethnicity, possibly because of the limited sample size of minority populations in some of the four states. Previous studies have indicated disparities in the prevalence of sleep-related problems in minority populations (2) and in women (4). Although certain studies have indicated that sleep disturbance is more prevalent among older adults, the results from the study described in this report are

consistent with research indicating that older adults (who are more likely to be retired) are less likely to report impaired sleep (4). Persons unable to work expressed the greatest prevalence of perceived rest or sleep insufficiency, which might be the result of mental distress or the medical problems, disabilities, or other conditions that prevent them from being employed (5).

Geographic variation in reported rest or sleep insufficiency among the four states described in this report might result from local and cultural differences, including variations in opportunities for shift work. The causes of perceived rest or sleep loss might include occupational factors such as extended work schedules, jet lag, or shift work, resulting in irregular sleep schedules (1). Lifestyle choices, including late-night television watching, Internet use, or consumption of caffeine and other stimulants (i.e., alcohol and over-the-counter or prescribed medications), also can result in sleep loss (1). Additionally, common sleep disorders such as insomnia, sleep-disordered breathing, sleep apnea, restless legs syndrome, narcolepsy, and circadian rhythm disorders, can cause sleep loss (1). Sleep disorders and sleep loss are associated with mental distress, depression, anxiety, obesity, hypertension, diabetes, high cholesterol, and adverse health behaviors such as cigarette smoking, physical inactivity, and heavy drinking (1,4,6).

The findings in this report are subject to at least four limitations. First, the definitions of "enough" (sufficient) sleep and "rest" and responses to the survey question were subjective and were not accompanied by reports of hours of sleep per night; therefore, this analysis cannot be compared directly with studies measuring hours of sleep. Because the survey question also did not define or distinguish between "rest" and "sleep," respondents might vary in their interpretation of the questions and the terms. Second, causes of rest or sleep insufficiency were not ascertained by the survey. The BRFSS question does not allow for estimates of the prevalence or incidence of specific sleep disorders in the population. Third, persons with severely impaired mental or physical health might not be able to complete the BRFSS, and institutionalized persons, and persons residing in households without landline telephones are not included in the survey. For those reasons, and because the analysis was limited to data from the four states that asked the rest or sleep insufficiency question, results might not be representative of the entire United States. Finally, the median response rate of 46.6% was low. However, BRFSS data have minimal bias compared with census data (3).

According to a 2005 National Sleep Foundation poll, U.S. adults sleep an average of 6.9 hours per night, and 40% report sleeping less than 7 hours on weekdays (7). The National Sleep Foundation reports that most adults need 7--9 hours of sleep each night to feel fully rested, children aged 5--12 years require 9--11 hours, and adolescents require 8.5--9.5 hours each night.[§] Few formal clinical practice guidelines or practice parameters are yet available for assessing and treating rest or sleep insufficiency and sleeping disorders (2,8). Further research and randomized clinical trials are needed to establish the efficacy of several treatment modalities available (1).

Persons concerned about chronic rest or sleep insufficiency should seek evaluation and treatment by a physician, preferably one familiar with assessment and treatment of these

conditions (1). Clinicians should advise patients who need to improve their sleep quality to keep a regular sleep schedule; sleep in a dark, quiet, well-ventilated space with a comfortable temperature; avoid stimulating activities within 2 hours of bedtime; avoid caffeine, nicotine, and alcohol in the evening; and avoid going to bed on a full or empty stomach.

Acknowledgment

The findings in this report are based, in part, on data provided by BRFSS state coordinators from Delaware, Hawaii, New York, and Rhode Island.

References

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* Information regarding BRFSS data and methods is available at http://www.cdc.gov/brfss/technical_infodata/surveydata/2005.htm.

† Homemaker or student.

§ Additional information, including suggestions to help persons sleep better, is available at <http://newsinhealth.nih.gov/2007/April/index.htm> and <http://www.sleepfoundation.org>.

Table

TABLE. Percentage of adults who reported insufficient rest or sleep during the preceding 30 days,* by number of days and selected sociodemographic characteristics — Behavior Risk Factor Surveillance System, Delaware, Hawaii, New York, and Rhode Island, 2006

Characteristic	0 days		1–6 days		7–13 days		14–20 days		21–29 days		30 days	
	%	(95% CI) [†]	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)	%	(95% CI)
State (unweighted sample size)												
Delaware (n = 3,876)	27.7	(25.9–29.7)	32.9	(30.8–35.1)	12.6	(11.2–14.3)	11.2	(9.8–12.8)	1.5	(1.1–2.1)	14.0	(12.2–16.0)
Hawaii (n = 6,077)	38.4	(36.7–40.1)	29.8	(28.2–31.4)	11.1	(10.0–12.2)	10.3	(9.2–11.4)	1.7	(1.3–2.2)	8.8	(7.9–9.8)
New York (n = 5,293)	29.2	(27.6–30.9)	32.9	(31.2–34.6)	13.0	(11.8–14.3)	12.3	(11.1–13.6)	2.7	(2.2–3.3)	9.9	(8.9–11.1)
Rhode Island (n = 4,343)	27.7	(26.1–29.4)	31.6	(29.7–33.5)	13.3	(11.9–14.9)	12.9	(11.5–14.4)	2.6	(2.0–3.4)	11.9	(10.7–13.3)
Age group (yrs)												
18–34 (n = 3,147)	21.9	(18.9–25.3)	27.8	(24.6–31.2)	16.5	(14.0–19.3)	17.1	(14.5–20.1)	3.4	(2.3–4.9)	13.3	(11.1–15.9)
35–44 (n = 3,505)	20.9	(18.1–23.9)	38.2	(34.9–41.6)	13.5	(11.6–15.7)	14.0	(12.0–16.3)	3.4	(2.5–4.7)	10.0	(8.2–12.0)
45–54 (n = 4,195)	26.2	(23.6–29.1)	36.0	(33.2–38.9)	14.4	(12.5–16.5)	11.3	(9.7–13.2)	2.1	(1.4–3.2)	10.0	(8.3–11.9)
≥55 (n = 8,742)	44.7	(42.7–46.7)	31.7	(29.9–33.7)	8.1	(7.1–9.2)	6.6	(5.7–7.7)	1.5	(1.1–2.1)	7.3	(6.3–8.4)
Race/Ethnicity												
White, non-Hispanic (n = 13,258)	28.2	(26.8–29.7)	33.0	(31.5–34.5)	13.7	(12.6–14.9)	12.7	(11.6–13.9)	2.7	(2.2–3.3)	9.7	(8.7–10.8)
Black, non-Hispanic (n = 1,006)	27.1	(22.7–32.1)	32.5	(27.5–38.0)	13.4	(10.1–17.6)	13.9	(9.9–19.0)	— [§]	—	11.4	(8.3–15.4)
Hispanic (n = 1,258)	33.7	(28.6–39.2)	32.3	(27.2–37.8)	9.8	(7.3–13.0)	9.7	(6.7–13.8)	—	—	11.6	(8.6–15.4)
Other, non-Hispanic [¶] (n = 4,067)	33.8	(29.4–38.5)	31.2	(26.8–36.0)	12.1	(9.0–16.0)	11.1	(8.5–14.5)	2.2	(1.3–3.8)	9.5	(7.2–12.6)
Sex												
Men (n = 7,598)	31.1	(28.8–33.4)	34.6	(32.2–37.0)	11.5	(10.1–13.1)	11.2	(9.8–12.9)	2.7	(2.0–3.7)	8.9	(7.6–10.5)
Women (n = 11,991)	28.3	(26.7–30.0)	30.8	(29.1–32.5)	14.2	(12.9–15.6)	13.1	(11.6–14.6)	2.5	(2.0–3.1)	11.2	(10.0–12.6)
Employment status												
Employed (n = 11,610)	24.0	(22.3–25.7)	37.2	(35.3–39.2)	13.7	(12.5–15.0)	12.4	(11.2–13.8)	2.8	(2.2–3.5)	9.9	(8.8–11.2)
Unemployed (n = 706)	32.9	(26.0–40.6)	27.5	(21.6–34.3)	9.5	(6.1–14.4)	14.7	(9.4–22.3)	—	—	12.8	(8.7–18.5)
Retired (n = 4,781)	53.5	(50.8–56.1)	28.9	(26.6–31.4)	5.9	(4.8–7.3)	4.9	(3.9–6.1)	1.2	(0.8–1.9)	5.5	(4.4–6.9)
Unable to work (n = 968)	24.6	(19.4–30.7)	15.1	(11.3–20.0)	13.6	(9.3–19.4)	17.7	(13.4–23.1)	—	—	24.8	(19.6–30.8)
Other** (n = 1,524)	28.1	(23.8–33.0)	23.1	(19.1–27.8)	18.8	(14.7–23.6)	16.6	(12.8–21.3)	2.8	(1.7–4.5)	10.6	(7.7–14.3)
Education level												
<High school diploma or GED ^{††} (n = 1,461)	39.7	(34.0–45.7)	27.8	(22.4–34.0)	9.8	(7.2–13.2)	10.1	(7.1–14.3)	—	—	10.4	(7.9–13.7)
High school diploma or GED (n = 5,565)	33.4	(30.8–36.1)	29.6	(26.9–32.5)	10.7	(9.0–12.7)	10.9	(9.1–13.0)	3.5	(2.4–5.2)	11.9	(10.0–14.0)
Some college or college graduate (n = 12,563)	26.3	(24.6–28.0)	34.7	(33.0–36.5)	14.4	(13.1–15.8)	13.1	(11.8–14.5)	2.2	(1.8–2.7)	9.3	(8.2–10.6)
Total (N = 19,589)	29.6	(28.2–31.0)	32.6	(31.2–34.1)	12.9	(11.9–14.0)	12.2	(11.2–13.3)	2.6	(2.1–3.1)	10.1	(9.2–11.1)

* Determined by response to the question, "During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?"

[†] Confidence interval.

[§] No estimate calculated (n <50).

[¶] Asian, Hawaiian or other Pacific Islander, American Indian/Alaska Native, or multiracial.

** Homemaker or student.

^{††} General Educational Development certificate.

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Date last reviewed: 2/27/2008