

sleeping less than the recommended 7-8 hours on weekday nights. There is a need to identify characteristics and behaviors that predispose individuals to short sleep.

Methods: Analyses are based on a representative sample of Americans 15 years and older participating in the 2003 to 2011 American Time Use Survey (N=124,517).

Results: Age (45-54 years), female gender, black ethnicity, high family income, being separated or widowed, having 3 or more household children, and working multiple jobs were all associated with a higher prevalence of short sleep duration (≤ 6 hours; all $P < 0.05$). Across all demographic categories, time spent working for pay, traveling, and grooming were the primary behavioral determinants of short sleep duration for both genders and virtually all age ranges. With every hour that work or educational activity started earlier in the morning, sleep time decreased by approximately 20 minutes.

Conclusion: Behavioral interventions to increase sleep for individuals who sleep less than 6 hours per night should focus on populations most at risk and concentrate on making the start times for work and educational activities later and more flexible when possible, and on reducing morning and evening commute times. Raising awareness that obtaining sufficient sleep is as important as exercise and diet may be an additional way to promote public health.

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WORK-FAMILY CONFLICT IS LONGITUDINALLY ASSOCIATED WITH SLEEP INSUFFICIENCY AND SHORT SLEEP DURATION

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Introduction: Job demands and decision latitude are common measures of work-related stress, and are associated with sleep deficiency (insufficient sleep and/or poor sleep quality). A factor proven salient in several studies of job stress is work-family conflict. The trade-off between domestic workload and job-related workload is perceived as a major cause of stress. Few studies have investigated work-family conflict and how it is related to sleep deficiency. The aim of this study was to test the hypothesis that work stress predicts sleep outcomes in a longitudinal design.

Methods: In this two-phase longitudinal study, a workplace health survey was collected from a cohort of patient care workers (n=1572) at two large hospitals. Follow-up was collected 26 months later in a subsample (n=102). Self-reported covariates included socio-demographics, workplace factors, work-family conflict, psychological distress, and outcomes of sleep duration, sleep insufficiency, and insomnia symptoms. Significant variables from the baseline sample were used to build multivariate logistic regression models.

Results: At baseline, after adjusting for covariates, higher levels of work-family conflict were significantly associated with insufficient sleep (OR 2.41, 95% CI, 1.69-3.49, $P < 0.0001$), but not with short sleep duration or insomnia symptoms. The subsample (n=102) was similar to the overall sample: predominantly white (91%), female (97%), staff nurses (67%), with a college degree (65%) and mean age 40.8 (SD 11.9) years. Longitudinally, when controlled for other significant variables and baseline scores on sleep outcomes, having a higher level of work-family conflict was significantly associated with insufficient sleep (OR 6.08, 95% CI, 1.50-24.7, $P = 0.04$) and short sleep duration (OR 11.6, 95% CI, 1.77 - 75.9, $P = 0.035$), but not insomnia symptoms. None of the other variables were associated with outcomes longitudinally.

Conclusion: Work-family conflict is cross-sectionally associated with sleep insufficiency, and significantly predicts sleep insufficiency and short sleep duration, but not insomnia symptoms, about 2 years later. Work stress appears to negatively impact sleep.

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SOCIAL INFLUENCES ON SLEEP TIMING AND DURATION: THE TALE OF TWO COUNTRIES

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Introduction: Sleep schedules are determined by social factors such that when relatively free of work / study, people delay their sleep-wake timing and extend their sleep. Here, we examined whether these social influences on sleep varied between countries by contrasting the timing and duration of sleep in Singapore and the UK on work and free days.

Methods: 1898 and 847 young adults (age: 18-35 years) respectively from Singapore and the UK reported their bedtime, wake time, and sleep duration on work and free days.

Results: We found significant country \times social factor interactions on bedtime, wake time, and sleep duration (all $P < 0.001$), indicating that differences in sleep schedules between the two countries were not uniform on work and free days. Compared to the UK, people in Singapore slept for 0.96h less on work days (mean \pm SEM: 7.41 \pm 0.02h vs. UK: 8.37 \pm 0.04h; $P < 0.001$) because of their significantly later bedtimes (00:27 \pm 00:02 vs. UK: 23:23 \pm 00:02; $P < 0.001$), but on free days, sleep duration was similar in the two countries (8.73 \pm 0.03h vs. 8.63 \pm 0.05h; $P > 0.05$). Participants in Singapore and the UK modified to a different extent their sleep schedules on free days relative to work days. On free days, people in Singapore showed a smaller delay in their bedtime (0.54 \pm 0.02h vs. UK: 0.94 \pm 0.03h; $P < 0.001$) but a greater delay in their wake time (1.85 \pm 0.03h vs. UK: 1.19 \pm 0.04h; $P < 0.001$). As a result, participants in Singapore extended their sleep duration on free days by 1.07h more than those in the UK (1.32 \pm 0.03h vs. 0.25 \pm 0.05h; $P < 0.001$).

Conclusion: Sleep duration and social influences on sleep schedules vary across countries. Investigating which factors determine these differences between countries, e.g. culture and socio-economic factors, may aid in developing country-specific measures to reduce sleep deprivation.

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