

## 0868

## SLEEP DURATION AND EXCESS HEART AGE AMONG U.S. ADULTS

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**Introduction:** Insufficient sleep negatively impacts the cardiovascular system. Studies have also shown associations between sleep duration and several CVD risk factors. No study has examined the association between sleep duration and heart age (predicted age of a person's vascular system based on their cardiovascular risk factor profile), a simplified way to express CVD risk. This study examines the association between sleep duration and excess heart age (EHA) (difference between heart age and chronological age) among U.S. adults.

**Methods:** Pooled 2007–2014 National Health and Nutrition Examination Survey data were used. Self-reported sleep duration was classified into 5 categories ( $\leq 5$ , 6, 7, 8, and  $\geq 9$  hours of sleep per night). We used the sex-specific Framingham heart age algorithm to calculate each individual's heart age and used multivariable linear or logistic regression to examine the association between sleep duration and EHA or risk of EHA  $\geq 10$  years.

**Results:** Among 12,775 adults aged 30–74 years, 13.4% (95% CI 12.5–14.3), 24.2% (23.1–25.2), 31.0% (29.8–32.3), 25.9% (25.0–26.9) and 5.5% (5.0–6.1) reported sleep duration  $\leq 5$ , 6, 7, 8 and  $\geq 9$  hours, respectively; 37.7% (36.3–39.1) reported  $< 7$  hours sleep. We observed a U-shaped relationship between sleep duration and EHA using 7 hours as a reference: adjusted EHA (in years) was 5.2 (4.5–5.8), 4.6 (4.0–5.2), 3.7 (3.3–4.0), 4.5 (4.0–4.9) and 4.0 (3.2–4.8) for sleep duration  $\leq 5$ , 6, 7, 8 and  $\geq 9$  hours, respectively ( $p=0.03$  for quadratic trend). Compared with 7 hours sleep, the prevalence ratios for risk of having EHA  $\geq 10$  years were 1.25 (1.11–1.41) and 1.15 (1.01–1.31) for those who slept  $\leq 5$  and 6 hours, respectively. Adjusted EHA was significantly higher among participants with less than a high school education, low poverty-income-ratio, and obesity. The U-shaped association remained largely consistent by age, sex, race/ethnicity and other covariates.

**Conclusion:** Mean adjusted EHA appeared to be lowest among adults who reported sleeping 7 hours per 24-hour period, and increased as adults reported sleeping fewer or more hours. Sleep duration coupled with EHA may prove helpful for communicating the cardiovascular risks and benefits associated with sleep duration.

**Support (If Any):** N/A.

## 0869

## SHORT SLEEP TIME IS ASSOCIATED WITH INCREASED RISK OF INCIDENT ATRIAL FIBRILLATION

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**Introduction:** Sleep apnea has long been associated with atrial fibrillation (AF). More recently, short self-reported sleep duration has been identified as a possible AF risk factor as well. However, longitudinal studies evaluating objectively measured sleep duration as a predictor of incident AF are lacking. We hypothesized that objectively measured short sleep duration is a risk factor for incident AF.

**Methods:** Electronic medical records of all patients age  $\geq 18$  years undergoing diagnostic full night in-lab polysomnography at 6 sleep

laboratories between March 1999 and December 2015 were examined. Patients with prevalent AF were excluded. Incident AF was identified using ICD-9 codes and EKG reports from outpatient and inpatient visits. Total sleep time (TST) and apnea-hypopnea index (AHI) were extracted from polysomnography reports. Cox proportional hazards modeling was used to estimate the impact of TST on AF incidence adjusting for age, sex, body mass index (BMI), hypertension, coronary artery disease, cerebrovascular disease, peripheral vascular disease, heart failure and AHI.

**Results:** In total, 27,947 individuals were included for analysis (age  $49.2 \pm 14.1$  yrs, 52.4% women). Over a median follow-up of 5.0 yrs [IQR 2.5–8.1], 1,864 cases of incident AF were identified. Incidence rates were 6.2, 7.8, 12.2, 18.0, and 25.3 cases per 1,000 patient-years for those sleeping  $\geq 6$ , 5–6, 4–5, 3–4, and  $< 3$  hours, respectively. After adjusting for age and sex, the hazard ratio (HR) for AF was 1.16 [95% CI 1.13–1.21] per 1-hour reduction in TST. After further adjustment for BMI, AHI, and comorbidities, the HR for AF was 1.11 [95% CI 1.07–1.15] per 1-hour reduction in TST. Compared with patients who slept  $\geq 6$  hours, patients sleeping  $< 3$  hours had a HR for AF of 1.48 [95% CI 1.19–1.84].

**Conclusion:** In a clinical cohort, short TST is an independent risk factor for incident AF. Further research is needed to identify mechanisms by which curtailed sleep may predispose to development of AF and to determine whether interventions to extend sleep duration can lower AF risk.

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## 0870

## SHORT SLEEP DURATION PREDICTS 30-DAY READMISSION AND MORTALITY IN PATIENTS AFTER EVALUATION FOR ACUTE CORONARY SYNDROME

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**Introduction:** The effects of short sleep on cardiovascular outcomes is well-established. Over 20% of patients experiencing acute coronary syndrome (ACS; myocardial infarction or unstable angina) will be re-hospitalized, and more than a third will die, within 5 years of a coronary event. Therefore, it is important to determine the risk conferred by short sleep on cardiac event recurrence and mortality.

**Methods:** The Reactions to Acute Care and Hospitalization (REACH) study is an observational cohort that enrolls patients during emergency department (ED) evaluation for ACS. One month after initial ED evaluation, sleep duration was assessed with the question: "On average, how many hours of sleep do you get per night?". ED/hospital readmissions and all-cause mortality in the month after discharge were identified by contacting patients and reviewing electronic health records. Binomial logistic regression was performed to test the relationship of sleep duration with an event (ED/hospital readmissions or all-cause mortality) at 1 month, while controlling for age, sex, race/ethnicity, education, and GRACE-ACS risk score.

**Results:** A total of 785 patients (mean age  $\pm$  SD:  $61.1 \pm 12.9$  y; 53% female) were included. Short sleep duration ( $< 7$  h/night) at 1 month was reported in 60% of patients. There were 123 events in the 30 days after ACS evaluation. Sleep duration was significantly shorter in those experiencing an event vs. those without ( $5.51 \pm 1.70$  vs.  $6.12 \pm 1.85$  h,  $p < 0.01$ ). Sleep duration (as a continuous variable) was negatively associated with having an event within 30 days after evaluation ( $B = -0.22$ ,  $p < 0.01$ ). As a binary variable, short sleep (vs. non-short) was significantly associated with 30-day ED/hospital readmissions or all-cause mortality ( $B = 0.64$ ,  $p = 0.004$ ; adjusted odds ratio = 1.90, 95% CI: 1.23, 2.92).