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Short sleep duration and incident coronary artery calcification.

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Abstract

CONTEXT: Coronary artery calcification is a subclinical predictor of coronary heart disease. Recent studies have found that sleep duration is correlated with established risk factors for calcification including glucose regulation, blood pressure, sex, age, education, and body mass index.

OBJECTIVE: To determine whether objective and subjective measures of sleep duration and quality are associated with incidence of calcification over 5 years and whether calcification risk factors mediate the association.

DESIGN, SETTING, AND PARTICIPANTS: Observational cohort of home monitoring in a healthy middle-aged population of 495 participants from the Coronary Artery Risk Development in Young Adults (CARDIA) cohort Chicago site (black and white men and women aged 35-47 years at year 15 of the study in 2000-2001 with follow-up data at year 20 in 2005-2006). Potential confounders (age, sex, race, education, apnea risk, smoking status) and mediators (lipids, blood pressure, body mass index, diabetes, inflammatory markers, alcohol consumption, depression, hostility, self-reported medical conditions) were measured at both baseline and follow-up. Sleep metrics (wrist actigraphy measured duration and fragmentation, daytime sleepiness, overall quality, self-reported duration) were examined for association with incident calcification. Participants had no detectable calcification at baseline.

MAIN OUTCOME MEASURE: Coronary artery calcification was measured by computed tomography in 2000-2001 and 2005-2006 and incidence of new calcification over that time was the primary outcome.

RESULTS: Five-year calcification incidence was 12.3% (n = 61). Longer measured sleep duration was significantly associated with reduced calcification incidence (adjusted odds ratio, 0.67 per hour [95% confidence interval, 0.49-0.91 per hour]; P = .01). No potential mediators appreciably altered the magnitude or significance of sleep (adjusted odds ratio estimates ranged from 0.64 to 0.68 per sleep hour; maximum P = .02). Alternative sleep metrics were not significantly associated with calcification.

CONCLUSION: Longer measured sleep is associated with lower calcification incidence independent of examined potential mediators and confounders.

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