NAPCRG 52nd Annual Meeting — Abstracts of Completed Research 2024.

Submission Id: 7070

Title

Association between Hypertension and Sleep Structure Based on Heart Rate Variability

Priority 1 (Research Category)

Hypertension

Presenters

Yu Jia, Xiaoyang Liao, MD

Abstract

Context: In recent years, Wearable devices have been used for sleep monitoring, among which based on heart rate variability has the advantages of minimal impact on sleep, low cost, rich and effective data, minimal signal interference, and relatively accurate monitoring, making it suitable for research on association between sleep structure and hypertension in everyday environments. Objective: This study aims to explore the relationship between sleep structure based on HRV and hypertension. Study design and analysis: This study is a cross-sectional study. All sleep data were collected from the ingle-lead ECG data using HRV sleep models. Setting or Dataset: Chengdu Prospective Urban Rural Epidemiology (PURE) study. Population Studied: People participate in Chengdu PURE and wore a single-lead ECG device for at least one night. Intervention: Poor and redundant total sleep time. Outcome Measures: Blood pressure. Results: There were significant differences in SBP and DBP among different groups of total sleep time (F=13.913, P<0.001, η²=0.020 for SBP; F=4.303, P=0.038, η²=0.008 for DBP). Applying a quadratic curve fit to the scatter plot of total sleep time and SBP (F=7.138, P=0.001) yielded a minimum SBP value at a total sleep time of 7.54 hours. A quadratic curve fit applied to the scatter plot of total sleep time and DBP (F=6.989, P=0.001) yielded a minimum DBP value at a total sleep time of 7.97 hours. When total sleep time was less than 7.54 hours, after adjusting for confounding factors, each additional hour of total sleep time was associated with a decrease of 2.94 mmHg in SBP (P=0.002, 95% CI -4.82 to -1.06). When total sleep time was less than 7.97 hours, after adjusting for confounding factors, each additional hour of total sleep time was associated with a decrease of 1.21 mmHg in DBP (P=0.005, 95% CI -2.05 to -0.36). Conclusions: Based on single-lead ECG and HRV, total sleep time shows a "U-shaped" relationship with blood pressure levels. Both Poor and redundant sleep period time are associated with increased prevalence of hypertension.

Downloaded from the Annals of Family Medicine website at www.AnnFamMed.org.Copyright © 2024 Annals of Family Medicine, Inc. For the private, noncommercial use of one individual user of the Web site. All other rights reserved. Contact copyrights@aafp.org for copyright questions and/or permission requests.