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## ASSOCIATION BETWEEN CHRONOTYPE AND SUBJECTIVE COGNITIVE FUNCTIONING: POPULATION-BASED STUDY

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**Introduction:** Increasing research suggests that subjective cognitive decline (SCD) in the absence of objective cognitive dysfunction may be a forerunner of non-normative cognitive decline and eventual progression to dementia. We investigated the association between chronotype and subjective cognitive functioning in the representative sample of the adult population.

**Methods:** We included subjects who participated in a nationwide cross-sectional survey of sleep and headache in 2018 in the Republic of Korea. A total of 2136 subjects (age 19-92, mean 48.3 ± 16.5 years old, 1062 male) was included in the analysis. To assess subjective cognitive functioning, we adopted the Mail-In Cognitive Function Screening Instrument (MCFSI). The MCFSI is a brief, self-administered potential outcome measure developed by the Alzheimer's Disease Cooperative Study (ADCS) to detect early changes in cognitive and functional abilities in individuals without clinical impairment. MCFSI scores ≥5 were considered abnormal for this study. As an indicator of chronotype, we adopted the "midpoint of sleep on free days corrected for sleep extension on free days (MSFsc)." MSFsc was calculated as follows: MSFsc = midpoint of sleep on free days - 0.5 × (sleep duration on free days - [5 × sleep duration on workdays + 2 × sleep duration on free days]/7). Participants whose MSFsc occurred before 04:00 AM, between 04:00 and 04:59 AM, and after 05:00 AM were classified as early, intermediate, and late chronotype, respectively. The associations between chronotype and subjective cognitive functioning were analyzed with logistic regression models adjusted for potential confounders.

**Results:** Subjective cognitive functioning was abnormal in 381 subjects (17.8%). A late chronotype was significantly associated with abnormal subjective cognitive functioning compared with an early chronotype independent of age, sex, average sleep duration, alcohol, smoking, regular exercise, anxiety, depression, body mass index (BMI), education years, and income status (OR 1.619, 95% CI 1.03 - 2.55, p=0.038). Abnormal subjective cognitive functioning was significantly associated with older age, female sex, lower education, higher BMI, anxiety, and depression.

**Conclusion:** This survey cohort results provide evidence at the population level that late chronotype is associated with abnormal subjective cognitive functioning.

**Support (if any):**

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## COVID-19 LOCKDOWN POLICIES ACROSS 20 COUNTRIES MODULATE SLEEP AND RESTING HEART RATE MEASURES

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**Introduction:** Lockdowns imposed to stem the spread of COVID-19 have disrupted the lifestyles of many worldwide, but studies to date are mostly confined to observations within a limited number of countries, based on subjective reports and survey from a narrow time window. In

the present study, we investigate associations between the severity of lockdown policies and objective sleep and resting-heart rate measures. **Methods:** Data from 113,000 users of a consumer sleep tracker across 20 countries were gathered between Jan–Jul 2020 and compared with an equivalent period in 2019 as a control for naturally occurring seasonal fluctuations. Lockdown stringency was derived using scores from the Oxford Government Response Tracker. Multilevel growth curve models were used to quantify the effect of lockdown stringency on changes to sleep patterns (midsleep time and midsleep variability) and resting heart rate changes, and to predict changes in resting heart rate from changes to sleep patterns.

**Results:** Lockdown severity modulated the size of shifts in sleep midpoint and regularity during this period. Midsleep times were delayed in all countries during strict lockdowns, particularly on weekdays, while midsleep variability reduced. The largest shifts in midsleep time (+0.09 to +0.58 hours), midsleep variability (−0.12 to −0.26 hours) and resting heart rate (−0.35 to −2.08 bpm) occurred in April and May - when most countries imposed their strictest lockdown measures. In addition, multilevel modelling revealed that for each unit increase in stringency index, midsleep time was delayed by 0.96 min, midsleep variability decreased by 0.46 min and resting heart rate decreased by 0.06 bpm. Finally, in models predicting changes in resting heart rate from changes to sleep patterns, midsleep variability was shown to be the strongest predictor of resting heart rate, wherein an hour increase in the standard deviation of midsleep variability predicted a 5.12 increase in bpm, while an hour increase in midsleep time only predicted a 1.25 decrease in bpm.

**Conclusion:** Our findings demonstrate the utility of large-scale data from consumer wearables in providing population-level insights into how lockdown severity directly impacts sleep health during this pandemic period.

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## COVID STRESS AND SLEEP DISTURBANCE AMONG A RACIALLY/ETHNICALLY DIVERSE SAMPLE OF ADOLESCENTS: ANALYSIS FROM THE NESTED STUDY

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**Introduction:** Using data from the Nationwide Education and Sleep in TEens During COVID (NESTED) study (N=6,578), we investigated if race/ethnicity (64.6% were White and 35.4% identified as a racial/ethnic minority, mixed, or "other") and community social vulnerability affected the association between COVID stress and sleep disturbance.

**Methods:** Data on sociodemographic factors (age, race, sex, grade, zip code [for neighborhood social vulnerability index, SVI]), COVID-related stress, depression, anxiety, instructional format (online, in-person, or hybrid), and sleep disturbance (PROMIS Pediatric Sleep Disturbance) were captured through an online survey. Descriptive and inferential analyses (Hierarchical Binary Logistic Regression (HBLR), SPSS v. 25) in 4171 adolescents examined associations between sleep disturbance and COVID-related stress, adjusting for race, sex, SVI, grade level, learning format, household density, and mental health factors.