LOW FREQUENCY EXTENSION FILTER AND ACTIGRAPH-CALCULATED SLEEP INTERVALS IN OLDER ADULTS

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Actigraphy has become a popular, non-invasive means of continuously monitoring physical activity and sleep. One optional setting, the low frequency extension (LFE) filter, reduces the movement threshold to capture low acceleration activity that is common in older adults. This filter significantly alters physical activity outcomes (e.g., step counts), but it is unclear if this has implications for sleep interval calculations that rely upon accurate differentiation between physical activity and sleep. We investigated the effects of the LFE filter on wrist-worn sleep estimates in older adults. Participants were 9 older adults who wore the ActiGraph GT9X on their non-dominant wrist for 7 days in a free-living environment. Raw data was processed with and without the LFE filter enabled, and sleep intervals were calculated by a proprietary ActiGraph algorithm. Paired samples t-tests demonstrated that the LFE filter generated significantly later bedtimes, fewer minutes spent in bed, shorter sleep duration, and fewer awakenings during the night compared to when the filter was disabled (all p < .043). Use of the LFE filter did not lead to differences in arise time, sleep latency, efficiency, or wake after sleep onset (all p > .052). While the LFE filter was designed to improve accuracy of physical activity estimates in more sedentary populations, these findings suggest that the LFE filter also has the potential to impact sleep estimates of older adults. Researchers using ActiGraph-calculated sleep would benefit from careful consideration of this software-dependent impact.

MULTIDIMENSIONAL SLEEP HEALTH AND PHYSICAL FUNCTIONING IN OLDER ADULTS

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Prior studies link specific sleep parameters to physical functioning in older adults. Recent work suggests the utility of examining sleep health from a multidimensional perspective, enabling consideration of an individual’s experience across multiple different sleep parameters (e.g., quality, duration, timing). We examined the associations of multidimensional sleep health with objective, performance-based measures of physical functioning in older adults. We conducted a secondary analysis of 158 adults (Mage=71.8 years; 51.9% female) who participated in the Midlife in the United States (MIDUS) 2 and MIDUS Refresher studies. We used data from daily diaries, wrist actigraphy, and self-report measures to derive a composite multidimensional sleep health score ranging from 0-6, with higher scores indicating better sleep health. Physical function was assessed using gait speed during a 50-foot timed walk, lower extremity strength as measured by a chair stand test, and grip strength assessed with dynamometers. We used hierarchical regression to examine the associations between sleep health and gait speed, lower extremity strength, and grip strength. Age, sex, race, education, depression symptoms, medical comorbidity, and body mass index were covariates in each model. In adjusted analyses, better multidimensional sleep health was significantly associated with faster gait speed (B=.03, p=.01). Multidimensional sleep health was not significantly associated with lower limb strength (B=-.12, p=.89) or grip strength (B=.45, p=.40). Gait speed is a key indicator of functional capacity as well as morbidity and mortality in older adults. Multidimensional sleep health may be a therapeutic target for improving physical functioning and health in older adults.

PERSONALITY AND SLEEP HEALTH: DO LIFESTYLE HABITS PLAY A ROLE?

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The health behavior model proposes that healthy/unhealthy behaviors may play a role in the relationship between personality and health. Previous research shows that personality traits are linked to sleep, however, few studies have considered the moderating role of unhealthy behaviors in the personality—sleep relationship. The current study investigated the associations between specific personality traits and sleep and whether the associations were moderated by unhealthy behaviors. Participants were 61 oncology nurses (Mage=35.39, SDage=11.73). They responded to a background survey that assessed the big five personality traits and engagement in unhealthy behaviors (i.e., exercise, smoking, fast food and alcohol consumption). For two weeks, ecological momentary assessments captured daily variability in sleep (i.e., quality, sufficiency, onset latency, insomnia, duration). A series of multilevel models was used. After controlling for sociodemographics and work shift, higher conscientiousness was associated with greater sleep sufficiency (B=0.31, p<.05) and lower odds of having insomnia symptoms (OR=0.24, p<.05). Moreover, higher agreeableness was associated with longer sleep duration (B=0.51, p<.05) and lower odds of insomnia symptoms (OR=0.29, p<.05). Other personality domains were not associated with sleep, however, extraversion interacted with unhealthy behaviors to be associated with sleep. Those who were more extraverted reported lower odds of insomnia and better sleep sufficiency; these associations were significant only for those with less unhealthy behaviors. Findings suggest that conscientiousness and agreeableness were associated with sleep health. The interaction between extraversion and unhealthy behaviors suggests that reducing unhealthy behaviors may be beneficial to improving sleep in individuals with certain personality traits.

POOR SLEEP HEALTH AND NEXT DAY WORK IMPAIRMENT: THE MEDIATING ROLE OF FATIGUE

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Nightly sleep impacts next-day alertness and cognitive functioning. For healthcare professions, work impairment can be life-threatening for patients. Thus, understanding how sleep affects work quality is imperative to promoting medical safety and overall health of workers. The current study investigated whether nightly sleep health is associated with next-day work impairment in nurses and whether this association...
is mediated by daily fatigue. Sixty nurses reported their sleep characteristics, fatigue, and work impairment using ecological momentary assessment for two weeks. We used a series of multilevel models (a path: sleep→fatigue, b path: fatigue→work impairment, c path: sleep→work impairment, c’ path: sleep and fatigue→work impairment), adjusting for sociodemographics and work shift. At the between-person level, poorer sleep quality was associated with greater work impairment ($\beta_{c}=-23.36, p<.001$). This association was mediated by fatigue such that poorer sleep quality was associated with greater fatigue ($\beta_{a}=-19.54, p<.01$), which was further associated with greater work impairment ($\beta_{b}=0.79, p<.001$). After including fatigue, the association of sleep quality with work impairment was reduced ($\beta'_{c}=-7.07, p=.08$). Similarly, fatigue mediated the relationship between sleep sufficiency and work impairment ($\beta_{a}=-16.49; \beta_{b}=0.79; \beta_{c}=-19.36; p<.001; \beta'_{c}=-6.32, p=.05$). At the within-person level, on days after long sleep duration (>8hrs), nurses reported greater work impairment ($\beta_{c}=10.08, p<.01$), however, this was not mediated by fatigue. Our results suggest that poor sleep health may impair next-day work performance, mostly through increased fatigue. Future interventions for nurses can target daily fatigue to reduce the adverse effects of poor sleep on work impairment.

**RELATIONSHIPS AMONG TYPES OF ACTIVITY ENGAGEMENT AND SLEEP QUALITY AMONG OLDER ADULTS**

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There is increasing awareness that lack of activity engagement is associated with poor sleep quality. However, the majority of studies have focused on the effect of a single type of activity engagement on sleep quality. Little is known about the combined effect of multiple types of activity engagement on sleep quality. The aim of this study is to identify relationships among different types of activity engagement and sleep quality among older adults. This study is a secondary data analysis using the Health and Retirement Study data. The participants included 3,357 persons who were age 65 or older and who responded to survey modules on activity engagement and sleep quality in 2016. Before we conducted primary analysis, factor analyses and calculating coefficient omega were conducted to identify factor structure, construct validity and reliability of the activity engagement questionnaire. Then, regression was conducted to examine the relationships among multiple types of activity engagement and sleep quality after adjusting for covariates based on the senescent sleep model. Exploratory and confirmatory factor analysis showed the 14-item questionnaire was comprised of three factors; social, cognitive, and physical activity and the three-factor model showed adequate validity and reliability. In the regression model social ($\beta=0.25, p=0.033$) and cognitive ($\beta=0.36, p=0.001$) activity engagement were positively related to better sleep quality. Based on these results, future research is needed to identify the mechanisms in which social and cognitive activities influence sleep quality positively and to develop targeted activity interventions for older adults.

**SESSION 2961 (POSTER)**

**CHRONIC DISEASE MANAGEMENT I**

**CARDIOMETABOLIC RISK AND BIOMARKER TRAJECTORIES AMONG OLDER ADULTS: FINDINGS FROM THE HEALTH AND RETIREMENT STUDY**

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The deterioration of the cardiovascular system is a process associated with aging. Most of the prior works have examined changes in cardiometabolic risk (CMR) while aging at the population level using cross-sectional data, but we study within-person changes for total CMR and separate risk factors, including pulse pressure, resting heart rate, C-reactive protein, glycosylated hemoglobin (HbA1c), high-density lipoprotein cholesterol, total cholesterol, waist circumference, and obesity. We examine 8-year changes (from 2006 to 2014) among respondents from the Health and Retirement Study biomarker sample (n=19,776). We use growth curve models to identify differences at baseline and the changes while aging, by age, gender, race/ethnicity, and education. Blacks, the old-old, the less educated, and current smokers have higher baseline CMR. The total CMR increases while people age over 8 years. HbA1c, waist circumference, and pulse pressure increase significantly with age. A reduction in total cholesterol can be observed and is likely due to medication. The CMR increase is no longer significant after accounting for socioeconomic status. The next step of this study is to focus on the disparity of risk distribution, in order to identify the individuals that are most in need of specific care and support.

**EVALUATING THE ASSOCIATION BETWEEN SINGLE ITEM LITERACY SCREENER AND HEALTH OUTCOMES IN PATIENTS WITH LUNG CANCER**

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Health literacy is becoming increasingly important in areas such as cancer care, where treatments are relatively difficult to navigate. This study aims to describe the how health literacy is associated with healthcare outcomes and health system usage among patients with lung cancer. Data include retrospective medical record data from 456 patients with lung cancer; half were age 70 and older. Patients were coded as having adequate or limited health literacy based on their response to their Single Item Literacy Screener (SILS). Data were collected from a 12 month period following diagnosis for each patient. One-third of patients had limited health literacy; this was significantly more common among adults age 70 and older. Patients with limited health literacy were more likely to have newly diagnosed lung cancers of stage 3B or higher (59.18% vs. 42.76%, $p = 0.0011$) compared to those with adequate health literacy. Patients with limited health literacy had higher median levels of depression based