

## SESSION 1510 (PAPER)

### SLEEP DISORDERS

#### BIDIRECTIONAL ASSOCIATIONS BETWEEN SLEEP COMPLAINTS AND DEPRESSION: FINDINGS FROM THE NHATS STUDY

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Depression and insomnia are prevalent in older adults and show bidirectional relationships. Sleep initiating and maintenance difficulties are the two frequently seen complaints of insomnia diagnostic criteria. Whether these two sleep complaints differ in their associations with depression is unknown. Using the National Health and Aging Trends Study (NHATS), we examined whether sleep initiating and maintenance difficulties at baseline (T1) predicted depression onset at 12 months (T2) and 24 months (T3) in 4,048 T1 non-depressed participants and whether depression at T1 predicted these two sleep complaints at T2 and T3 in 3,581 T1 non-insomnia participants. Participants who developed depression at T2 tended to be Hispanic, non-Hispanic black, less educated, live alone, physically inactive, and have more painful locations and chronic conditions. Participants with sleep complaints at T2 tended to be less educated, live alone, physically inactive, and have more painful locations and chronic conditions. Sleep initiating difficulty persistently predicted depression onset at T2 (OR: 1.62, 95% CI: 1.14, 2.31) and T3 (OR: 1.84, 95% CI: 1.21, 2.81) after adjusting demographics, lifestyles and health condition-related covariates. Depression at T1 persistently predicted sleep initiating difficulty at T2 (RRR: 2.19, 95% CI: 1.44, 3.34) and T3 (RRR: 1.70, 95% CI: 1.07, 2.70) after adjustment. Sleep maintenance difficulty at T1 did not predict depression onset at either time point and vice versa. This study suggests a bidirectional association of depression with sleep initiating difficulty but not sleep maintenance difficulty in older adults. Interventions targeting difficulty initiating sleep may moderate depression onset in older adults.

#### DYADIC FACTORS THAT ASSOCIATE WITH INSOMNIA IN CAREGIVERS OF PERSONS LIVING WITH DEMENTIA

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Insomnia is prevalent in caregivers of persons living with dementia (PLWD); however, more research is needed to identify which dyadic factors most impact caregiver sleep. This study aimed to identify the factors associated with caregiver insomnia in the baseline component of a randomized clinical trial. A linear regression was conducted with caregiver variables (e.g., depression), and PLWD variables (e.g., disruptive nighttime behaviors) as independent variables in relation to insomnia, as

assessed with Insomnia Severity Index (ISI). Caregivers (n=49) were on average 63 years, mostly female (65.3%), White (69.4%), and spouses (65.3%). Mean ISI was 6.8, indicating mild-to-moderately disturbed sleep. Multiple linear regression ( $F(11,32) = 13.4, p < .001$ ) showed that both caregiver-based measures (depression,  $p < .023$ ) and PLWD-based measures (disruptive nighttime behaviors,  $p < .001$ ) were independently associated with ISI. Ideas about needed multicomponent dyadic interventions which target both PLWD nighttime behaviors, caregiver depression, and sleep disturbances will be discussed.

#### MULTIMODAL PERSONALIZED CHRONOTHERAPY IMPROVES SLEEP IN ADULTS WITH MILD COGNITIVE IMPAIRMENT: A RANDOMIZED TRIAL

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Poor sleep is common among older adults with Mild Cognitive Impairment (MCI) and may contribute to their increased risk for dementia. Chronotherapy is a set of intervention strategies which can improve sleep quality by strengthening the entrainment of the biological clock to the solar light-dark cycle, and includes strategies such as: 1) bright light therapy (BLT); 2) physical activity (PA); and 3) good sleep hygiene. Thus, in this 24-week randomized controlled trial (RCT; NCT02926157), we aimed to examine the efficacy of a multimodal, personalized chronotherapy intervention to improve sleep quality among older adults with MCI. Ninety-six older adults (65+ years) with MCI were randomized to either: 1) a multimodal personalized chronotherapy group (INT); or 2) a waitlist-plus-education control group (CON). Participants allocated to the INT received four once-weekly, general sleep hygiene education classes, followed by 20 weeks of 1) individually-timed BLT; and 2) bi-weekly, individually-tailored PA counselling in conjunction with receiving a consumer-available PA tracker (Fitbit® Flex™). We found a significant group x time interaction for objectively measured sleep fragmentation (5.01;  $p < 0.01$ ) and also for Pittsburgh Sleep Quality Index (PSQI) score ( $p = 0.03$ ), such that the INT: 1) maintained sleep fragmentation while CON worsened at 12 weeks ( $p < 0.01$ ); and 2) had improved PSQI score compared to CON at both 12 weeks ( $p < 0.01$ ) and 24 weeks ( $p = 0.04$ ). Our results provide novel evidence that a multimodal personalized chronotherapy approach may promote both objective and subjective aspects of sleep quality in older adults with MCI.

#### POOR SLEEP QUALITY IS RELATED TO DECREASED WHITE MATTER INTEGRITY IN BRAIN NOCICEPTIVE PATHWAYS IN OLDER ADULTS

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Poor sleep quality, decreased physical activity (PA) and increased sedentary behavior (SB) are common characteristics of older adults. Notably, these factors play an important role in brain health. We examined the relationship

between sleep quality, PA, SB and brain white matter integrity (WM) in older adults with osteoarthritis (OA). We retained data on 16 participants (mean age 60, SD=7.7) from a larger Monitor-OA cohort recruited from Metro Vancouver, BC, Canada. Sleep efficiency and duration, amount of time spent on PA and SB daily over a period of one week was acquired with an objective measure – the multi-sensor monitor SenseWear Mini which integrates tri-axial accelerometer data, physiological sensor data and personal demographic information. Brain WM tractography was calculated from fractional anisotropy data obtained with diffusion weighted magnetic resonance imaging. Voxelwise group-level statistics examined the effects of our variables of interest on the integrity of brain WM tracts while controlling for participants age. We found that lower sleep efficiency was related to decreased integrity in WM tracts of frontal, temporal lobes, precuneus and thalamus (Bonferroni corrected  $p < 0.05$ ). Shorter sleep was related to lower WM integrity in frontal regions, posterior cingulate and insula radiations (Bonferroni corrected  $p < 0.05$ ). No significant effects were noted for PA or SB. The identified brain regions are involved in sleep processes but further overlap with the nociceptive brain network. Our findings suggest that neural mechanisms related to sleep disturbance may also involve pain-related processing in older adults.

## SESSION 1515 (PAPER)

### SOCIAL ISOLATION AND NETWORKS

#### DO DENSE URBAN CENTERS PROVIDE LARGE SUPPORTIVE SOCIAL NETWORK TO OLDER ADULTS? A CROSS-COUNTRY COMPARATIVE STUDY

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The urban-rural dichotomy underpins the common approach in studying environmental conditions influencing older adults' lives characterized by post-Second World War urban migration in both Italy and the United States (US). However, the traditional opposition urban-rural dichotomy is inadequate to study how the environmental characteristics of a geographical area can account for the heterogeneous profile of its populations and its age distribution. This study aims to overcome the traditional mobility theories as an explanatory dichotomy for understanding the distribution of the age structure of a given population. The extent of a supportive network, and the connection between the place of residence to the proximity of other residential centres can be seen as potential resources for understanding the attractiveness of certain areas for older adults. A large harmonized set of demographic and socio-economic data were collected

from the Italian National Institute of Statistics (ISTAT) and the American Community Survey (ACS). An analysis at the Italian municipality- and US county-level finds the population over 75 years old are overrepresented in rural areas of both countries as would be expected by available employment opportunities, but considerable heterogeneity among both urban and rural areas exist. In particular, rural more than urban settings are based on an informal support network that is argued to rely on human proximity to produce successful aging in the community. The variation in population of older adults in rural areas, therefore, might have implications on how to achieve age-friendly communities, aside from population's traditional mobility theories and formal support network.

#### PREDICTORS OF LONELINESS INCIDENCE IN CHINESE OLDER ADULTS FROM A LIFE COURSE PERSPECTIVE

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Loneliness in older adults is an increasing public health issue. Research on predictors of loneliness incidence using longitudinal data in China is limited. We aim to examine what factors are predictive of loneliness incidence from a life course perspective and whether predictors differ between women and men based on a nationally representative longitudinal dataset in China. A total of 5,043 older adults aged 65 or above from the Chinese Longitudinal Healthy Longevity Survey who were not lonely in the 2008 wave were included in the analysis. Logistic regression models were applied to examine what factors in the 2008 wave predicted loneliness incidence in the 2011 wave. Analyses were also stratified by gender to examine gender differences. Older ages and self-rated poor health increased the odds of loneliness incidence, whereas receiving one or more years of schooling, rural-urban migration, living with family members, having a white-collar job, having a good family economic status, being currently married, having a higher resilience and social support decreased the odds of loneliness incidence. We also found gender differences: socioeconomic factors were significant only for older men, whereas self-rated health, resilience, and social support were significant only for older women. This study offers insights into disentangling the complexity of factors associated with loneliness incidence in Chinese older adults from a life course perspective and from a gendered perspective.

#### SOCIAL ISOLATION AND OLDER ADULTS: UNDERSTANDING THEIR EXPERIENCE

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This presentation will focus on a unique undertaking where three provincial organizations in Saskatchewan, Canada implemented nine projects to address social isolation for rural and urban older adults across a geography that encompasses one-half of the province. A survey of older adults was conducted to assess their level of social isolation in order to gain a more thorough understanding of the experiences of social isolation among community dwelling older adults. Key variables of interest included: older adult access to services