NEIGHBORHOOD ENVIRONMENT, INTRINSIC CAPACITY AND 4-YEAR LATE-LIFE FUNCTIONAL ABILITY TRAJECTORIES

Shiyu Lu, Yuqi Liu, Yingqi Guo, Hung Chak Ho, Hiu Kwan Chui, Chris Webster, Lai Har Chiu, and Terry YS Lum, The University of Hong Kong, Hong Kong, Not Applicable, Hong Kong

Knowledge on how intrinsic capacity (IC) and neighbourhood physical environment shape functional ability (FA) trajectories in later life remains understudied. We investigated the 4-year trajectories of IC and their impact on FA trajectories, and the associations between neighbourhood physical environments and FA trajectories over time among older adults. We conducted a four-wave longitudinal study from 2014-2017 in Hong Kong with 2,081 adults aged 65 and above. FA was assessed by The Chinese Lawton Instrumental Activities of Daily Living. We used cognition, affect, locomotion, sensory capacity, and vitality to capture multi-domains of IC. Neighbourhood physical environment attributes included green space, land use diversity, and facilities availability, assessed within 200- and 500-meter buffers of respondents’ homes. IC and FA each decreased significantly over time. Individuals with declines in IC experienced faster declines in FA over time. Green space, the number of leisure facilities and public transport slowed the decreasing FA rate.

ASSOCIATIONS BETWEEN NEIGHBORHOOD ENVIRONMENTS AND DEPRESSIVE SYMPTOMS OF OLDER ADULTS

Yuqi Liu, Shiyu Lu, Yingqi Guo, Hung Chak Ho, Hiu Kwan Chui, Chris Webster, Lai Har Chiu, and Terry YS Lum, The University of Hong Kong, Hong Kong, Not Applicable, Hong Kong

Little is known about the accumulative impacts of neighbourhood physical environments on depression among older adults. Based on a cohort study of 2,081 older adults in Hong Kong, this study examined longitudinal relationships between neighbourhood physical environments and depressive symptoms among older adults and the moderating effects of the slope of terrain and individual functional ability using latent growth curve modelling. Results indicated that the availability of community centres and passive leisure facilities reduced depressive symptoms over time. The protective effects of residential surrounding greenness on depressive symptoms among older adults differed by the slope of terrain. Longitudinal associations between neighbourhood physical environments and depressive symptoms varied between older adults with and without functional limitations. Identifying environmental barriers and applying targeted residential environment interventions are essential.

ENVIRONMENTAL COGNITION AND MENTAL HEALTH: PHYSICAL ACTIVITY AND PLACE ATTACHMENT AS PATHWAYS

Yingqi Guo, Shiyu Lu, Yuqi Liu, On Fung Chan, Hiu Kwan Chui, and Terry YS Lum, The University of Hong Kong, Hong Kong, Not Applicable, Hong Kong

Few studies have explored the underlying pathways between environment cognition (i.e., perception of environment) and mental health in older adults. We tested the mediation effects of physical activity and place attachment in the relationship between environmental cognition and mental health, based on a survey study of 1,553 older adults in Hong Kong using structural equation model. The results showed that significant relationship between negative environmental cognition (i.e., residing in higher accessible area but perceive lower) on access to convenient stores, leisure facilities, clinics, community centers, religious places and lower mental health can be explained by lower daily average physical activity time. Place attachment can significantly mediate the positive effect of positive environmental cognition (i.e., residing in lower accessible area but perceive higher) towards all types of services on mental health. Findings from this study have policy implication for urban planning and age-friendly community design.

NEIGHBORHOOD PHYSICAL ENVIRONMENT AND COGNITION IN LATER LIFE: A CROSS-SECTIONAL STUDY IN HONG KONG

On Fung Chan, Yuqi Liu, Yingqi Guo, Shiyu Lu, Hiu Kwan Chui, Lai Har Chiu, Chris Webster, Terry YS Lum, The University of Hong Kong, Hong Kong, Not Applicable, Hong Kong

This study examined the association between neighbourhood physical environment and cognition among community-dwelling older people and identifies whether this association varies among different older age groups. Data came from a cross-sectional survey data with 2,081 older people living in 12 public housing estates in Hong Kong. We merged individual data with neighbourhood physical environment data from community audit and GIS. Multivariable linear regression model was used. Young-old who resided in neighbourhoods with a higher land use mix and more public transport terminals, were associated with better cognition. Only the number of community centres was positively associated with the cognition for old-old. A curvilinear association was found between cognition and the number of active leisure facilities in the overall sample and young-old. Our findings could inform urban planners and policymakers on planning community facilities and physical environments based on the needs of older people in different age groups.

Session 4160 (Symposium)

THE RATIONAL USE OF HORMONE REPLACEMENT THERAPY IN OLDER ADULTS

Co-Chair: Jennifer Mammen
Co-Chair: Eleanor Simonsick
Discussant: Eleanor Simonsick

Multiple hormone levels are lower in older compared to younger adults, but the clinical implications are controversial. Lower thyroid hormone, testosterone, estrogen and vitamin D are variously associated with metabolic syndrome, sarcopenia, low bone density and cognitive decline, for which treatment has been recommended in the past. However, evidence from the T Trials of testosterone therapy failed to show benefit for endpoints other than sexual function. In the Women’s Health Initiative, a large RCT of estrogen replacement in older women, found evidence of an interaction between estrogen therapy and metabolic risk factors such as diabetes that actually exacerbates risk of cognitive decline. Longitudinal observation of thyroid hormone and thyrotropin patterns in
the Baltimore Longitudinal Study of Aging demonstrate heterogeneity that might account for a lack of benefit in studies of treatment for subclinical hypothyroidism in older adults. At the same time, new data suggest the need for a more aggressive threshold for vitamin D in older adults, with a lower threshold associated with a drop in physical function compared to younger adults. Complexity in the regulation of hormonal pathways and the downstream effects on target tissues means multiple individuals with similar hormone levels may have different underlying physiology, with divergent clinical needs. Changes in activity and diet common during aging, and exacerbated by the pandemic, lead to physical and mood changes associated with hormonal dysfunction in popular culture and patient requests for evaluation. The ultimate goal should be personalized treatment decisions based on comprehensive evaluation and pathophysiology.

THE MANY FACES OF ELEVATED TSH: WHEN TO AVOID THYROID HORMONE THERAPY IN OLDER ADULTS
Jennifer Mammen,1 Enoch Abbey,1 John McGready,2 Luigi Ferrucci,3 and Eleanor Simonsick,4 1. Johns Hopkins University School of Medicine, Baltimore, Maryland, United States, 2. Johns Hopkins University Bloomberg School Of Public Health, Baltimore, Maryland, United States, 3. National Institute on Aging, Baltimore, Maryland, United States, 4. National Institute on Aging/NIH, Baltimore, Maryland, United States

We have previously demonstrated that hypothalamic-pituitary-thyroid axis aging is characterized by several distinct patterns. An elevated thyrotropin (TSH) level (mean 5.6mIU/L) with normal free thyroxine (FT4) was present in 75 BLSA participants with at least 3 visits. Twenty-one percent had an historical pattern consistent with primary gland failure, while 13% had a pattern consistent with an HPT response to stressors (aging-adaptation). The remainder had intermediate patterns of change. FT4 >0.92pg/ml identified those in whom TSH elevations occurred with aging-adaptation with a 90.0% sensitivity and 93.8% specificity, indicating no need for therapy. In addition, among 597 participants with stable TSH levels in the reference range, being on thyroid hormone therapy increased mortality risk (IRR=1.8; 95% CI 0.9-2.1). Thus, including FT4 in the diagnostic criteria for hypothyroidism in older adults could target therapy for bone health (typically recommended at 20 or 30 ng/dl). Therefore, we derived and validated sex-specific thresholds for serum 25(OH)D predictive of poor physical function using 5 cohorts comprising 16,388 community-dwelling older adults (60.9% women). Using a cohort-stratified random two-thirds sample, we found incident slow gait was best discriminated by 25(OH)D<24.0 versus 25(OH)D>24.0 ng/mL among women (Relative Risk=1.29; 95% CI 1.10-1.50) and 25(OH)D<21.0 versus 25(OH)D>21.0 ng/mL among men (RR=1.43; 95% CI 1.01-2.02). Estimates from the remaining one-third validation sample were similar. Empirically identified and validated sex-specific 25(OH)D thresholds from multiple well-characterized cohorts of older adults may yield more biologically meaningful definitions in important sub-populations. Such thresholds may serve as candidate reference concentrations or inform design of vitamin D intervention trials in older adults.

TESTOSTERONE THERAPY FOR MEN WITH AGE-RELATED LOW TESTOSTERONE: TEMPEST IN A TEACUP
Shehzad Basaria, Harvard Medical School, Boston, Massachusetts, United States

Serum testosterone concentrations decrease in men with age, but benefits and risks of raising testosterone levels in older men remain controversial. In the T-Trials, a total of 790 men, age 65 and older, with a serum testosterone concentration of < 275 ng/dL and symptoms of sexual dysfunction, fatigue or physical dysfunction were randomized to either testosterone gel or placebo gel for 1 year. Treatment in the testosterone arm increased serum testosterone levels to the mid-normal range for young men. Testosterone replacement was associated with a significant increase in sexual activity (p < 0.001), libido and erectile function. In contrast, there was no improvement in vitality or physical function. Adverse findings included increases in non-calcified plaque formation and a higher rate of prostate events. In sum, testosterone treatment in older men was associated with modest benefits, while the risk on prostate and cardiovascular health remain unclear.

ASSOCIATIONS BETWEEN ENDOGENOUS ESTROGEN, POSTMENOPAUSAL HORMONE THERAPY, AND COGNITIVE CHANGES IN OLDER WOMEN
Mark Espeland, and Christina Hugenschmidt, Wake Forest School of Medicine, Winston-Salem, North Carolina, United States

How markers of brain health are associated with endogenous estrogen and use of postmenopausal hormone therapy (HT) varies depending on women’s years from menopause and metabolic health status, ranging from potential benefit to harm. The Women’s Health Initiative (WHI) included 7,233 women age 65-80 who underwent a randomized clinical trial of various HT preparations for an average of 5.9 years. Over up to 18 years of post-trial follow-up, diabetes (DM2) increased the risk of dementia (hazard ratio [HR] 1.54 [95% CI 1.16–2.06]). Having DM2 and also treatment with unopposed conjugated equine estrogens increased the risk to HR=2.12 [1.47-3.06]. We hypothesize...