Calcification of articular cartilage, known as chondrocalcinosis, becomes more prevalent with age. Although chondrocalcinosis can be characteristic of osteoarthritis, it has been associated with more joint pain and disability independent of osteoarthritis severity. Identifying novel modifiable risk factors for chondrocalcinosis may help reduce joint pain and disability. One potential risk factor involves vitamin K because vitamin K-dependent proteins that inhibit calcification are present in articular cartilage. To test the hypothesis that vitamin K antagonism is associated with more chondrocalcinosis, we evaluated the cross-sectional association between warfarin use and chondrocalcinosis prevalence in the Osteoarthritis Initiative (n=1472, 60% female, mean age 64 years). Warfarin is a vitamin K antagonist that interferes with vitamin K-dependent protein function. In a secondary analysis we evaluated whether the prevalence of chondrocalcinosis differed according to dietary vitamin K intake. Chondrocalcinosis of the knee, evaluated using plain x-rays, was detected in 8% of participants. It was three times more prevalent in warfarin users (n=20) compared to non-users [prevalence ratio (95% confidence interval) (PR(95%CI)): 3.02(1.42-6.46); p=0.004, adjusted for age, sex, race, BMI]. Chondrocalcinosis prevalence did not differ according to vitamin K intake [PR(95%CI), compared to tertile 3 (≥189 mcg/d): tertile 1 (<96 mcg/d) =1.30(0.82-2.07), tertile 2 (96-189 mcg/d) =1.17(0.76-1.81), p-trend=0.623, adjusted for age, sex, race, BMI, energy intake]. That chondrocalcinosis prevalence differed according to warfarin use, but not vitamin K intake, suggests vitamin K-dependent protein function may be involved in chondrocalcinosis development. Since warfarin was not commonly used in this cohort, additional studies are needed to substantiate our findings.

SESSION 720 (SYMPOSIUM)

EARLY-LIFE INFLUENCES ON LATER-LIFE HEALTH
Chair: Sara M. Moorman, Boston College, Chestnut Hill, Massachusetts, United States
Discussant: Jacqui Smith, University of Michigan, Ann Arbor, Michigan, United States

This symposium identifies risk and protective factors in childhood and adolescence that continue to influence the physical and cognitive health of older adults. Dimensions of early life inequality include geographic location, educational opportunities, and total amount of adversity faced. Papers in the symposium use data from three major U.S. longitudinal studies: the Health and Retirement Study (HRS), the MacArthur Study of Midlife in the U.S. (MIDUS), and the Wisconsin Longitudinal Study (WLS). Each paper focuses on the mechanisms (i.e., mediators and moderators) linking well-being in childhood and adolescence to health in older adulthood. Greenfield, Akincigil, and Moorman find that net IQ, college education boosts later life cognition, especially for men who had a low probability of college attendance. Kemp and Montez further find that state economic policy and adult health behavior explain later life disparities in health by educational attainment. Herd, Sicinski, and Asthana continue the theme of geographic place, finding that rural

NOVEL METABOLOMICS MARKERS PREDICT 18-MONTH DECLINE IN HAND GRIP STRENGTH IN COMMUNITY-DWELLING OLDER ADULTS
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Sarcopenia that accompanies aging necessitates early detection tools, ideally before the presentation of clinically evident symptoms. The acylcarnitines (ACs) are a class of metabolites generated by cellular fuel metabolism and their predictive utility in declining muscle strength in community-dwelling older adults is unknown. We aim to examine whether baseline acylcarnitines levels can predict changes in hand grip strength over 18 months in 121 community-dwelling older adults. We measured ACs by targeted plasma metabolomics profiling. We then performed a biologically-relevant classification of these markers. Hand grip strength was measured using a Smedley spring-type dynamometer. Multivariate linear regressions were performed to examine if: 1) there was an association between ACs and hand grip strength at baseline and 2) baseline ACs could significantly predict changes in hand grip strength over an 18-month period. At baseline, AC levels were not significantly associated with hand grip strength. We found an inverse association between baseline short-chain carboxyl and dihydroxyl acylcarnitines (AC-DC/-OH) levels and 18-month changes in hand grip strength (p=0.047, β=-0.548, 95% CI=-1.088 to -0.008). Notably, a specific AC-DC/OH species, C4-DC/C6-OH, accounts for the majority of the variance. The mean difference between Malay and Chinese ethnicity is 2.28kg (p=0.042, β=2.275, 95% CI=0.84 to 4.46). These findings suggest an association between metabolic markers and deterioration in hand grip strength. These results suggest that perturbations in fuel metabolism are detectable way before the emergence of clinically evident sarcopenia and frailty. The use of AC-DC/OH panel as antecedent biomarkers may enable clinicians to risk stratify patients in the future.

VITAMIN K ANTAGONISM AND CHONDROCALCINOSIS IN THE OSTEOARTHRITIS INITIATIVE
M. Kyla Shea3 Richard F. Loeser2 Timothy E. McAlindon1 Sarah L. Booth1, 1. Tufts University USDA Human Nutrition Research Center on Aging, Boston, Massachusetts, United States, 2. University of North Carolina Chapel Hill, Chapel Hill, North Carolina, United States, 3. Tufts Medical Center, Boston, Massachusetts, United States

Vitamin K antagonism, as measured by international normalized ratio (INR), significantly associated with chondrocalcinosis prevalence at the knee, hand and hip in the Osteoarthritis Initiative. In a cross-sectional analysis, INR was associated with chondrocalcinosis prevalence in the knee (PR(95%CI) = 2.28, p=0.002), hand (PR(95%CI) = 2.52, p=0.008), and hip (PR(95%CI) = 2.36, p=0.001) and when the three joints were combined (PR(95%CI) = 2.38, p=0.001). Additionally, Warfarin use was associated with chondrocalcinosis prevalence, particularly in the knee (PR(95%CI) = 2.27, p=0.04), and subclinical chondrocalcinosis was significantly associated with INR. These findings provide evidence that vitamin K antagonism, particularly Warfarin use, is associated with increased prevalence and subclinical chondrocalcinosis.
children who were raised on farms are at a cognitive disadvantage in later life. Both Ferraro and Sauerteig and Homan and Kong generate indices of total childhood misfortune. Ferraro and Sauerteig conclude that childhood misfortune affects obesity by way of adult health behavior, specifically, physical activity. Homan and Kong find that childhood misfortune affects subjective and functional health by way of the psychological mechanism of purpose in life. Together, these five papers begin to identify the ways in which experiences in childhood and adolescence have long-lasting consequences for a variety of health outcomes in later life.

COLLEGE COMPLETION AS A PROTECTIVE FACTOR FOR LATER-LIFE COGNITION: ISSUES OF SELECTION
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Additional years of education is considered a modifiable protective factor against Alzheimer’s disease and related dementias. However, some empirical studies have suggested that linkages between educational attainment and later life cognition are largely a function of differential selection into higher education. Our study uses data from the Wisconsin Longitudinal Study, as one of the longest-running cohort studies in the U.S., to further probe how differential selection into higher education might influence associations between college completion and later life cognition. Using adjusted inverse probability weighting and with particular attention to adolescent IQ, we find evidence that college completion is associated with better language for both men and women at age 65, as well as with better memory for men. Examining heterogeneous treatment effects, we further find that associations between college completion and later life cognition are strongest for men who were least likely as adolescents to attend college.

GEO-LIFE COURSE DETERMINANTS OF EDUCATIONAL DISPARITIES IN U.S. ADULT HEALTH
Blakelee Kemp1, Blakelee R. Kemp1, Jennifer K. Montez1,
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Educational attainment is one of the strongest social determinants of adult health. However, recent studies show that it is a stronger determinant in some areas of the country than others. This study investigates geographic and life course contexts that may explain the pattern. We merge data on adults aged 50+ in the Health and Retirement Study (1998-2014) with contextual data on their state(s) of birth and residence. We examine: (1) how the education-health association varies across regions, and (2) how childhood (e.g., poverty, compulsory schooling) and adulthood experiences (e.g., smoking, minimum wage) explain the variation. Findings reveal that the education-health association varies across regions and is more pronounced for outcomes further along in the disablement process. Poor childhood health, adult behaviors, and states’ economic policies partly explain why the association varies across regions. The findings underscore the importance of geographic and life course contexts for understanding educational disparities in health.

GROWING UP ON A FARM AND COGNITIVE FUNCTIONING IN LATER LIFE
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There is growing interest in rural disadvantage and the implications for health and well-being in later life. We examine the relationship between living in rural areas in childhood and cognitive outcomes later in life using the Wisconsin Longitudinal Study. The WLS has prospective childhood measures of geographic status, adolescent IQ, and detailed measures of socioeconomic status, combined with later life measures of health and cognitive functioning. We find a robust relationship between rurality and lower levels of cognitive functioning, but it is explained by growing up on a farm.

REDUCING THE IMPACT OF CHILDHOOD MISFORTUNE: THE ROLE OF ADULT PHYSICAL ACTIVITY ON LATER OBESITY
Kenneth F. Ferraro,1 Madison R. Sauerteig,1 and Monica M. Williams-Farrelly1, 1. Purdue University, West Lafayette, Indiana, United States

This study investigates the effects of childhood misfortune and adult physical activity on later-life body mass index (BMI) and waist circumference. We use ordinary least squares regression to examine the impact of childhood misfortune (30 indicators), and adult physical activity (frequency and intensity) on waist circumference and BMI (kg/m²) using data from the Health and Retirement Study (N=5,732). Results emphasize that experiencing childhood misfortune is associated with a larger waist circumference and BMI in later life, while adjusting for social status and lifestyle variables. Adjusting for adult physical activity decreases the effect of childhood misfortune on waist circumference, suggesting mediation. The analysis reveals that the effects of childhood misfortune on BMI and abdominal adiposity are remediable. Although childhood misfortune is associated with larger waist circumference and BMI in later life, regular physical activity reduces the risk on both indicators of obesity.

LONGITUDINAL HEALTH CONSEQUENCES OF CHILDHOOD ADVERSITY: THE MEDIATING ROLE OF PURPOSE IN LIFE
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Adverse childhood experiences have long-term detrimental effects on physical health. Although biological, behavioral, and social factors have been explored as intermediate mechanisms, little research has explored psychosocial factors as potential mediators. This study examined whether purpose in life longitudinally mediates the relationship between childhood adversity and two measures of adult health (self-rated health and functional limitations). Data were obtained from 3,871 participants in the Midlife in the United States (MIDUS) study. We tested a cross-lagged mediation model from childhood adversity to adult health via purpose in life, controlling for baseline measures of health and purpose in life. Good model fit was achieved indicating that childhood adversity is associated with poorer adult health through direct and mediated paths. Childhood adversity may restrict young people’s