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### MULTIPLE RISK BEHAVIOUR IN ADOLESCENCE AND ADVERSE HEALTH AND SOCIAL OUTCOMES IN EARLY ADULTHOOD: FINDINGS FROM A PROSPECTIVE BIRTH COHORT STUDY

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**Background** Adolescents engage in new and changed behaviours such as substance use or reduced physical activity. Evidence is accruing that these health risk behaviours co-occur at a population level and cluster within individuals. There has, however, been less focus on what the cumulative impact of engagement in multiple risk behaviours might be even in the short term. We sought to assess if engagement in multiple risk behaviours in mid-adolescence is associated with deleterious health and social outcomes in early adulthood.

**Methods** 5591 young people enrolled in the Avon Longitudinal Study of Parents and Children provided data on 13 risk behaviours from the domains of physical inactivity, substance use, self-harm, sexual health, vehicle-related risk behavior, and antisocial behavior when aged 15 to 16. Logistic regression was used to examine any association between the total number of behaviours engaged in and rates of obesity, harmful alcohol use, problem gambling, anxiety, depression, trouble with the police and unemployment and lack of training at age 18.

**Results** There was a strong association between multiple risk behaviour and all seven adverse outcomes. For each additional risk behaviour engaged in, the odds of having anxiety or being a problem gambler were 1.18 [1.12, 1.24] and 1.20 [1.13, 1.27] respectively, the odds for depression were 1.24 [1.17, 1.31], and the odds of getting into trouble with the police or of harmful drinking were 1.49 [1.42, 1.57] and 1.58 [1.48, 1.69] respectively. Adjustment for gender, parental socio-economic position, and maternal risk behaviours did little to alter the odds of these adverse outcomes. Confining analyses to adolescents not having experienced the adverse outcomes before age 15, to exclude reverse causality, also produced little change in odds.

**Conclusion** Improvements in adolescent health are lagging behind those seen in child health. Investment in interventions and environments that effectively prevent multiple risk behaviour is likely to produce better adolescent health and wellbeing.

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### CORRELATES OF LEVEL AND LOSS OF GRIP STRENGTH IN LATER LIFE: FINDINGS FROM THE ENGLISH LONGITUDINAL STUDY OF AGEING AND THE HERTFORDSHIRE COHORT STUDY

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**Background** Low grip strength in later life is a risk factor for subsequent disability and mortality and a key component of sarcopenia. Established determinants of low grip strength level include: older age; shorter stature; poor nutrition; low physical activity; socio-economic disadvantage and multimorbidity. However, little is known about risk factors for accelerated loss of grip strength in later life.

**Methods** We examined socio-demographic, lifestyle and clinical predictors of baseline level and 8 year loss of grip strength in 3703 men and women (aged 52–82 years at baseline) in the English Longitudinal Study of Ageing (ELSA). Data on 441 men and women (aged 59–71 years at baseline) who participated in a 10 year follow-up of the Hertfordshire Cohort Study (HCS) were used for replication. Change in grip strength from baseline to the end of follow-up was characterised using linear mixed-effects models in ELSA as grip strength was measured at three time-points. A residual change method was used in HCS to obtain a measure of change in grip strength between two time-points which was independent of baseline level. Linear regression models adjusted for age and gender, as well as mutually-adjusted models, were used to examine the relationship between baseline predictors and level and change in grip strength in both cohorts.

**Results** Men in ELSA and HCS had higher average levels of grip strength at baseline, and accelerated rates of loss, compared with women. In ELSA, older age, shorter stature, and increased morbidity were associated with lower level, and accelerated rate of loss, of grip strength in both sexes. For example, accelerated loss of 0.04 (95%CI: 0.00, 0.08) standard deviation (SD) scores per additional morbidity were estimated from mutually-adjusted models; corresponding SD scores per SD decrease in height were 0.06 (95%CI: 0.03, 0.09). In mutually-adjusted analyses, socioeconomic disadvantage, low level of physical activity and poorer self-reported health were also associated with low grip strength level, but not with rate of loss. Analysis in HCS yielded similar results.

**Conclusion** Our results identify multimorbidity as a modifiable determinant of both level and loss of muscle strength in later life. The association between shorter stature and accelerated loss of grip strength suggests that developmental influences may also impact on rate of loss, as well as on level, of muscle strength in older age. This research will inform the development of lifecourse interventions to promote maintenance, and reduce loss, of muscle strength in later life.

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### SENSORY IMPAIRMENTS AND COGNITIVE AGEING: FINDINGS FROM 11 EUROPEAN COUNTRIES

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**Background** Sensory impairment (hearing and/or visual) and cognitive decline commonly occur in the elderly. Whether they are in fact associated, and whether sensory impairment might contribute to intellectual decline, has been a subject of a number of investigations during the past three decades. The purpose of this study was to assess in an older European population: (1) any independent association between single and dual sensory impairment (hearing and/or vision) and cognitive decline; (2) cognitive trajectories according to the pattern of sensory impairment.

**Methods** This study used data from the Survey of Health, Ageing and Retirement in Europe (SHARE) and English Longitudinal Study of Ageing (ELSA). We measured cognitive function by one key cognitive domain available in both surveys, namely episodic memory score (range 0–20). Sensory impairment was measured using self-reported hearing and vision quality in both SHARE and ELSA. Vision and hearing function in both surveys were each coded on a scale from 1 (excellent) to 5 (poor). We recoded the scores of hearing and vision function into two categories by combining the responses excellent, very good and good into ‘good’ sensory function and collapsing fair and poor vision into ‘poor’ sensory function. We defined sensory impairment as having poor sensory function and categorised it into three: no impairment, single impairment (vision or hearing), and dual impairment (vision and hearing).

**Results** Using growth curve analysis, we found that older adults with single and dual sensory impairment (hearing and/or vision) were able to recall fewer words than those with no sensory impairment in final model in all 11 European countries included in this study, where the potential confounders were included. The cognitive trajectories of older adults with no sensory impairment followed curvilinear shapes, while those of older adults with single and dual sensory impairments showed more precipitous pattern trajectory of cognitive decline after the age of 50 in both surveys. Being female, having attained a higher level of education, having paid job and being relatively wealthy, were associated with higher cognitive function in older age both in SHARE and ELSA.

**Conclusion** These findings demonstrate that hearing and/or vision impairment is a marker for risk of cognitive decline that could inform preventative interventions to maximise cognitive health and longevity. Further studies are needed to investigate how sensory markers could inform strategies to improve cognitive ageing, including hearing and vision rehabilitative intervention in combination with healthy ageing interventions to promote social engagement, physical activity and positive health behaviours.

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#### INCIDENCE OF DIAGNOSED DEMENTIA IN THE ENGLISH LONGITUDINAL STUDY OF AGEING IN ENGLAND: A 12-YEAR FOLLOW-UP

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**Background** There has been a suggestion that the incidence of dementia in England has recently declined. Crucially, however, these estimates have not been based on nationally representative samples. Accordingly, we calculated dementia incidence, the temporal trends and, additionally, examined various socioeconomic and geographical predictors of its occurrence.

**Methods** Data from the English Longitudinal Study of Ageing (ELSA), a prospective cohort study at baseline known to be representative of the English population, were used to investigate the rates of dementia incidence over seven waves between 2002 and 2014.

Dementia was determined by doctor-diagnosis and the Informant Questionnaire on Cognitive Decline in the Elderly (score >3.38 indicative of dementia). Age- and sex-specific

incidence rates of dementia were calculated for 5131 individuals aged 65 and older at study entry. Dementia incidence over time was examined by comparing age-specific incidence rates between two age-period-cohorts derived in ELSA using a median split in birth-year range (ELSA I: 1900–1925 and ELSA II: 1926–1950). The predictive value of education, wealth, geographical area, the index of multiple deprivations and the degree of urbanisation for dementia incidence were examined using Poisson regression.

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The predictive value of education, wealth, geographical area, the index of multiple deprivations and the degree of urbanisation for dementia incidence were examined using Poisson regression.

**Results** The average duration of follow-up was 7.7 years. As anticipated, there was a significant increase in the rates of dementia incidence with age, from 5.90 per 1000 person years at ages 65–69 to 31.59 at ages 85+.

We observed an age-period-cohort effect on dementia incidence, with nearly 30% reduction in the incidence rates for participants of the same initial age group (75–79) at the study entry from ELSA I and II.

Higher rates of dementia incidence were observed for London (Rate=15.52, Incidence rate ratio (IRR)=1.43 95% confidence intervals (CI) 1.01–2.03) compared with Northern England, and for those in the lowest wealth quintiles (Rate=14.61, IRR=2.18, 95% CI 1.55–3.06) compared with the highest.

**Conclusion** In a nationally representative sample, we observed a reduction in the age-specific dementia incidence over time. This incidence appeared to be patterned by group- and individual-level characteristics.

P09

#### AFFECTIVE PROBLEMS AND MEMORY DECLINE: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Background** Previous evidence suggests that the presence of affective problems, such as depression and anxiety, may confer an increased risk for late-life dementia. However, the extent to which affective symptoms may influence memory decline in particular, even many years prior to the clinical threshold for a diagnosis of dementia, is not clear. The present study systematically reviews and synthesises the current evidence surrounding the association between depression and memory decline across the life course.

**Methods** An electronic search of PubMed, PsycInfo and ScienceDirect was conducted to identify studies on the association between depression and subsequent memory decline. Key inclusion criteria were prospective, longitudinal studies with a minimum follow-up period of one year. Cross-sectional,