obtain occupation from the 1991 census (social destination), as well as geographical location in 1939 and 1991. We examined the movement between three geographical areas (Edinburgh, Glasgow, Other) in Scotland. Four social mobility trajectories were derived. We modelled the relationship between social and geographic mobility and likelihood of having self-reported limiting long term illness (LLTI) at age 65, using logistic regression.

Results Those who were geographically mobile to Edinburgh had the lowest rates of self-reported LLTI and those who remained resident in the Glasgow area had the highest rates. The lowest and highest rates of LLTI were found in the socially-static at the top and bottom of the social scale respectively, with intermediate rates seen in the upwardly and downwardly mobile. However neither social nor spatial mobility were significantly associated with health in later life in the fully adjusted model when highest educational qualifications and cognitive ability were included. Being female, having higher education qualifications and being in a higher social class in childhood and adulthood reduced the likelihood of poor health at age 65.

Conclusion Although both social class and geographical location were associated with the likelihood of LLTI in later life, social and spatial mobility were not, when factors such as education and cognitive ability were controlled for.

P47 ARE OBESITY AND INFLAMMATION FROM MIDLIFE ASSOCIATED WITH PHYSICAL FATIGABILITY IN OLD AGE? FINDINGS FROM A BRITISH BIRTH COHORT STUDY

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Background Physical fatigability, the level of fatigue experienced while undertaking specified physical tasks, increases with age throughout adulthood. These age-related changes, which reflect reductions in energy availability, precipitate declines in activity participation and function. Higher levels of fatigue are also related to increased risk of disability and premature mortality so it is imperative to identify modifiable risk factors across life associated with physical fatigability. Cross-sectional analyses suggest that obesity and inflammation may be associated with increased risk of high physical fatigability. However, whether these inter-related factors act on the same pathway is unclear and requires further investigation in longitudinal studies. We thus aimed to examine the associations of body mass index (BMI) and inflammatory markers from midlife with subsequent levels of perceived physical fatigability in a nationally representative sample.

Methods Up to 2095 men and women from the MRC National Survey of Health and Development, a British cohort followed-up prospectively since birth in 1946, who had valid physical fatigability scores on the Pittsburgh Fatigability Scale (PFS) at age 68 years were included in analyses. Linear regression models were used to assess associations of BMI from age 43 and inflammatory markers (C-reactive protein (CRP) and interleukin-6 (IL-6)) at age 60–64 with continuous PFS scores at age 68. Adjustments were made for sex (where no evidence of interaction was found), long-term limiting illness, physical activity and symptoms of anxiety and depression. All analyses were performed using STATA v14.2.

Results Women had higher mean PFS scores than men (16.0 (SD=9.3) vs 13.4 (SD=9.0), p<0.01), with higher scores indicating greater perceived physical fatigability. In sex-adjusted analyses, higher BMI and higher levels of CRP and IL-6 were associated with higher PFS scores. For example, participants with BMI $\geq$30kg/m^2 at age 43 had sex-adjusted mean PFS scores 4.7 (95% CI: 3.3–6.1) points higher than those with BMI 20–24.9kg/m^2 and, those in the highest fifth of IL-6 at age 60–64 had a mean score 4.9 (95% CI: 3.5–6.3) points higher than those in the bottom fifth. When these associations were mutually adjusted and adjusted for other covariates, higher BMI and IL-6 remained associated with higher PFS scores, whereas associations with CRP were fully attenuated.

Conclusion These findings highlight the potentially important influence of inflammatory and other cardio-metabolic processes on physical fatigability. They suggest that both BMI and inflammation from midlife may be important targets for intervention to reduce the burden of this commonly reported symptom in older populations.

P48 COMPARING BMI WITH SKINFOLDS TO ESTIMATE AGE AT ADIPOSITY REBOUND AND ITS ASSOCIATIONS WITH LATER CARDIO-METABOLIC RISK MARKERS

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Background Adiposity rebound (AR), defined as the lowest point before the second rise in body mass index (BMI), occurs between the ages of 5 and 7. Early age at AR is associated with higher risk of obesity in later life. However, BMI as a measure of adiposity has limitations: first, BMI incorporates both fat and lean mass, second, BMI is calculated from both height and weight. To identify the AR, a direct measure of fat (i.e. skinfold thickness) might be more relevant. We used data from the Mysore Parthenon Birth Cohort to compare relative merits of BMI and skinfolds in identifying AR and predicting BMI and cardio-metabolic risk factors at 13.5 years.

Methods The cohort was set up in 1997 in Mysore, India, to examine the long-term effects of gestational diabetes on cardiovascular disease risk factors in the offspring. Children were followed-up annually until 5 years, and 6-monthly after that for detailed anthropometry. At 13.5 years, 545 children had measurements of cardio-metabolic risk markers. We used non-linear splines and regression analyses (STATA version 14) to characterise the subject-specific growth of BMI and skinfolds (sum of triceps and subscapular skinfolds) throughout childhood, and to assess the associations between age at AR, BMI and cardio-metabolic risk factors.

Results BMI and skinfolds had similar trajectories with both reaching their minimum between 5 and 6 years. Average age at AR was similar between the two measures (5.94 years and 5.73 years respectively), with skinfold-derived AR being characterised by higher variability (standard deviation: 1.47 years and 2.18 years respectively). Later age of BMI-derived AR was associated with lower BMI (−0.89kg/m^2; 95% CI: [−1.04,–0.74kg/m^2]), fat mass (−1.14 kg; 95% CI:[−1.36,–0.91 kg]), HOMA-IR (−0.12; 95% CI:[−0.17,–0.07 kg]) and

blood pressure (systolic BP:−0.78; 95% CI:[−1.26,–0.31 kg]; diastolic BP: −0.46; 95% CI:[−0.87,–0.04]) at 13.5 years. Similar results were obtained for skinfold-derived AR. Many of the above associations were fully explained by fat mass at 13.5 years. However, the association between skinfold-derived AR and SBP was still significant after adjusting for fat mass (−0.37; 95% CI:[−0.72,–0.01]).

Conclusion BMI and skinfolds produced similar estimates of age at adiposity rebound. Associations of AR with BMI and cardio-metabolic risk factors at 13.5 years were comparable regardless of how we derived AR. AR appears to be related to later cardio-metabolic risk markers through its association with fat mass. Skinfolds, as a more direct measure of adiposity than BMI, may be a better method for estimating AR when available.

P49 AN ECONOMIC EVALUATION OF A COMPLEX WORKPLACE DIETARY INTERVENTION: A CLUSTER CONTROLLED TRIAL

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Background The workplace is recognised as a priority environment to influence dietary behaviours and improve employee healthy. Yet, previous workplace dietary interventions have failed to combine clinical effectiveness evidence with economic costs, thus the cost-effectiveness of workplace dietary interventions remains unknown. Employing cost and outcome data from the Food Choice at Work (FCW) study, a cluster controlled trial of complex workplace dietary interventions, this study employed an economic evaluation of nutrition education, environmental dietary modification and combined workplace interventions.

Methods A 9 month time horizon was assumed (length of interventions). Each of the dietary interventions (education, environment and combined) were compared to a control workplace. Firstly, a cost-benefit analysis (CBA) employed the monetary value of absenteeism to report the net benefit of the interventions compared to the control, from an employer's perspective. Secondly, cost-effectiveness analyses (CEAs) were performed using intervention-specific clinical measures (body mass index (BMI), weight and midway waist circumference) to measure health outcomes. Thirdly, a cost-utility analysis (CUA) measured the cost-effectiveness of the interventions in terms of quality adjusted life years (QALYs). The robustness of the QALYs were assessed as the results of the CEAs and CUA were compared. Probabilistic sensitivity analysis (Monte Carlo simulation) assessed parameter uncertainty.

Results The environment intervention reported the highest net benefit (€ 146/employee) which was associated with an average reduction of 0.7 absent days. The environment intervention also reported the lowest incremental cost-effectiveness ratios (ICERs) for BMI (€ 14/kg/m^2), waist circumference (€ 3/cm) and weight (€ 7/kg). The CUA demonstrated similar results as the environment intervention also reported the lowest ICER of € 98/QALY, followed by the education (€ 971/QALY) and combined interventions (€ 2,156/QALY). The cost-effectiveness acceptability curve (CEAC) indicated that the environment intervention had a 50% probability of being cost-effective when compared to the control at a ceiling ratio of € 45,000/QALY. However, as demonstrated on the CEAC, no decision uncertainty surrounded the cost-effectiveness of the education or combined interventions, the control had a higher probability of being cost-effective.

Conclusion Although demonstrated over a short timeframe, environmental dietary modification alone, offers a potentially cost-effective approach for improving employee health and generating positive net benefit for employers. While environmental dietary modification strategies are potentially sustainable and important interventions for obesity prevention, future research should include long-term outcomes to determine if improvements in outcomes persist.

P50 THE PREVALENCE AND DETERMINANTS OF POLYPHARMACY: DATA FROM THE BRITISH 1946 BIRTH COHORT

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Background Polypharmacy, a growing phenomenon within the British population, has been linked with increased falls, reduced functional status and higher all-cause mortality in later life. However the risk profile for individual medications is not universal, with cardiovascular medications in particular posing a high risk. Prior research has found that greater socioeconomic disadvantage is associated with higher levels of polypharmacy but studies rarely control for disease burden or distinguish between cardiological and non-cardiological polypharmacy. The aim of this study was to describe the development of polypharmacy and its composition in a British birth cohort in its seventh decade and to investigate socioeconomic and gender differences independent of disease burden.

Methods Medication data from the Medical Research Council National Survey for Health and Development (NSHD), the oldest British birth cohort, were analysed to determine the prevalence and composition of polypharmacy at age 69 and its change from ages 60–64. Multinomial regression was used to test associations between gender, education and occupational social class and total, cardiological and non-cardiological polypharmacy controlling for the number of diagnosed diseases.

Results At age 69, 22.8% of individuals were taking more than 5 medications. There was an increase in the use of 5 to 8 medications (+2.3%) and over 9 medications (+0.8%) between ages 60 to 64 and 69. The greatest increases were found for cardiovascular (+13.4%) and gastrointestinal medications (+7.3%). Men experienced greater cardiological polypharmacy, women greater non-cardiological polypharmacy. Higher levels of education were associated with lower levels of both types of polypharmacy independent of disease burden, with strongest effects seen for over five cardiological medications (RRR 0.3, 95% CI 0.2,0.5 $p<0.001$ for advanced secondary qualifications compared with no qualifications); there was no additional effect of occupational class.

Conclusion Polypharmacy, particularly cardiological polypharmacy, increased over the seventh decade and was associated with lower educational attainment. While this study could not assess the appropriateness of the polypharmacy observed, it provided understanding of its genesis and the possible benefits of targeted interventions to reduce potential harm caused by