

found in nutrient intake were independent of measures of child deprivation and ethnicity.

Conclusion Children taking a packed lunch to school have a less nutritious diet on average over the whole day in terms of sugar, sodium and fibre. A good quality lunch is therefore an important factor for overall dietary quality in children. Policies to encourage parents and children to include nutritious foods such as fruit, vegetables and low fat starchy foods are needed to narrow the gap between school meals and packed lunches.

OP84 DO SUPERMARKET INTERVENTIONS IMPROVE FOOD ACCESS, FRUIT AND VEGETABLE INTAKE AND BMI? EVALUATION OF THE PHILADELPHIA FRESH FOOD FINANCING INITIATIVE

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Background Structural interventions to improve access to healthy food in deprived communities are a current policy priority. In 2010, the Obama administration unveiled the Healthy Food Financing Initiative to promote interventions that expand access to nutritious foods. The initiative provided more than \$400 million in funding to bring grocery stores and health food retailers to deprived communities. However, no evidence for the effectiveness of such policy interventions exists. This paper is a first attempt to evaluate the effect of this intervention on perceptions of the food environment, fruit and vegetable intake and body mass index (BMI) in Philadelphia, USA.

Methods Data from the Philadelphia Neighbourhood Food Environment Study were used. This study utilised a prospective quasi-experimental design comparing baseline and follow up data in an 'intervention' community with a matched 'comparison' community. The intervention was the introduction of a large food supermarket in an underserved area. Outcomes were BMI, weekly fruit and vegetable consumption (Block FFQ), and perception of the neighbourhood food environment. Data were analysed using an intention-to-treat (ITT) and adopters vs non-adopters (ANA) approach. Difference-in-differences analyses (DID) assessed whether significantly different changes over time existed between intervention and comparison groups. Models were adjusted for age, sex, income, race, education, household composition and employment status.

Results In ITT and ANA analyses no significant difference-in-differences in mean BMI and mean weekly fruit and vegetable consumption were found. ITT analyses demonstrated a significant improvement in perceptions of the neighbourhood food environment in the intervention versus comparison neighbourhood (DID=1.71, p=0.001). Using ANA, a similar result was found for adopters, with those who used the grocery store as their primary shop (DID=1.57, p=0.05) and those who used it for any food shopping (DID=2.34, p<0.001) having significantly better perceptions of the neighbourhood food environment compared to non-adopters. After adjustment, ITT analyses remained significant (DID=1.65, p=0.002). For ANA, significant DID results were attenuated for primary adopters (DID=1.30, p=1.105) but remained significant for those undertaking any food shopping (DID=2.18, p<0.001).

Conclusion The introduction of a new grocery store had a positive effect on how local residents perceive the quality of their neighbourhood food environment. However, this did not have a significant effect on fruit and vegetable consumption or BMI. Improvement in perceptions of neighbourhood food environment quality did not translate into improved dietary behaviour or reductions in BMI.

Population Based Studies: Mid Life and Older Age

OP85 DO GOOD HEALTH AND MATERIAL CIRCUMSTANCES PROTECT OLDER PEOPLE FROM THE INCREASE IN MORTALITY AFTER BEREAVEMENT?

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Background Death of a spouse or partner is a common major life event for older people. The adverse health effects of bereavement are well recognised with an increased risk of death described in several populations. The impact of modifying factors, such as chronic disease and material circumstances, is less well understood. In this study, we use a large UK primary care database to examine the modifying and mediating effect of physical comorbidity and material socio-economic circumstances on the rise in mortality in the first year after bereavement.

Methods We identified 171,120 older (60 years and over) couples in a UK primary care database (THIN) based on a shared household identifier. The couples were followed up between 2005 and 2010 for an average of 4 years. 26,646 (15.5%) couples experienced bereavement with mean follow up after bereavement of 2 years. The effect of bereavement on risk of death in the surviving partner was examined in a survival model adjusted for age, sex, comorbidity at baseline, material deprivation based on area of residence, season and smoking. Further analysis examined the effect of changes in comorbidity during follow up.

Results The fully adjusted hazard ratio (HR) for bereavement in the first year after bereavement was 1.25 (95% CI: 1.18 to 1.33). Further adjustment for changes in comorbidity throughout follow up did not alter the hazard ratio for bereavement (HR 1.27, 95% CI: 1.19 to 1.35). The effect of bereavement was not modified by age, gender or baseline comorbidity. The relative rise in mortality after bereavement was greatest in individuals with no significant chronic comorbidity throughout follow up (HR 1.50, 95% CI: 1.28 to 1.77) and in more affluent couples (P=0.035).

Conclusion We have confirmed the increased risk of mortality after bereavement and demonstrated its independence of pre-existing physician recorded chronic comorbidity and social status. Our analysis, taking account of changes in morbidity before and after bereavement, suggests that the rise in mortality after bereavement is not primarily mediated through new or worsening chronic physical disease. Furthermore, there was no evidence that pre-existing or continuing good health or affluence protect individuals. The results also suggest that, paradoxically, good health and high social status may accentuate the rise in mortality after bereavement. Our findings suggest that the rise in mortality after bereavement acts as a leveller, affording no protection to the affluent or healthy, and is best explained by an increase in sudden unexpected deaths.

OP86 MORE RAPID DECLINE IN CHD INCIDENCE AMONG SCOTTISH TOWNS THAN AMONG ENGLISH TOWNS FROM THE 1980s TO THE 2000s

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Background The incidence of coronary heart disease (CHD) has declined in the UK since the late 1970s. However, regional differences in this decline are unknown. We investigate the change in

CHD incidence from the period 1980–1988 to 2000–2008 according to UK region. We also examine regional differences in changes in established coronary risk factors over these periods

Methods The British Regional Heart Study recruited 7735 men between 1978 and 1980 when aged 40–59 from 24 British towns. Established risk factors were measured at baseline examination and on 4252 participants twenty years later (1998–2000). CHD incidence over eight years from baseline was compared with incidence over eight years following re-examination. Age-adjusted Cox regression models including an interaction between an indicator for time period and region were used to assess relative hazards of CHD incidence between the two time periods according to UK region: South England (7 towns), Midlands/Wales (4 towns), North England (10 towns) and Scotland (3 towns). Age-adjusted linear and logistic models with the same interaction term assessed changes in risk factors between the two periods according to region.

Results CHD incidence for 1980–1988 in the South, Midlands/Wales, North and Scotland was 0.6, 0.8, 0.9 and 1.1 per 100 person years, and 1.1, 1.5, 1.3, and 1.1 for 2000–2008 when participants were 20 years older. Age-adjusted hazard ratios for the second versus first period in the four regions were 0.40, 0.50, 0.32 and 0.22 (p for interaction = 0.05), indicating that age-adjusted CHD incidence declined considerably in all regions but most rapidly among Scottish towns. While risk factor profiles were more favourable in the South than other regions in the first period, evidence of period/regional interactions were found in the analysis of some risk factors. Compared with the South, statistically significantly faster declines occurred in mean systolic blood pressure for North England and Scotland (by 3.1 mmHg and 4.1 mmHg respectively), in mean total cholesterol for Midlands/Wales (0.24 mmol/l), in smoking for Scotland (ratio of odds ratios 0.74), and faster increases in moderate physical activity in North England and Scotland (ratio of odds ratios 1.20 and 1.41 respectively). However mean BMI increased similarly across all regions.

Conclusion Fall in CHD incidence was faster in the Scottish towns than the English towns. An impressive improvement in coronary risk profiles was likely to be responsible, especially with respect to blood pressure, smoking and physical activity.

OP87

HEALTHY BEHAVIOURS IN MIDDLE AGE AND LONG-TERM CONSEQUENCES FOR MORTALITY, PHYSICAL AND COGNITIVE FUNCTION, AND MENTAL HEALTH

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Background Physical activity, healthy body weight, smoking, and alcohol consumption are each related to mortality, physical and cognitive function, and mental health but their combined long-term effect is unknown. We examined the individual and combined influence of these risk factors on mortality and subjective and measured function in middle-aged adults followed for 18 years.

Methods Data were from the US Health and Retirement Study (HRS), a biennial, longitudinal, nationally representative survey of older adults. 11,597 participants aged 51 to 61 were followed from study enrolment for an 18-year period. A health behaviour score was calculated with one point for each behaviour: moderate physical activity three times per week; BMI 20 to 25; alcohol consumption less than 7 drinks/week; non-smoking. Outcomes were all-cause mortality, problems with activities of daily living (ADLs), lung function, grip strength, walk speed, measured cognitive function, and depressive symptoms. Adjusted logistic and linear regression models were used to examine the relationships between health behaviours and outcomes separately by gender.

Results For all outcomes except grip strength there was a dose-response relationship between healthy behaviour score and outcomes. For example, in men with four healthy behaviours and no baseline ADL problems, at 18-year follow-up 78.4% had no ADL problems, 6.6% had ADL problems, and 15.0% had died. In men with no healthy behaviours and no ADL problems at baseline, at follow-up 35.1% had no ADL problems, 8.8% had ADL problems, and 56.1% had died. Results in women were comparable but ADL differences were more marked. Number of healthy behaviours was related to follow-up cognitive function, mental health, walk speed, and lung function but not grip strength. Results were robust to adjustment for socioeconomic status (SES: measures of health, income, and level of education) and in analyses stratified by SES similar differences were found in relation to healthy behaviours within strata.

Conclusion Simple differences in lifestyle behaviours in middle age are associated with major differences in mortality, functioning and health risks as people progress into old age. Effective health promotion in these age groups could bring substantial health benefits for individuals across SES groups.

OP88

THE HAZARD OF SMOKING FOR SPECIFIC CORONARY DISEASE PHENOTYPES: AN ELECTRONIC HEALTH RECORDS STUDY WITH LINKED DATA IN 915,000 PATIENTS

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Background The association between smoking and coronary heart disease (CHD) has been well-documented, though most studies use a composite measure of CHD. Few studies have investigated the association between smoking and specific coronary disease phenotypes, even fewer, its first manifestation. These have generally been restricted to comparison between two disease phenotypes, often with small number of events or single gender studies. Our objective is to investigate the association between smoking and initial manifestation of specific coronary phenotypes, i.e. stable angina (SA), unstable angina (UA), non ST-elevation myocardial infarction (nSTEMI), ST-elevation myocardial infarction (STEMI), and coronary death unheralded by prior symptomatic disease (UCD), within a framework of competing risks for these and other atherosclerotic diseases.

Methods This was a prospective cohort study of >915,000 patients aged 30+ with no evidence of atherosclerotic disease in coronary, cerebrovascular or peripheral circulation prior to study entry. Using linked electronic health records from a CALIBER dataset, we incorporated primary care data from General Practice Research Data, acute coronary syndrome data from the Myocardial Ischaemia National Audit Project registry, hospital admissions data from Hospital Episode Statistics, and mortality and deprivation data from Office for National Statistics. The hazard of smoking was modelled using Cox proportional hazard regression, with data augmentation to incorporate competing risks of multiple disease presentations, and adjusted for age, sex, deprivation, blood pressure, blood-pressure lowering medication, diabetes and statin use.

Results There were 22,815 initial coronary disease presentations and a further 48,659 initial presentations of other cardiac, atherosclerotic cerebrovascular disease and peripheral arterial disease. Within the competing risk model, all coronary presentations showed an increased hazard for smokers compared to non-smokers, but the cause-specific adjusted hazard ratio (95% CI) for ST elevation myocardial infarction (STEMI) (2.99; 2.46–3.64) was substantially greater than those for the other presentations, including: stable angina: (1.30; 1.25–1.35), unstable angina (1.48; 1.32–1.66),