

consequences of musculoskeletal disorders. An avoidant coping strategy has been associated with an increased likelihood of sickness absence, and some evidence has been shown of increasing use of avoidant coping with decreasing social class.

Objectives The objective of this study is to examine the single and joint effect of musculoskeletal pain and avoidant coping on sickness absence and how this effect may be moderated by socio-economic position.

Methods This study was based on a prospective design including survey data from 2000 and 2006 and register data from 2007. The study population consists of a sample of Danes in their 40s and 50s free of major depression at baseline and in 2006, economically active in 2006, and reporting functional limitations due to musculoskeletal pain, N=2967. The outcome measure was retrieved from Statistics Denmark and contained information on sickness absence > 2 weeks in 2007. By multivariate logistic regression the association between self-reported musculoskeletal pain (daily vs weekly/monthly/seldom and never) and sickness absence was studied, adjusted by avoidant coping, physical exposures in work environment, gender and socio-economic position (measured by occupational social class). The joint effect of pain and avoidant coping was calculated as departure from multiplicativity and tested by product terms.

Results The adjusted OR between musculoskeletal pain and sickness absence was 1.76 (95% CI 1.44 to 2.15). Further analysis showed a departure from multiplicativity for the joint effect of pain and avoidant coping on sickness absence. Socio-economic position had a strong independent effect on the risk of sickness absence ($p < 0.0001$). However, there was no significant moderating effect of socio-economic position on the joint effect of pain and avoidant coping.

Conclusion An avoidant coping strategy interacts with the perception of pain and has a strong effect on the risk of sickness absence. Although socio-economic position is significantly associated with the risk of sickness absence it did not moderate the joint effect of avoidant coping and musculoskeletal pain.

015 PATHWAYS TO WORK? INSIGHTS FROM A SYSTEMATIC REVIEW OF THE UK'S RETURN TO WORK INITIATIVES FOR DISABLED AND CHRONICALLY ILL PEOPLE

doi:10.1136/jech.2010.120956.15

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Purpose Employment rates of chronically ill and disabled people in the UK are low (49%) and 2.7 million are on disability-related state benefits. Recent government policy has seen the introduction of a range of measures aimed at integrating them into the labour market. This paper explores what can be learned for future policy from a synthesis of a wide range of evidence evaluating these policies.

Method We conducted a systematic review and evidence synthesis of empirical studies reporting the employment effects and/or factors influencing the effectiveness of national-level interventions aimed at helping people into work who were not employed and were on some form of disability-related benefit. We *excluded* measures aimed at reducing short-term sickness absence, localised interventions, and those that were not wholly concerned with helping individuals move into the open labour market.

Results In total, 42 studies were identified that met the inclusion criteria and were included in the full review. This paper synthesises evidence from 32 studies of individual-oriented interventions; that is, ones based on the strategy of supporting and improving potential employees (as distinct from ones that aim to improve the employment environment). These covered the three major national initiatives: the *One Advisory Service*, *New Deal for Disabled People*, and

Pathways to Work, and initiatives packaged with them (eg, *Return to Work Credit*, *Permitted Work Rules*, *Condition Management Programme*). There was evidence that personal advisors and individual case management in these schemes helped some participants back to work. However, these results were biased by widespread selection into these programmes of more work-ready claimants. Qualitative studies revealed the time pressures and requirements to fill job outcome targets that influenced the advisors' selection of claimants. Claimants were concerned about reduction in income and benefit sanctions that advisors could impose. This worked against the building up of mutual trust needed for the individual case management to work effectively.

Conclusions Selection into these programmes of more work ready claimants creates difficulties in judging to what extent the employment effects reported in the quantitative studies derive from the programmes or from the motivations of the individuals. We consider the implications for recent and future UK reforms of the finding that those furthest from the labour market need long-term engagement based on mutual trust to help them move towards work.

016 BANKING CRISES AND MORTALITY DURING THE GREAT DEPRESSION: EVIDENCE FROM US URBAN POPULATIONS, 1929–1937

doi:10.1136/jech.2010.120956.16

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Objectives Previous research has suggested that the economic turmoil during the Great Depression led to significant improvements in public health. However, these studies have relied on highly aggregated national data (using less than 25 data points), and employed intermediary measures of economic change, such as employment and Gross Domestic Product. We use a new historical data set of US mortality rates and bank suspensions to analyse both the immediate and underlying causes of mortality change during Great Depression.

Design Cause-specific mortality rates covering 114 US cities in 36 states were taken from the US Bureau of the Census. Bank suspensions data were taken from the Federal Deposit Insurance Corporation. Epidemiologic analysis was performed of the immediate causes of fluctuations in urban mortality rates weighted by population size. Dynamic fixed effects models were used to assess the immediate and delayed effects of bank suspensions on mortality.

Setting 114 US cities and 36 US states, 1929–1937.

Participants NA.

Main outcome measure Age-standardised all-cause and cause-specific mortality rates

Results Reductions in all-cause mortality rates (about 10% between 1929 and 1932) were attributable to declines in death rates due to pneumonia (26.4% of total), influenza (13.1% of total), and respiratory tuberculosis (11.2% of total), while death rates increased from heart disease (19.4% of total), cancer (8.1% of total) and diabetes (2.9%). Of these main causes of mortality changes, only heart disease plausibly relates to contemporary economic shocks. A higher rate of bank suspensions was associated with contemporary higher suicide rates ($\beta = 0.32$, 95% CI 0.24 to 0.41) but lower death rates from motor vehicle accidents ($\beta = -0.18$, 95% CI -0.29 to -0.07); no effect was observed for other causes of death studied. There was no evidence of substantially differing delayed effects.

Conclusion In contrast with existing research, we find that the majority of rises and falls in deaths during the Great Depression was unrelated to economic shocks. Spurious correlations can occur when immediate effects are not decoupled from long-term trends, especially problematic with trending variables, such as GDP. Consistent with existing work, we observed that bank suspensions led to rapid rises in suicides and falls in road traffic fatalities. Further research should investigate alternative explanations for the reductions in infectious diseases and their marked variations across cities and states, such as nutrition, sanitation, the New Deal, Prohibition and other public health measures at the time.

Diabetes

017 SOCIO-ECONOMIC STATUS, INCIDENCE OF TYPE 2 DIABETES AND RELATIVE MORTALITY IN SCOTLAND 2001–2007

doi:10.1136/jech.2010.120956.17

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Background RRs of mortality associated with type 2 diabetes (T2DM) have declined in recent years but are higher in women than men in many populations. The role of socio-economic status (SES) in risk of mortality among people with diabetes is not clear.

Methods We used data from a population-based national diabetes register to investigate the associations between T2DM, SES and mortality. SES was categorised with Q5 and Q1 representing the most deprived and most affluent quintiles from an area-based measure. Age-standardised incidence for 2004 and RRs for all-cause mortality among people with incident T2DM of 35 to 84 years of age between 2001 and 2007 were estimated using general population data, the European standard population and Poisson regression models.

Results Complete data were available for 111 441 people who developed type 2 diabetes between 2001 and 2007 and there were 8775 deaths before the end of 2007. SES had a more marked effect on age-standardised incidence of T2DM among women (717.5 vs 357.2 per 100 000, age-adjusted RR for Q5 vs Q1 (95% CI) 1.91 (1.62 to 2.25)) than men (comparable estimates 918.6 vs 568.9 per 100 000, 1.59 (1.38–1.84)). Age and SES adjusted RR (95% CI) for mortality were 0.97 (0.93 to 1.01) for men and 1.11 (1.07 to 1.16) for women. Age and sex adjusted RR for mortality associated with type 2 diabetes was lower for Q5 (0.93 (0.89–0.97)) than for Q1 (1.19 (1.12 to 1.27)).

Conclusion RRs for mortality associated with incident T2DM were lower in this population than reported in previous studies. Incident diabetes was not associated with increased mortality among men but was associated with higher mortality in women compared to women without diabetes. SES modifies the effect of T2DM on mortality but does not explain sex differences in RR. Further work is required to establish whether these findings can be explained by risk factor patterns.

018 FORECASTING DIABETES PREVALENCE USING A SIMPLE MODEL: ENGLAND AND WALES 1993–2006

doi:10.1136/jech.2010.120956.18

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Background Current projections of diabetes prevalence are mostly based on demographic change. Explicitly including trends in obesity and other risk factors could improve the accuracy of the projections and assist in evaluating policy options for prevention.

Methods The model integrates population, obesity and smoking trends to estimate future diabetes prevalence. From three starting states (healthy, obese and smokers) the number of people with diabetes and deaths by diabetes status are estimated using a Markov approach. The transition probabilities and RR associated with risk factors were obtained from the literature, except for diabetes incidence that was estimated using DISMOD. For validation purposes, we developed a model for the England and Wales population (1993–2006), and compared model outputs with diabetes prevalence reported by the Health Survey for England (HSE) and the English Longitudinal Study of Ageing (ELSA).

Results The prevalence of diabetes mellitus in England and Wales in 1993 was 3% in men and 2% in women (HSE; adjusted for self reporting, 3.9% and 2.6% respectively) and increased to 6% and 4% (7.3% and 5.5%, adjusted) by 2006. Obesity prevalence almost doubled and smoking trends showed a more complex pattern. Comparisons with the HSE showed almost parallel trends, over a period of 13 years. Prevalence as estimated from the model was 7.3% for men and 5.7% for women for 2006 and 8.9% and 7.2% for 2012. The model tends to slightly overestimate prevalence but accuracy improved in later years. The estimated prevalence compared well with that reported in ELSA (Men: model: 9.9%, ELSA: 11.6%; women: 8.3% and 6.8%).

Conclusions The model provide a reasonably close estimate of diabetes prevalence for England over the 1993–2006 period, compared with contemporary independent prevalence surveys in the same population. Although the model seems to slightly overestimate prevalence, the observed and modelled trends are almost parallel. Further testing and validation in a range of populations would be desirable but the model appears to provide reasonably accurate estimates of diabetes prevalence that could be used by policymakers.

019 ETHNIC DIFFERENCES IN TYPE 2 DIABETES RISK MARKERS IN CHILDREN IN THE UK ARE NOT EXPLAINED BY SOCIO-ECONOMIC STATUS: CHILD HEART AND HEALTH STUDY IN ENGLAND

doi:10.1136/jech.2010.120956.19

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Objectives To examine the influence of socio-economic position on type 2 diabetes risk markers in different ethnic groups and determine whether differences in socio-economic position can explain ethnic differences in type 2 diabetes risk.

Design Cross-sectional survey of children in 200 primary schools in London, Birmingham and Leicester (Child Heart and Health Study England, or CHASE) in which standardised anthropometric and fasting blood measurements were made. Ethnic origin was defined by parental self-report. Parent's socio-economic position (based on occupation) was measured using the National Statistics Socio-economic Classification (NS-SEC). Statistical analyses were adjusted for age and sex and included a random effect for school.

Participants 4796 children (1153 white European, 1306 South Asian, 1215 black African/Caribbean) aged 9–10 years.

Main outcome measures Height, adiposity (ponderal index, skinfold thickness, fat mass index, waist circumference), glycated haemoglobin (HbA1c), glucose, insulin resistance, triglyceride, HDL-cholesterol, C reactive protein.

Results In the whole study population, NS-SEC showed weak and inconsistent associations with diabetes risk markers. However, there were marked differences between ethnic groups. Low socio-economic position was related to higher adiposity, insulin resistance