

probability weights and missingness using multiple imputation, we compared prevalence ratios to examine: 1) the direct effect of having a higher level of education on voting when accounting for these health indicators, and 2) the proportion of its total effect that is eliminated by this adjustment.

Results Contrasting extreme groups, we found that participants with a degree (NVQ5/6) at the age of 23 were 25%, 28%, and 32% more likely to have voted in the last general election compared to those with no qualifications at the ages of 42, 46, and 50. Adjusting for health indicators at the ages of 23, 32, and 42, participants with a degree remained 19%, 24%, and 27% more likely to have voted at the ages of 42, 46, and 50, respectively. This translates into an average proportion eliminated of 22%, 18%, and 16% across these age points. Testing mediators separately, we found that smoking, physical activity, and self-reported health were each likely to contribute to the 'education-voting' association.

Discussion In keeping with health promotion principles, health represents beyond the absence of disease a resource for individuals, their social network, and their communities. Our findings suggest that health and its behavioral determinants are likely to explain a portion of social inequalities in voting over the life-course. Research and intervention should address the specific health-related mechanisms through which current electoral processes may unequally influence voter turnout across social groups.

OP64

THE IMPACT OF POLITICAL ECONOMY ON POPULATION HEALTH: A SYSTEMATIC REVIEW OF REVIEWS

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Background Although there are many studies considering specific aspects of political economy and health, there have been few attempts to synthesise the literature. This work describes a systematic review of reviews of the literature describing the impact of political economy on population health.

Methods We searched Medline, Embase, International Bibliography of the Social Sciences (IBSS), Proquest Public Health, Sociological Abstracts, Applied Social Sciences Index and Abstracts (ASSIA), EconLit, SocIndex, Web of Science and the grey literature via 'Google Scholar'; for reviews of the literature. Relevant exposures were differences or changes in: policy, law or rules; economic conditions; institutions or social structures; politics, power or conflict. Relevant outcomes were any overall measure of population health such as self-assessed health, mortality, life expectancy, survival, morbidity, well-being, illness, ill-health and lifespan. All citations were reviewed independently by two authors for relevance. Critical appraisal of all included reviews was undertaken using modified AMSTAR criteria and then synthesised narratively giving greater weight to the higher quality reviews.

Results From 4,912 citations, 58 reviews were included. Both the quality of the reviews and the underlying studies within the reviews were variable. Social democratic welfare states, higher public spending, fair trade policies, extensions to compulsory education provision, microfinance initiatives in low income countries, health and safety policy, improved access to healthcare, and high quality affordable housing have positive impacts on population health. Neoliberal restructuring seems

to be associated with increased health inequalities and higher income inequality with lower self-rated health and higher mortality. There are evidence gaps on the relationship between governance, politics, power, macroeconomic policy, public policy and population health, including the social class processes and forms of discrimination which generate inequalities. For some areas, such as the relationship between income inequality and mean population mortality, there is a need for a high quality systematic review. Primary research gaps also existing, for example on the impact of housing policy, availability and tenure.

Conclusion Politics, economics and public policy are important determinants of population health. Countries with social democratic regimes, higher public spending and lower income inequalities have populations with better health. There are substantial gaps in the synthesised evidence on the relationship between political economy and health and there is a need for higher quality reviews and empirical studies in this area. However, there is sufficient evidence in this review, if applied through policy and practice, to have marked beneficial health impacts.

Obesity & Physical Activity

OP65

THE EFFECTS OF Pedometer AND OTHER STEP-COUNT MONITORING INTERVENTIONS ON PHYSICAL ACTIVITY: A SYSTEMATIC REVIEW AND META-ANALYSIS OF RANDOMISED CONTROLLED TRIALS

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Background Physical inactivity is a growing public health concern, and the fourth leading cause of death globally. Pedometers measure step-counts and can increase physical activity levels. Newer devices, for example mobile phone applications and body worn devices, also measure step-counts and require scrutiny of their effectiveness. Our primary aim is to conduct a systematic review and meta-analysis of the effects of pedometer and other step-count monitoring interventions on physical activity levels among the adult general population.

Methods We systematically searched seven databases using MeSH headings and keywords to identify randomized controlled trials published after 1/1/2000. We included trials with healthy adults participants aged ≥ 18 , or those at risk of disease. Children, those selected with a specific health condition, high-performance trainers and hospital-based studies were excluded. The intervention group comprised community-based step-count monitoring interventions including pedometers with objective physical activity measures; the comparator group incorporated 'usual standard care' or healthcare advice with minimal active engagement. The primary outcome was change in step-count at follow-up compared to baseline. A random-effects model was utilized to assess the primary outcome, and a risk of bias assessment determined the quality of included studies. The protocol is registered PROSPERO: CRD42017075810.

Results Following initial database searching of 14,356 records and subsequent forward citation search, 54 studies were included, of which 13 were part of the narrative synthesis. 41 studies were therefore incorporated in the quantitative meta-analysis; 22 providing estimated mean between-group

differences in change from baseline step-count and 19 providing mean between-group differences in end-point only step-counts. From the 22 studies, 16 reported the primary outcome at ≤ 3 months with a mean difference (MD) in step-count of 1255 [95% Confidence Interval 848, 1661]; 8 studies at ≤ 6 months, MD 1084 steps [647, 1520]; 9 studies at ≤ 1 year, MD 516 steps [273, 758]; 2 studies at ≤ 2 years, MD 290 steps [-7, 587]; and 4 studies at > 2 years, MD 494 steps [251, 738]. The 19 studies with end-point only step-counts highlighted similar findings, but had fewer participants and reported no outcomes beyond one year.

Discussion This review demonstrated that pedometers and other step-count monitoring interventions significantly increase individuals' step-counts in the short-term, with larger trials also showing small sustained long-term effects. These interventions could therefore provide a means of addressing the public health inactivity challenge. Further work will evaluate which type of interventions are more effective and determine the effect-modifiers of physical activity maintenance.

OP66

EFFECT OF PEDOMETER-BASED WALKING INTERVENTIONS ON LONG-TERM HEALTH OUTCOMES: PROSPECTIVE 4-YEAR FOLLOW-UP OF 2 RANDOMISED CONTROLLED TRIALS USING ROUTINE PRIMARY CARE DATA

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Background Data are lacking from physical activity (PA) trials with long-term follow-up of both objectively measured PA levels and robust health outcomes. Two primary care 12-week pedometer-based walking interventions in adults and older adults (PACE-UP and PACE-Lift) found sustained objectively measured PA increases at 3 and 4 years, respectively. Using routine primary care data, we aimed to evaluate intervention effects on long-term health outcomes relevant to walking interventions.

Methods We downloaded primary care data for trial participants who gave written informed consent, for 4-year periods after their randomisation from the 7 PACE-UP and 3 PACE-Lift English general practices. The following new events were counted masked to intervention status for all participants, including those with pre-existing diseases (apart from diabetes, where existing cases were excluded): non-fatal cardiovascular; total cardiovascular (including fatal); incident diabetes; depression; fractures; and falls. Intervention effects on time to first event post-randomisation were modelled using Cox regression for all outcomes, except for falls, which used Poisson regression to allow for multiple events, adjusting for age, sex, and study. Absolute risk reductions (ARRs) and numbers needed to treat (NNT) were estimated.

Results Data were downloaded for 1297 (98%) of 1321 trial participants. Event rates were low (< 20 per group) for outcomes, apart from fractures and falls. Cox Hazard ratios for time-to-first event after randomisation for interventions versus controls were: non-fatal cardiovascular 0.24 (95% CI 0.07 to 0.77); total cardiovascular 0.35 (0.12 to 0.91); diabetes 0.75 (0.42 to 1.36); depression 0.98 (0.46 to 2.07); and fractures 0.56 (0.35 to 0.90). Poisson incident rate ratio for falls was

1.09 (95% CI 0.83–1.43). ARR and NNT (95% CI) for cardiovascular events were: non-fatal 1.7% (0.5% to 2.1%), NNT=59 (48 to 194); total 1.6% (0.2% to 2.2%), NNT=61 (46 to 472); and for fractures 3.6% (0.8% to 5.4%), NNT 28 (19 to 125).

Discussion New cardiovascular events and fractures were significantly decreased in the intervention group at 4 years. Though no significant differences between intervention and control groups were demonstrated for other events, direction of effect for diabetes was protective. Short-term primary care pedometer-based walking interventions can produce long-term health benefits and should be more widely used to help address the public health inactivity challenge.

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OP67

THE PHYSICAL ACTIVITY WEARABLES IN THE POLICE FORCE (PAW-FORCE) TRIAL: FEASIBILITY, ACCEPTABILITY AND IMPACT

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Background Policing is an increasingly sedentary occupation that is associated with high levels of physical and psychological morbidities. Mobile health (mHealth) technology is increasingly popular, low cost and accessible. The study aim was to assess the potential impact, feasibility and acceptability of an mHealth technology intervention (Fitbit® activity monitor and 'Bupa Boost' smartphone app) to promote physical activity (PA), reduce sedentary time, and improve health and well-being, perceived stress and perceived productivity in the police force.

Methods Single-group, pre-post, mixed methods exploratory trial. Police officers and staff (n=180) were recruited from two sites (Plymouth Basic Command Unit, Devon & Cornwall Police and North Dorset territorial area, Dorset Police). Participants used the technology for 12 weeks (an 'individual' then 'social' phase) followed by five months of optional use. Data sources included Fitbit®-recorded objective step count, questionnaire surveys and semi-structured interviews (n=32). Outcome assessment points were baseline (week 0), mid-intervention (week 6), post-intervention (week 12) and follow-up (month 8). Quantitative data was analysed using paired t-tests, regression and correlations. Qualitative analysis involved framework and thematic analysis. Findings were integrated during interpretation; qualitative findings confirmed, explained, and expanded on quantitative results.

Results While self-reported PA increased overall (e.g. mean increase +421 MET-minutes/week moderate to vigorous PA baseline to month 8, 95% CI 56–785), significant increases in steps were observed only in participants with a baseline mean daily step count less than 10,000 (+1028 steps/day, 95% CI 417–1,639 baseline to week 12; +810 steps/day, 95% CI 115–1,506 baseline to month 8).

Engagement and perceived acceptability were high overall, particularly for the less active participants, but some usability issues were reported with the Bupa Boost app, resulting in lower and declining engagement with this component.