Hierarchical models for international comparisons: a case study of smoking, disability and social inequality in 21 European countries

**Methods** BI policies were assessed using the Sheffield Alcohol Policy Model. Previous analysis has shown a national BI programme for alcohol to be both cost-effective and inequality-improving. We examined whether these conclusions changed under three scenarios: i) individually excluding socioeconomic gradients in each model input; ii) raising levels of uptake to those in the ‘best’ group; iii) using different baseline populations. Impacts on total population health and health inequality were assessed using incremental population Net Health Benefit (NHB) and incremental ‘Equally Distributed Equivalent’ (EDE) health respectively. Results are compared with those from similar analyses undertaken using a smoking cessation model.

**Results** A national BI programme improved both health (+43,016 QALYs) and EDE (+50,792 QALYs), reducing health inequalities. Excluding gradients in model inputs had generally small effects on NHB (+0% to +10.4%) but a larger effect on EDE (-7.9% to +15.7%), although not enough to change the conclusion that the policy is inequality reducing. Increasing delivery to the ‘best’ level would increase EDE to a greater extent than NHB (+51.6% and +43.5% respectively), further reducing inequalities.

**Conclusion** Unlike smoking cessation programmes, BI are likely to be both cost-effective and reduce inequalities. Considering potential inequalities across all stages of intervention delivery is important when considering the impact of policies on health inequalities, even if it may not substantially affect decisions based solely on cost-effectiveness. The relative importance of socioeconomic gradients in different stages is likely to vary between risk factors and settings.
The impact of political economy on population health: a systematic review of reviews

1G McCartney*, 1W Heasly, 1J Arnot, 2F Popham, 3A Cumber. 3B McMaster. 1NHS Health Scotland, Glasgow, UK; 2CSO/MRC SPHSU, University of Glasgow, Glasgow, UK; 3University of Glasgow, Glasgow, UK

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: political processes may unequally influence voter turnout across social groups.

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

The effects of pedometer and other step-count monitoring interventions on physical activity: a systematic review and meta-analysis of randomised controlled trials

UAR Chaudhry*, C Wahlich, R Normansell, R Knightly, D Cook, T Harris. Population Health Research Institute (PHRI), St George’s University of London (SGUL), London, UK

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