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probability of transition to healthy, overweight or obese states or to die from CVD, cancer or other causes. Model inputs were population and death records from Turkish Statistical Institute, overweight and obesity prevalence from Turkish National Chronic Disease Survey, 2011, daily mean SSB intake from Turkish National Diet and Nutrition Survey. We used DISMOD II software to estimate the incidence of overweight and obesity. The effect of tax was calculated using price elasticities obtained from previous published studies. We compared three scenarios: The baseline scenario involved no change in consumption of SSBs. In two additional scenarios, we modelled the effect of a 10% and 20% tax on decreasing SSBs intake. We then modelled the effect of this SSB decrease on BMI and obesity prevalence on the Turkish population. We further calculated the population attributable risk fraction of obesity to estimate the CVD and cancer cases potentially preventable. We also conducted a probabilistic sensitivity analysis to estimate 95% uncertainty intervals (95% UI).

Results We forecast that in this closed cohort, by the year 2031, approximately 4,201,100 (4,130,000–4,270,000) men and 5,419,000 (5,305,000–5,537,000) women would be obese. However implementing a 10% SSB tax could result in approximately 21,900 (19,800–29,040) fewer obese men and 13,500 (12,900–15,400) fewer obese women. A 20% tax might result in 41,900 (40,100–48,100) fewer obese men and 24,800 (15,600–28,700) fewer obese women. Overall, a 20% tax could result in a 0.7% reduction in obesity prevalence in the whole cohort. This might result in approximately 29,700 fewer CVD cases and 13,400 fewer obesity related cancer cases by 2031.

Conclusion A tax on Sugar Sweetened Beverages in the Turkish population could usefully reduce the prevalence of obesity, cardiovascular disease and common cancers. These findings reinforce the growing evidence of health benefits with SSB taxation policies in diverse countries.

OP75 SUGAR SWEETENED BEVERAGES COVERAGE IN THE BRITISH MEDIA – AN ANALYSIS OF PUBLIC HEALTH ADVOCACY VERSUS PRO-INDUSTRY MESSAGING

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Background Sugar-sweetened beverages (SSBs) are an increasing contributor to rising rates of diabetes, obesity and cardiovascular disease. The media has an important role in framing perceptions of these products and therefore has significant potential to influence public health policy. We assessed the extent of media-based public health advocacy versus pro-industry messaging regarding SSBs.

Methods We conducted a systematic analysis to identify and examine all articles regarding SSBs published in mainstream British print newspapers and their online news websites from 1st January 2014 to 1st January 2015. We initially conducted a brief literature search to develop appropriate search terms and categorisations for grouping and analysing the articles. Articles were then coded according to the publishing newspaper, article type, topic, prominence and slant (pro- or anti-SSB). A contextual analysis was undertaken to examine key messages in the articles.

Results 1295 full-text articles published during 2014 were assessed for eligibility of which 374 were included in this analysis. The majority of articles (81%) suggested that SSBs are unhealthy. Messaging from experts, campaign groups and health organisations was fairly consistent about the detrimental effects of SSB on health. SSBs were associated with a large variety of topics and sub-topics, most frequently health effects, followed by regulation and product consumption. Of those articles discussing the health impact of SSBs, the most prominent subtopic was youth's consumption of SSBs.

However, relatively few articles assessed any approaches or solutions to potentially combat the problems associated with SSBs. Only a quarter (24%) suggested any policy change. 31% placed the responsibility for combating consumption of sugar on individuals and 36% offered no solutions, merely highlighting the problems associated with SSBs over-consumption.

Meanwhile, articles concerning the food industry produced consistent messages emphasising consumer choice and individual responsibility for making choices regarding SSB consumption, and promoting and advertising their products. The food industry thus often managed to avoid association with the negative press that their products were receiving.

Conclusion Sugar-sweetened beverages featured heavily in mainstream British print newspapers and their online news websites during 2014. Public health media advocacy was prominent throughout, with a growing consensus that sugary drinks are bad for people's health. However, the challenge for public health will be to mobilise supportive public opinion to help implement effective regulatory policies. Only then will our population's excess consumption of sugar sweetened beverages come under control.

OP76 CORPORATE FUNDING OF SCIENTIFIC RESEARCH: A CASE STUDY OF COCA-COLA

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Background Global corporations have come under sustained attack in recent years for their lack of transparency. In particular, concerns have been raised about their funding of research to support their advocacy campaigns, in some cases with concealment of the links between the funder and the researcher. Most attention has been focused on the tobacco industry, which has a long history of conducting research designed to create confusion and to reframe the agenda in ways that advance its interests. Similarly, the food industry has sought to reframe the debate on obesity as one driven primarily by too little physical activity rather than by high levels of intake of energy dense food. In this paper we report the findings of the case study of Coca-Cola. The Coca-Cola Corporation has been the subject of extensive criticism, in particular because of its support of academics at certain American universities who have been in the forefront of advancing the argument that the obesity epidemic should be tackled through greater physical activity rather than reductions in energy dense products. However, it has also claimed that it embraced transparency by publishing a list of researchers that it funds, although this was in response to widespread public criticism when it was realised that Coca-Cola had donated more than

\$4 million to the non-profit group “Global Energy Balance Network”, whose research framed obesity as determined by the lack of physical activity rather than by dietary habits. However, we challenge Coca-Cola’s commitment to transparency by demonstrating that its list of scientific experts that it collaborated with is selective and severely incomplete.

Methods Using web scraping tools, we have collected information from the Web of Science Core Collection on every article published in a scientific journal that acknowledges the Coca-Cola Company or the Coca-Cola Foundation as a funding agency. From a total sample of 262 articles, involving approximately 2,100 authors, we impose further restrictions to the sampling procedure and end up with a total of 247 articles and 647 authors.

Results 151 articles, published in roughly 100 different journals, and involving 468 authors, were funded by grants from the Coca-Cola Company or the Coca-Cola Foundation (its philanthropic arm), but were not listed on Coca-Cola’s press release of scientific experts it has funded since 2010.

Discussion Many of these articles equate the obesity epidemic with lack of physical activity, which raises important questions about the role of industry funding in academic research.

HSR 4

OP77

COMMISSIONING SERVICES FOR DISEASE PREVENTION IN ENGLAND: A QUALITATIVE EXAMINATION OF BARRIERS AND ENABLERS

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Background Part of the rationale for transferring public health responsibilities from the NHS to local government in 2013, was that it would give renewed focus to “upstream” preventive interventions, to improve population health and tackle inequalities more effectively. However there is a risk of potential unintended consequences in terms of the impact on commissioning preventive services at the interface between local government and the NHS. Such services may be difficult to prioritise, particularly given the greater visibility and demand for services for treatment of symptomatic conditions. To date, the actual impact of current commissioning arrangements on preventive service commissioning remains unclear.

The aim of this work was therefore to identify common themes relating to the current barriers and enablers of commissioning prevention services.

Methods Information from interviews and workshops with commissioners and providers were synthesised from two independent projects: a research project exploring barriers to effective management of the Hepatitis B risk in the Chinese community (CATH-B) and a consultation conducted for Public Health England to inform the roll-out of the national Diabetes Prevention Programme (DPP). Data was collected from 23 interviews (3 for DPP; 20 for CATH-B) and 4 workshops (2 for DPP; 2 for CATH-B) for thematic analysis. Findings were discussed with stakeholders to ensure appropriate interpretation and contextualisation.

Results Common barriers that emerged from both commissioner and provider perspectives included: lack of clarity

regarding commissioning responsibilities; other competing priorities in the context of finite budgets; lack of understanding of the evidence base; lack of perception that prevention was a priority for services driven by increasing urgent demands; the long-term nature of outcomes for preventive services.

Potential enablers included making the service a higher priority for commissioners by linking it to national targets and funding and the availability of local community providers with capacity to deliver appropriate services. However, the “top-down” nature, and complexities, of commissioning meant using local community-based providers was not always feasible.

Conclusion Since the transfer of responsibility for public health and in a context of shrinking resources, prevention services have been put at risk by lack of clarity about where responsibilities lie, lack of local champions for prevention services in many areas, and complexities of commissioning locally tailored, appropriate and accessible services.

Fragmentation and complexity of commissioning responsibilities and lack of clarity about budgets are widely seen as significant barriers to effective commissioning suggesting integrated budgets “place-based” commissioning will be essential to facilitate effective service commissioning and delivery.

OP78

IMPROVING TRIAL RECRUITMENT THROUGH IMPROVED COMMUNICATION ABOUT PATIENT AND PUBLIC INVOLVEMENT: AN EMBEDDED CLUSTER RANDOMISED RECRUITMENT TRIAL

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Background Evidence is emerging that patient and public involvement in research (PPIR) may improve recruitment into randomised controlled trials, but the best methods to achieve improvement are unclear. Although many trials use PPIR to improve design and conduct, many do not communicate their use of PPIR clearly to potential participants. Directly communicating PPIR might encourage participation through increased patient confidence and trust in a trial. We aimed to develop and evaluate the impact on recruitment an intervention communicating PPIR in a trial to potential participants.

Methods This study was embedded in *EQUIP*, a cluster randomised controlled trial which allocated mental health teams in England to either a training intervention group to improve service user and carer involvement in care planning, or to a control group (no training).

We conducted a cluster randomised trial of a recruitment intervention communicating PPIR, embedded within the *EQUIP* trial. The principles underlying the intervention were informed by a systematic review and a workshop that included mental health service users and trialists.

Working with *EQUIP* PPIR partners (service users and carers) we developed the intervention using a leaflet to advertise the nature and function of the PPIR. Professional graphic design optimised readability and impact. Patients identified as

potentially eligible for EQUIP were randomised to receive the leaflet or not, alongside the standard trial information. The primary outcome was the proportion of participants enrolled in *EQUIP*. The secondary outcome was the proportion expressing interest in taking part.

Results 34 clusters (mental health teams) were recruited, and 8182 potential participants were randomised. Preliminary analyses show that for the primary outcome, 4% of patients receiving the PPIR leaflet were enrolled vs. 5.3% in the control group. For the secondary outcome 7.3% of potential participants receiving the PPIR leaflet responded positively to the invitation to participate, vs. 7.9% in the control group. Future analyses will be by intention-to-treat and use logistic regression to estimate between-group odds ratios (ORs) and corresponding 95% confidence intervals. A planned secondary analysis will explore whether the impact of the intervention is moderated by age and gender.

Conclusion In preliminary analysis of this large trial, communicating PPIR demonstrated no benefits for improving the numbers of potential participants expressing interest in the trial, and reduced trial enrolment. Our findings contrast with the literature suggesting PPIR benefits recruitment. We will discuss the potential reasons for this finding, along with implications for future recruitment practice and research.

OP79

ASSESSING THE IMPACT OF FLORIDA'S 'STAND YOUR GROUND' LAW ON PATTERNS OF HOMICIDE: AN INTERRUPTED TIME SERIES STUDY

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Background Homicide rates in the United States are unusually high for a developed country. Despite a gradual reduction in homicide rates over the last 100 years, homicide is still one of the leading causes of pre-mature death in U.S. citizens below the age of 40. There is continual debate about the consequences of stricter gun control measures, but less discussion about other kinds of legislative changes that may affect rates of homicide adversely. Since 2005, 22 U.S. states have amended their self-defence laws, removing the “duty to retreat” principle. “Stand your ground” (SYG) laws, specifically, give individuals legal immunity for use of lethal force in any situation in which individuals perceive a threat. Critics of this legislation are concerned that weakening the punitive consequences of using lethal force may serve to escalate aggressive and violent encounters, with significant implications for public health. This study examines the impact of the first SYG law on homicide rates in Florida.

Methods An interrupted time series analysis was performed using state-level rates of homicide between 1999 and 2014. Seasonally adjusted segmented Poisson regression models were used to assess whether the onset of the SYG law was associated with a deviation from the underlying trend. Stratified analyses were conducted to examine whether effects differed by ethnicity, age, and sex. To assess the impact of simultaneous cyclical factors, we have used non-equivalent control variables: alternative outcome variables that are sensitive to

similar changes in cyclical factors, but not hypothesised to be influenced by the intervention under examination.

Results The mean monthly homicide rate prior to the change in legislation was 0.49 deaths per 100,000, with an underlying trend of 0.1% decrease per month. We found an abrupt increase in monthly homicide rates of 24.7% associated with the onset of Florida's SYG law (RR 1.25; 95% CI: 1.17–1.33, CI: ≤ 0.001). Stratified analysis found increases in homicide across all demographic groups, with notable increases in Caucasian populations and in those aged 20–34 years.

Conclusion The removal of a “duty to retreat” in Florida has been associated with a substantial increase in the homicide rates. If the reported association is causal, we estimate that the implementation of Florida's SYG law produced an additional 20 homicides per month, or a further 2,229 homicides since the law came into effect. This suggests that the change in the law may have served to escalate the severity of harm incurred from violent altercations.

OP80

FORMATIVE EVALUATION OF THE UK NHS DIABETES PREVENTION PROGRAMME DEMONSTRATOR PHASE: REVIEW OF BASELINE INFORMATION

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Background The NHS diabetes prevention programme (NHS DPP) aims to identify people at high-risk of developing Type 2 diabetes, and offer them an intensive lifestyle change intervention (ILCI). The development, evaluation and implementation of the NHS DPP is planned in phases, starting with formative evaluation of a demonstrator phase. This study aims to 1) review and appraise activities related to recruitment, intervention delivery and equality across the seven NHS DPP demonstrator sites; and 2) inform the further development and ability to evaluate the programme.

Methods Information from documentation supplied by demonstrator sites was extracted and mapped against recommendations contained in NICE guidance PH38 (prevention of diabetes), NHS DPP specification and equality indicators. To facilitate the mapping exercise, themes within the guidance documents were identified and used in a coding framework to characterise demonstrator site programmes. Mapping was conducted by three reviewers and discrepancies were resolved through discussion.

Results Elements identified were categorised within four themes: (a) raising awareness and recruitment; (b) intervention components, design and delivery; (c) inequalities and adaptation and; (d) quality assurance, monitoring and training. Responsibilities for awareness raising and enrolment in the ILCI were unclear. In all sites referral to ILCI was via primary care or NHS Health Checks. Where a blood test was reported HbA1c was the most usual measure. Intervention content reporting was insufficiently detailed and varied across sites. The proposed programmes were less intensive and shorter than recommended. Place of residence and gender impacted on ILCI delivery in terms of choice of venue and availability of single-sex groups. Recommended minimum data items to evaluate programmes (age, sex, ethnicity, postcode, height,

weight, HbA1c and physical activity levels) were specified by five sites, whereas dietary data were only specified by one site. Programme deliverers included a range of professionals. The training received varied across sites, with regular review of intervention delivery, the deliverer and their training needs in some sites.

Conclusion This review developed a useful framework to reflect on the different elements, actors and responsibilities needed to implement an evaluable NHS DPP. Information provided at baseline from some sites, had items missing from intervention content, equality indicators and quality assurance procedures. Findings were used to make recommendations for the subsequent stages of the NHS DPP implementation and evaluation. Lack of clarity and detail in intervention specification will jeopardise evaluability of the NHS DPP.

CVD

OP81

EXPLAINING THE FALL IN CORONARY MORTALITY IN JAPAN BETWEEN 1980 AND 2012: IMPACT MODELLING ANALYSIS

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Background Coronary heart disease (CHD) mortality has declined substantially in Japan for several decades. However, the contributory factors remain unclear because major CHD risk factor levels have paradoxically increased since 1980, notably cholesterol, obesity and diabetes. Our objective is to quantify the contributions of prevention and treatment to the coronary heart disease mortality trends in Japan between 1980 and 2012.

Methods We used the previously validated IMPACT model to analyse mortality trends between 1980 and 2012 in the Japanese population aged 35–84 years. This model integrates data on changes in population size, CHD mortality, risk factors, and uptake of evidence-based cardiac treatments. Main data sources included official vital statistics, national patient, health and nutrition surveys, and the health insurance claims data. Relative risks and regression coefficients came from the published meta-analyses. The difference between observed and expected CHD deaths in 2012 was then partitioned among treatment benefits and risk factor changes. We also performed probabilistic sensitivity analyses to quantify the potential effects of parameter uncertainty.

Results From 1980 to 2012, age-adjusted CHD mortality rates in Japan fell by 61%, resulting in 75,680 fewer CHD deaths in 2012 than if rates had not fallen. Improvements in medical and surgical treatments were associated with approximately 59% (range, 56% to 61%) of the total mortality decrease. Major contributions came from therapy for angina in the community (explaining approximately 17% of the mortality fall), antihypertensive medication (≈10%), and heart failure therapies (≈7%).

Risk factor changes accounted for approximately 31% (19% to 42%) of the mortality fall. Some 24% from decreases in systolic blood pressure and 11% from falls in smoking

prevalence. However, rises in cholesterol, BMI and diabetes negated some of these benefits, potentially increasing mortality by 2%, 3% and 6% respectively.

Conclusion Approximately 60% of the CHD mortality fall in Japan between 1980 and 2012 was attributable to increases in evidence-based medical treatments, and 30% to falls in population risk factors. However, the substantial contributions from falls in blood pressure and smoking were offset by adverse trends in cholesterol, obesity and diabetes. Our results highlight the potential for further improvements in cardiovascular risk factors in Japan.

OP82

LONG-LIVED PARENTS AND CARDIOVASCULAR OUTCOMES: 8 YEAR FOLLOW-UP IN 189,000 UK BIOBANK PARTICIPANTS

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10.1136/jech-2016-208064.82

Background Coronary heart disease (CHD) risk, and especially the risk of early onset myocardial infarction, shows a strong familial pattern. Associations with other circulatory conditions and overall survival are less well studied. We estimated the associations between age at death of the parents and the risk of 18 prevalent and incident conditions, and mortality, in a large middle-aged UK cohort.

Methods Prospective data from the UK Biobank was available for 189,076 participants aged 55–73 years (including 696 offspring of centenarians). Participants were followed-up from baseline for hospital admissions and mortality (mean period of 6 years and 5.5 years respectively, maximum >8 years for both). We excluded premature parental deaths and parental survival was ranked into short, intermediate and long-lived categories. A combined ranked parental longevity score was created, with a higher score indicating a greater parental age at death. Cox proportional hazards regression models investigated the associations of parental longevity score and the risk of prevalent and incident disease and mortality.

Results At baseline, increasing parents' age at death was associated with participants being more physically active and having more education and higher income, plus having less obesity and lower rates of smoking. Adjusting for age, sex, ethnicity, education, income, smoking status, alcohol intake, physical activity and body mass index, parental longevity was associated with lower prevalence and incidence of several common circulatory conditions, including peripheral vascular disease (per longevity category Hazard Ratio for incidence: 0.73; 95% CI: 0.64, 0.83), stroke (HR, 0.77; 95% CI: 0.70, 0.86), heart failure (HR, 0.78; 95% CI: 0.70, 0.87), coronary heart disease (HR, 0.86; 95% CI: 0.81, 0.91) and atrial fibrillation (HR, 0.88; 95% CI: 0.82, 0.94). Offspring of longer-lived parents also had a lower risk of all-cause mortality (HR, 0.87; 95% CI: 0.84, 0.91) and a markedly lower risk of CHD mortality (HR, 0.74; 95% CI: 0.65, 0.83). However, the