

implemented smoke-free workplace laws designed to protect most workers. However, workers who work in other people's homes (such as home-care workers, tradespeople and nannies) are not protected by these laws, as smoking is not prohibited inside private homes. Previous research has suggested that domiciliary care workers, such as nurses making home visits to patients, are particularly heavily exposed to SHS. This research project sought to quantify that exposure in the context of wider occupational exposure to SHS.

Methods Through a programme of expert assessment, we developed a job exposure matrix (JEM) for SHS exposure among all classes of worker in the UK. Three raters assessed exposure to SHS for all UK occupations by 4-digit Standard Occupational Classification (SOC), rating likelihood, intensity and frequency of exposure.

To assess the extent of exposure to SHS among home-care workers, we conducted surveys of these workers in the NHS, two local authorities and a private organisation in Scotland. We conducted personal exposure monitoring with these groups of home-care workers, assessing their exposure to SHS by monitoring fine particulate matter (PM_{2.5}), air nicotine and changes in salivary cotinine over the course of a shift.

Results Our JEM indicated that around ten million workers in the UK may be occupationally exposed to SHS. Overall, 84 of 412 four-digit SOC codes (20.4%) were considered likely to have at least 10% of workers experiencing some degree of non-incident exposure to SHS during their duties. Exposure is estimated to be most severe among lower SES workers, particularly care workers. Our survey results indicated that many home-care workers are occupationally exposed to SHS. Local authority workers were more likely to be exposed than NHS workers, with 84% of council respondents reporting exposure during their work vs 15% of NHS respondents. Measurements revealed highly variable patterns of SHS exposure based on shift pattern and visit duration. Visits to smoking homes included peak PM_{2.5} concentrations in excess of 400µg/m³, sixteen times the WHO guideline limit for 24h periods.

Discussion SHS exposure remains a serious health concern for a considerable fraction of the UK working population. People in lower paid jobs are disproportionately affected by SHS at work, potentially a cause of health inequality. Home-care workers can experience frequent and high SHS exposure, and new policies are necessary to protect them from associated health harms.

OP68

CAN SOCIETY AFFORD FURTHER DISINVESTMENT IN SMOKING CESSATION? A MICROSIMULATION STUDY TO QUANTIFY SMOKING CESSATION SERVICES IMPACTS IN ENGLAND

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Background The UK smoking prevalence is decreasing, however, the inequality gap is increasing. A new UK Tobacco Strategy is being finalised and it urgently needs further underpinning research. Smoking cessation services (SCS) contributed around 15% of the reduction in UK smoking prevalence between 2001–2016. However, even these benefits are in jeopardy, given the proposed further funding cuts to SCS.

Using a previously validated microsimulation model, we quantitatively compared three future SCS scenarios: maintaining, disinvesting, or enhancing services.

Methods We modelled the effectiveness and equity impacts of three scenarios over a 20-year time horizon:

- A) a baseline of maintaining current SCS levels and trends;
- B) assuming disinvestment (no SCS);

C) an enhanced SCS enabling 30% of current smokers, aged between 30–79 years, to be supported in smoking cessation every five years. We used the validated IMPACT_{HINT} microsimulation, an implementation of the IMPACT_{NCD} framework, to estimate changes in smoking prevalence, disease burden, and economic impact. We simulated close-to-reality smoking histories, smoking-related diseases and lag times to disease. Population data were drawn from the Health Survey for England (HSE). We assumed the SCS one-year overall effectiveness of 8% quitting (reflecting published studies). We modelled the relapse probability post-cessation conditional on deprivation and years since cessation, informed by HSE. Standard UK Treasury discount rates were applied, and we report costs from a societal perspective, but no SCS costs included. We used R v4.04.

Results Preliminary results suggest that the disinvestment scenario could result in approximately 3000 (95% Uncertainty Intervals: 990 to 5400) additional cases of cardiometabolic diseases, common cancers, and chronic obstructive pulmonary disease compared to the baseline scenario; most of them in the most deprived quintiles. The policy could result in about 4500 (2700 to 6700) additional deaths and £220m (110m to 380m) additional costs. In contrast, enhancing SCS could prevent or postpone approximately 1700 (420 to 3000) disease cases, most of them in the most deprived quintiles, and about 1700 (680 to 2700) fewer all-cause deaths. The policy could produce savings of £270m (120m to 460m) over the simulated period.

Conclusion Disinvesting in SCS is likely to be counterproductive, given their substantial health and economic benefits. Our model suggests that SCS provision needs to be continued at least at current levels. An enhanced service provision could be beneficial (after addressing issues of staff capacity and implementation costs).

OP69

SOCIO-DEMOGRAPHIC DIFFERENCES IN SMOKING STATUS AND CESSATION BEFORE AND DURING EARLY PREGNANCY AMONG WOMEN IN ENGLAND: AN ANALYSIS OF THE NATIONAL MATERNITY SERVICES DATASET

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Background Smoking in pregnancy increases the risk of major adverse health outcomes for mothers and their offspring. The aim of this study was to describe socio-demographic differences in smoking before and during early pregnancy among women in England.

Methods Among 652,880 women with their first antenatal (booking) appointment recorded in the national Maternity Services Dataset between April 2018 and March 2019, 514,227 (78.8%) had valid data on all relevant variables and were included in analysis. Women reported their smoking status (including prior cessation), age and ethnicity. Level of deprivation was based on postcode and expressed as the Index of Multiple Deprivation. Descriptive analyses examined differences in smoking status by age, ethnicity and level of deprivation (deciles). Proportions were mutually adjusted for socio-demographic characteristics, and chi-square tests determined statistical significance.

Results Women had a mean age of 29.8y (SD 5.7), a median gestational age of 9.7 weeks at booking (interquartile range 8.4–11.4) and 35.6% were pregnant for the first time. Almost 1 in 4 women (23.5%) smoked 12 months before conception, 20.8% smoked around conception and 13.1% at booking. Smoking 12 months before conception was highly prevalent in women aged <20y (45.3%) and decreased to 16.5% in those aged ≥35y. The proportion who smoked before conception also decreased across level of deprivation, from 36.1% (most deprived areas) to 15.5% (least deprived). Asian (Chinese/South Asian/other Asian) (4.8%) and black women (10.1%) were less likely to smoke before conception compared with women of white (28.2%), mixed (24.3%) and other (14.0%) ethnicity. Among women who smoked before pregnancy, 14.5% quit during the 12 months before conception and 29.5% between conception and booking. Women aged ≥35y were nearly twice as likely to quit before conception as women aged <20y (17.0% vs 10.2%), but not more likely to quit in early pregnancy (28.6% vs 28.9%). Women living in the least deprived areas were three-times more likely to quit before conception than women in the most deprived areas (23.7% vs 7.8%), and twice as likely to quit in early pregnancy (41.3% vs 19.0%). All comparisons were significant at $p < 0.0001$.

Conclusion Smoking before and during pregnancy remains common among women in England, and socio-demographic differences in smoking cessation are most pronounced before pregnancy. This suggests targeted efforts are needed to reduce smoking uptake and/or increase cessation support, particularly for younger women of reproductive age, those living in the most deprived areas, and women of white and mixed ethnicity.

OP70

MERCHANTS OF DOUBT: A RANDOMIZED CONTROLLED TRIAL OF RESPONSES TO INDEPENDENT VS INDUSTRY-FUNDED MESSAGING ON THE HARMS OF ALCOHOL, CLIMATE CHANGE, TOBACCO AND SUGAR SWEETENED BEVERAGES

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Background As evidenced by research on tobacco industry documents, messages that seed uncertainty about product harms helped create more positive public attitudes towards industry, reduce support for regulation, and deflect potential litigation. There is mounting evidence that other harmful product industries engage in similar tactics, but the

extent to which these are effective in generating uncertainty in the mind of the public is unknown. This study aimed to assess the effects of industry and industry-sponsored messages on public understanding across a range of harmful products.

Methods We identified examples of industry-funded alternative causation arguments from the published literature focusing on (i) smoking and lung cancer; (ii) alcohol and breast cancer; (iii) alcohol and pregnancy harms; (iv) sugar-sweetened beverages and obesity; and (V) fossil fuels and climate change. Anonymized Qualtrix panel respondents were randomly assigned to be exposed to either a message on the risk in question from one of four industry-funded organizations (exposure), or one of four independent organizations (un-exposed). Participants were asked about the level of their prior knowledge on the topic before responding, along with age, gender and education level. We ran logistic regression models within each set of argument topics to examine the binary outcome of ‘uncertain/certain it doesn’t increase risk’ vs ‘certain it does increase risk’ in industry vs non-industry texts. We then pooled the results together in a random-effects meta-analysis.

Results In total, across all paired comparisons, $n=3284$ respondents received industry text and $n=3297$ received non-industry text. Exposure to industry messages led to significantly greater uncertainty compared to non-industry messages [Odds ratio (OR) 1.60, confidence interval (CI) 1.28–1.99]. Effect size was greater among those who self-rated as not/slightly knowledgeable (OR 2.24, CI 1.61 – 3.12), or moderately knowledgeable (OR 1.85, CI 1.38–2.48) compared to those very/extremely knowledgeable OR 1.28 (1.03–1.60). Analysis by industry revealed similar trends.

Conclusion This novel randomized controlled study demonstrates that exposure to messages from industry-sponsored organisations significantly increase uncertainty regarding the risk of climate change, sugar sweetened beverages, tobacco and alcohol. The difference in groups was predominantly due to more respondents reporting uncertainty. This evidence brings into question whether industries who produce harmful products and those in receipt of their funding should be permitted to communicate with the public about the harmful impacts and health risks, considering the effect, and the scale of these interventions. More broadly, policy-makers seeking to improve public understanding of risk and policy, should be aware of the spread and potency of commercially driven misinformation.

OP71

A SPATIAL ANALYSIS OF THE TOBACCO RETAIL ENVIRONMENT AROUND PUBLIC SCHOOLS IN SHANGHAI, CHINA

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Background Most smokers begin using tobacco before the age of 18. In China, the prevalence of experimental smoking among adolescents aged between 13–15 was 12.9% (2019). Greater access to tobacco retail has been identified as a major cause of earlier smoking initiation amongst this age group. This study examined the distribution of tobacco retailers around public schools in Shanghai, China, determining whether there was evidence of retailer clustering around schools and whether there is evidence of non-compliance with