Effectiveness of mass media campaigns to change tobacco use in England

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**Duration:** 2 years

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**Objectives:**
- To characterise recent campaigns in England. e.g. content, style, intensity
- To examine the impact of tobacco control (TC) advertising on: campaign recall, quitting, smoking rates, cigarette consumption, SHS exposure
- To determine which campaigns are particularly effective.
- To examine the impact on smoking-related health inequalities.
Outline of talk

- Tobacco policy in England
- Study aims
- Evaluating tobacco control interventions
- What we know so far...
- Tobacco control television advertisements in England
- Study – data, methodology, results, conclusions
- Using Opinions and Lifestyle/Opinions surveys in tobacco control research
Smoking Kills

Smoking kills: a White Paper on tobacco
Department of Health 1998

- Announced the government's plan of action to stop people smoking
- A huge leap forward in efforts to reduce smoking in the UK
- Arguably the most comprehensive strategy embarked upon anywhere in the world.
- The comprehensive package of measures/interventions include:

  *End tobacco advertising, promotion and sponsorship*

  *Tobacco tax increases*

  *Action against tobacco smuggling*

  *Choice for non-smokers and smokers in pubs and restaurants*

  *Mass media health promotion campaign.*
Tobacco policies in England, 2000-2010

- No evaluation of the effectiveness of the MMCs shown during the 2000s on smoking rates or cigarette consumption.
- April 2010 - the government froze spending on national public health campaigns.
- Campaigns reintroduced in September 2011, albeit at a lower level of funding after a DH report found that following the funding cuts, quit attempts fell.
Study aims

To evaluate whether the tobacco control television advertisements shown in England between 2002 and 2010 were associated with changes in smoking prevalence and cigarette consumption.

Focus on television advertisements (major expenditure on this media channel)

Will provide essential evidence for determining whether the cutting of government spending on mass media campaigns is justifiable in terms of its consequences on smoking prevalence and cigarette consumption.
Public health interventions

• Evaluating public health interventions is notoriously difficult.

• Consequently evidence is often weak.

• Examples of difficulties:
  - Population-level intervention
    RCT, for example, are often impractical and unfeasible
    No control group
  - Secular trends and confounders
    Disentangling effects of MMC from other tobacco policies
  - Small impacts are often expected and may be difficult to detect.
Evaluating TC interventions

- Population-level interventions to improve health
- Examples related to evaluations in England

<table>
<thead>
<tr>
<th>Study design</th>
<th>Example of data sources</th>
<th>Example of population-level intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomised controlled trials</td>
<td>-</td>
<td>May be unethical and impractical</td>
</tr>
<tr>
<td>Routinely collected data</td>
<td>Hospital Episode Statistics</td>
<td>Impact of Smokefree legislation (SFL) on adult asthma admissions</td>
</tr>
<tr>
<td>Repeated cross-sectional study</td>
<td>Health Survey for England, ONS Opinions Survey</td>
<td>1) Impact of SFL on exposure to secondhand smoke</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Effectiveness of mass media campaigns to reduce smoking rates and consumption</td>
</tr>
<tr>
<td>Longitudinal /cohort study</td>
<td>International Tobacco Control Policy Evaluation Project</td>
<td>Impact of televised tobacco control advertising on campaign recall</td>
</tr>
</tbody>
</table>
Impact on of TC television advertising on smoking rates and consumption

Studies to date:

**Mid-1970s to mid-1990s**
Community-level studies based on field experiments with intervention and control communities, or population-level studies. Studies evaluated campaigns run over short time periods in jurisdictions with little other tobacco control activity.

**2000s - present**
One study in Australia (repeated cross-sectional study) evaluated the effectiveness on national smoking rates when run as part of a comprehensive tobacco control strategy.
Impact on of TC television advertising on smoking rates and consumption

In the UK:

1990s
Evaluations of short-run campaigns targeting either a specific population subgroup or region in the 1990s when there was little other tobacco control activity.

2000s – present
No studies conducted on smoking prevalence and consumption*

* There is a 2012 study showing the positive impact of such campaigns on calls to the National Health Service stop smoking helpline in England (routinely collected data)
Television advertising 2002-2010

- Television Ratings (TVRs) - standard industry measure of an advertising campaign’s reach and frequency (indicator of exposure).

- We use total adult TVRs for all TC advertisements

- For example, 400 TVRs per month indicates that on average 100% of the adult population were exposed to 4 advertisements per month, or 50% were exposed to 8 advertisements, and so on.
Television advertising 2002-2010

• The TVR data used in this study relate to Department of Health-funded campaigns shown in England from January 2002 until April 2010.

• During this period the Department of Health also funded CRUK and BHF to undertake media campaigns. We include TVR data from these campaigns.

• These were the main purchasers of public sector TC advertisements during this period.
Television advertising 2002-2010
Campaigns differ in theme, emotional tone and style

Campaigns differ in intensity

International evidence suggests:

1) Campaigns which warn of the negative consequences of smoking and feature testimonials from real-life smokers are most effective
2) Four exposures per head per month (400 TVRs) are required to reduce smoking prevalence
3) Sustained campaign exposure due to the short-lived effects of campaigns
Cancer patient dies after advert

A Liverpool cancer patient who features in a new NHS anti-smoking campaign died just days after filming was completed.

The advert, which is launched across the UK on Monday, shows 58-year-old smoker Anthony Hicks lying in a hospital bed struggling to breathe.

He has a visible hole, or stoma, in his throat following a laryngectomy operation to remove his voicebox.

The NHS wants to raise awareness of head and neck cancer, 90% of whose sufferers are smokers.

"I will be alive to see that"

Mr Hicks talks about his illness and how his daughter is due to visit him from the United States.

His final words are: "I will be alive to see that."

The following image says he died 10 days after filming, and never got to see his daughters again.

Melanie Johnson, Minister for Public Health, said: "This new campaign is a stark reminder of the potential dangers of smoking and the horrific consequences it can cause.

Head and neck cancer surgeon Shaun Jackson, who was Mr Hicks' consultant at the University Hospital in Aintree, said: "Few people actually realise that cancer can actually occur in any of the tissues and organs in the head and neck.

"Smoking is by far and away the biggest risk factor for such
Is this the most disgusting anti-smoking advert yet? Cancerous tumour seen growing inside cigarette in New Year campaign

- Department of Health ad, which cost £2.7m, will run for nine weeks on television, billboards and online
- Launched in response to statistics which show more than a third of smokers still think the health risks are greatly exaggerated

By DAILY MAIL REPORTER
PUBLISHED: 00:12, 26 December 2012 | UPDATED: 08:07, 26 December 2012

This gruesome image of a tumour growing from a cigarette is part of the Government’s latest attempt to get millions of Britons to stop smoking.

The new Department of Health campaign launched today is in response to statistics which show more than a third of smokers still think the health risks are greatly exaggerated.

This is despite the fact that smoking is still the biggest cause of premature death, responsible for taking more than 100,000 lives in the UK every year.

Scroll down to watch the ad

The Department of Health hopes the image of a tumour growing from a cigarette will prompt some of Britain’s eight million smokers to quit.
New Smokefree homes and cars secondhand smoke campaign

On 31 March, the Department of Health launched a campaign reminding smokers about the dangers of secondhand smoke to their children and families.

The adverts dramatise the fact that over 80% of secondhand smoke is invisible and odourless, making it impossible to control. So, even if you smoke near an open window or door, the smoke can travel and harm others.

The campaign encourages smokers to order a free Smokefree Kit either by texting or from the Smokefree website. The Kit will provide additional information on the harms of secondhand smoke as well as giving smokers tools to help them make their home and car Smokefree, along with information and support on quitting.

The campaign is running across TV, radio, press and online channels for eight weeks until 28 May 2012.
Characterising campaigns in England


Tobacco control advertising campaigns funded and run by the Government between 2004 and 2010 are unlikely to have been maximally effective because:

1. the intensity (the number of TVRs) was often lower than the recommended level
2. the types of campaigns screened were not the most effective.

Relevant for any evaluation of effectiveness
Strategy

• Effects of tobacco control advertising occurred relatively quickly.
  - need monthly-level data to allow us to look at lagged effects.

• A RCT would be the best approach but:
  - unethical to manipulate exposure to MMCs to study effects on health if the intervention has been shown to work in other settings.
  - impractical - short time scales, difficult to manipulate experimentally.

• A prospective longitudinal cohort study would be the next best alternative, but:
  - there is no UK study that conducts follow-up surveys on individuals on a monthly basis
  - this design would still suffer threats to validity from confounders, similar to a cross-sectional study.

• Best available option – repeated cross sectional survey
Data

ONS Opinions Survey
Smokers were defined as those answering ‘Yes’ to the question ‘Do you smoke cigarettes nowadays?’.

Measures of cigarette consumption based on responses to two questions:
‘How many cigarettes a day do you usually smoke at weekends?’
‘How many cigarettes a day do you usually smoke on weekdays?’.

Average number of cigarettes smoked a day derived by taking an average of weekend and weekday consumption and weighting the weekend consumption by two-sevenths and weekday consumption by five-sevenths.

Respondents are also asked questions about their age, gender, region of residence, employment, education and gross income.
Data

Tobacco control policies

Coding scheme used to quantify TC activity separately in England for each month from 2002 to 2010.

Based on 4 policies:

(1) smokefree work and public places
(2) bans on advertising and promotion
(3) health warning labels on cigarette packets
(4) treatment to help smokers stop

Scoring for each policy was identical to that assigned by the Tobacco Control Scale (TCS), developed by Joossens and Raw (2006).

Cigarette pricing and spending on public information campaigns not included in our coding scheme.
Data

Cigarette costliness

• Defined as the proportion of monthly income that a packet of cigarettes costs

• Calculated as the weighted average price (WAP) of a packet of 20 cigarettes in month of interview divided by average monthly gross income of respondent

• Monthly income obtained from ONS Opinions Surveys

• WAP calculated using price and volume market share data from Nielsen, Price Checker and GHS
Methodology

• Information on month and year of interview of the Opinions Survey respondents was used to match the survey data to information on TVRs, cigarette prices and the Tobacco Control Score.

• Restrict to records for adults aged 18 years and older living in England

• Model smoking prevalence using Binomial generalised additive model

• Model average cigarette consumption using Poisson generalised additive model
Methodology

Covariates in models:

- TVRs for the current month and one and two month lags as three separate smooth terms using cubic regression splines.
- Tobacco control score as a categorical term
- Cigarette costliness on the log scale as a smooth term (using cubic regression splines)
- Individual-level variables associated with smoking, differential nonresponse and unequal probability of selection in the Opinions survey:
  - cubic regression splines for age and income
  - a linear term for number of adults in the household
  - categorical variables for gender, government office region, education, employment status and social class
Trends in TVRs, the tobacco control scale and WAP
Results

• A 400 point increase in tobacco control TVRs was associated with a:

  1.80% (95% CI: 0.47, 3.11) reduction in average consumption in the following month

  3% lower odds of smoking two months later (odds ratio 0.97, 95% CI: 0.95, 0.999)

• During the period 2002-2009, this accounted for a:

  1.2% decline in consumption (11.2% of the total decline seen over this period).

  0.5 percentage points decline in smoking prevalence (13.5% of the total decline seen over this period).
Limitations of study

- Cannot completely rule out that other, unmeasured variables may confound the relationship between TVRs and smoking outcomes.

- Small sample sizes leads to a lot of noise in data and might make it difficult to pick up impacts.

- Could not fully adjust for the survey sampling design (e.g. clustering)

- TVRs measure average potential exposure; individual-level exposure will vary depending on frequency of actual television viewing and attention to advertisements.

- WAP does not reflect the brand smoked by an individual and we know that price trends have varied markedly by brand.
Strengths of study

In an environment of intense tobacco control activity:

• This is the first European study to look nationally at the effect of TC advertisements on smoking prevalence and consumption

• This is the first international study to examine the impacts on consumption in an environment of intense tobacco control activity.

This study uses a statistical method which allows for nonlinear effects of the explanatory variables, including TVRs. This is in contrast to most other studies looking at the impact of mass media campaigns on smoking behaviour which assume linear effects of TVRs.
Conclusions

- Tobacco control television advertisements associated with positive changes in smoking behaviour, even in a jurisdiction with comprehensive tobacco control policies where the campaigns may not have been maximally effective.

- In light of government budget cuts and concerns over the future of public health in the UK, it is vital that public health interventions are evaluated and published.

- This will ensure there will be evidence-based decisions on whether these interventions are maintained.
Opinions and Lifestyle/Opinions Surveys in Tobacco control research

• Current study illustrates the use of ONS Opinions Surveys to evaluate public health intervention.

• To increase its usage in TC research:
  1. Will there be a variable identifying the 15 centres that the new Public Health England will operate through?
  2. Is it possible to get full detail about the sampling design (e.g. anonymised psus)?
Opinions and Lifestyle/Opinions Surveys in Tobacco control research

- Public Health England (PHE)
  - established on 1 April 2013
  - to protect and improve the nation’s health and wellbeing, and to reduce inequalities.
  - Detail of which PHE centre individuals reside will enable regional evaluations of public health interventions to be evaluated.

- Sampling design
  - Without full detail about sampling design – all models using data from this survey will be limited.
  - Particularly important when result are borderline significant.
Public Health England will operate through four regions and 15 centres. These are shown on the map below.
Acknowledgements

The TVR data was obtained from M4C/BARB.

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The ONS Opinions Survey data were obtained from the UK Data Archive (www.data-archive.ac.uk). However, the original data creators, depositors or copyright holders, the funders of the Data Collections and the UK Data Archive bear no responsibility for the further analysis or interpretation of data included within this report.
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Until 2011, they were the primary means by which a wide range of policies and programmes of the Government of the United Kingdom were delivered in the regions of England.

Between 1994 and 2011, nine regions had an official administrative role within UK Government. While they no longer fulfill this role, they continue to be used for administrative purposes.