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## Tobacco imagery on prime time UK television

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**ABSTRACT**

**Background** Smoking in films is a common and well documented cause of youth smoking experimentation and uptake and hence a significant health hazard. The extent of exposure of young people to tobacco imagery in television programming has to date been far less investigated. We have therefore measured the extent to which tobacco content occurs in prime time UK television, and estimated exposure of UK youth.

**Methods** The occurrence of tobacco, categorised as actual tobacco use, implied tobacco use, tobacco paraphernalia, other reference to tobacco, tobacco brand appearances or any of these, occurring in all prime time broadcasting on the five most popularly viewed UK television stations during 3 separate weeks in 2010 were measured by 1-minute interval coding. Youth exposure to tobacco content in the UK was estimated using media viewing figures.

**Findings** Actual tobacco use, predominantly cigarette smoking, occurred in 73 of 613 (12%) programmes, particularly in feature films and reality TV. Brand appearances were rare, occurring in only 18 programmes, of which 12 were news or other factual genres, and 6 were episodes of the same British soap opera. Tobacco occurred with similar frequency before as after 21:00, the UK watershed for programmes suitable for youth. The estimated number of incidences of exposure of the audience aged less than 18 years for any tobacco, actual tobacco use and tobacco branding were 59 million, 16 million and 3 million, respectively on average per week.

**Conclusions** Television programming is a source of significant exposure of youth to tobacco imagery, before and after the watershed. Tobacco branding is particularly common in *Coronation Street*, a soap opera popular among youth audiences. More stringent controls on tobacco in prime time television therefore have the potential to reduce the uptake of youth smoking in the UK.

**INTRODUCTION**

Smoking and other tobacco content are common in films marketed to children and young people in the UK<sup>1</sup> and elsewhere,<sup>2–4</sup> and as a recognised cause of experimentation and uptake of smoking among youth<sup>5–8</sup> represent a significant public health hazard. However, since an estimated 27 million British homes have a television,<sup>9</sup> and young people aged between 6 years and 17 years in Britain report that they watch television for an average of 2.5 h each day,<sup>10</sup> with 77% of film viewing occurring through television airing,<sup>11</sup> television has the potential to reach far larger audiences than films alone. Evidence from other countries indicates that tobacco content is common in popular television programmes,<sup>12–17</sup> occurring in around 40% of US<sup>14</sup> and 50% of German television<sup>15</sup> programmes

according to recent reports. However the only recent study of UK television content is an analysis of the 10 most popular programmes among 10–15-year-olds, carried out in 2005, which reported low levels of smoking content.<sup>18</sup> The extent to which children are exposed to tobacco content across the full range of programmes broadcast on television, including feature films, is unknown.

Tobacco advertising, promotion and sponsorship, including all television advertising and paid product placement, is now prohibited in the UK by the 2002 Tobacco Advertising and Promotion Act.<sup>19</sup> However, tobacco imagery included in television programmes for artistic or editorial purposes is exempt from the Act. Television broadcasting content in the UK is regulated by Ofcom,<sup>20</sup> an independent regulator which under the provisions of the 2003 Communications Act<sup>21</sup> publishes standards for the content of television programmes.<sup>22</sup> Ofcom defines a 21:00 watershed before which programmes should not be broadcast if unsuitable for children (those aged under 15 years), but in relation to smoking content advises only that before the watershed smoking should be 'editorially justified'.<sup>23</sup> To determine the extent to which children are exposed to smoking and other tobacco content in a representative sample of UK television programming we have therefore characterised the content of all programmes broadcast on the five national UK free-to-air channels during the peak viewing hours of 18:00–22:00 during three separate weeks in 2010, and used independent audience viewing figures to estimate youth exposure to the tobacco content.

**METHODS**

At the time of the study there were five national free-to-air channels available for viewing without a cable or satellite connection or subscription in the UK (*BBC1*, *BBC2*, *ITV1*, *Channel 4*, *Channel 5*), and these are the most frequently viewed UK channels.<sup>24</sup> Three of these (*ITV1*, *Channel 4* and *Channel 5*) are commercial stations which broadcast commercial advertising; *BBC1* and *BBC2* are public service channels with no commercial advertising.

For 7 days from Monday to Sunday on three occasions 4 weeks apart (19th–25th April; 17th–23rd May; and 14th–20th June 2010) we recorded all material broadcast by these five channels between 18:00 and 22:00, thus capturing 3 h before and 1 hour after the Ofcom 21:00 watershed.<sup>23</sup> Broadcasts were then analysed and coded in 1-minute intervals, recording tobacco appearances in any of the following categories:

*Actual tobacco use:* use of tobacco onscreen by any character, coded as cigarette, cigar, pipe or other (such as water pipe or chewing tobacco).

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**Implied tobacco use:** any inferred tobacco use occurring without actual use onscreen (eg, a comment about going for a cigarette or a smoky atmosphere), and coded as verbal or non-verbal.

**Tobacco paraphernalia:** the presence onscreen of tobacco or tobacco related materials, coded by the type of appearance (including cigarette or other tobacco pack, matches, lighter, ashtray, no smoking or smoking area signs).

**Other references to tobacco:** any reference to tobacco that did not involve actual or implied use, (eg, a news report of a new smoking cessation service), coded as being either verbal or non-verbal

**Tobacco brand appearance:** the presence of clear and unambiguous tobacco branding, and including cigarette or other tobacco packs, secondary advertising (advertisements appearing within other programmes) and branded merchandising

**Any tobacco content:** the occurrence of any of the above.

Interval recording methods have previously been shown to be a sensitive means of detecting relative changes in behaviour levels and previously used in studies exploring tobacco in films<sup>3 25 26</sup> and television.<sup>27 28</sup> Tobacco appearances were recorded as having occurred if observed onscreen once or more in any 1-minute coding period. Where multiple appearances of the same category in the same 1-minute interval occurred, this was considered a single event. Appearances that crossed a transition from one 1-minute interval to the next were recorded as having occurred in two separate intervals, and thus as two separate appearances. However, if appearances were in different coding categories (eg, if actual tobacco use and paraphernalia occurred in the same interval) then these were recorded as two separate instances. Since changes from one programme to the next, or breaks in a programme for advertising frequently did not occur at the end of a 1-minute interval, we coded part-minutes immediately before programme changes. For each minute that crossed over the transition from advertisements to programmes, and vice versa, half the minute was considered advertising, and half as programming, and recorded as part-minutes. Although the BBC channels showed no commercial advertising they did broadcast programme trailers in the breaks between programmes. This also occurred on the commercial channels, when they were often mixed with commercial advertising. We therefore coded advertisements and trailers together. We also categorised the *genre* of the programme (comedy, drama, soap opera, news, game show, feature film, chat show, sport, party political broadcast, documentary, reality TV, sci-fi/fantasy), as identified from the programme announcement, the Internet Movie Database, the channel's webpage or the researcher's discretion, and noted whether any part of the programme was broadcast before or after the 21:00 watershed.

Live audience viewing figures for the 18:00–22:00 study period in the under 18-year-old age group collected by the Broadcasters' Audience Response Board<sup>29</sup> were obtained from *Attentional*,<sup>30</sup> a commercial media consultancy firm. Data excluded programmes that began before 18:00, news programmes (because of regional variation) and advertisements or trailers.

Comparisons of tobacco content between programme genres and channels were made using multiple logistic regressions which allowed for clustering within each 4-h recorded interval. The *p* values for the effect of channel and genre were obtained using the Wald test as the likelihood ratio test was inappropriate due to the use of robust variance estimates to allow for clustering. These Wald tests are still testing whether there is a difference overall between channels or genres.

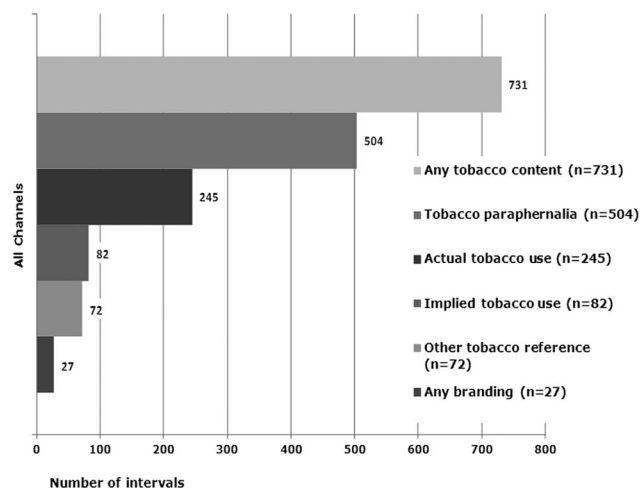
To estimate the total amount of exposure to tobacco content for the under 18-year-old audience, we first multiplied the number of intervals in each programme that contained at least some tobacco content (any tobacco, actual use and branded tobacco appearances) by the estimated number of viewers of that programme (ie, total number of exposures per programme). Then, we summed the total number of exposures per programme to give an overall total number of exposures to tobacco content among British youth.

## RESULTS

The 420 h of recorded broadcasting comprised 613 programmes and 1121 advertisements/trailers, and included 25 210 part or full 1-minute intervals, of which 21 996 were from programmes and 3214 from advertisements/trailers. Channel 5 broadcast a total of 165 different programmes; BBC1 120, BBC2 116, Channel 4 109 and ITV1 103. Documentaries (161), news programmes (139) and soap operas (72) were the most frequent programme genres. Documentaries also occupied the greatest amount of broadcasting time (6935 min), followed by news (2862 min), drama (2250 min) and sport (2169 min).

### Any tobacco content

There were 731 intervals (2.9% of total) containing any tobacco appearances, and for the most part comprised tobacco paraphernalia (figure 1). This proportion was highest on ITV1 (3.6%) and lowest on Channel 5 (2.4%), but not significantly so after allowing for clustering within each channel (Wald  $\chi^2=4.36$ ,  $p=0.36$ ). Of the 613 programmes broadcast, 210 (34%) contained any tobacco, occurring in 699 (3.2%) of 1-minute intervals in programmes (range 2.3% to 4.5% between channels). Tobacco content differed significantly between genres, occurring at least once in more than half of all reality TV (67%), feature films (64%) and comedy (52%) programmes (soap opera (49%); drama (48%); chat show (37%); documents (37%); news (22%); sport (21%); game show (20%); party political broadcast (5%); Sci-fi/fantasy (0%)). When channel and genre were included in a logistic regression model with allowance for clustering, there was still no significant difference between channels (Wald  $\chi^2=7.31$ ,  $p$  value=0.12) but the difference between genres remained so (Wald  $\chi^2=77.10$ ,  $p<0.05$ ). News, game shows, sports and documentaries were significantly less likely to include any tobacco content than comedy (baseline). Of 1,121



**Figure 1** Number of 1-minute intervals that contained any tobacco by coded category.

advertisements/trailers analysed, 29 (2.6%) contained any tobacco, occurring in 32 of 3214 1-minute intervals of advertisements/trailers. With the exception of advertisements for smoking cessation products this occurred almost entirely in programme trailers. The 75% of hours of programming in our sample broadcast before the 21:00 watershed contained 69% of the observed tobacco appearances.

### Actual tobacco use

Actual tobacco use appearances occurred in 245 (1%) of all intervals, in 73 (12%) programmes and 7 (0.7%) advertisements/trailers, all of which were trailers on BBC1 or BBC2. Most actual tobacco use appearances were of cigarette smoking (183 intervals; 75%), followed by pipe (19%) and cigar smoking (8%). Actual tobacco use occurred in 9 of the 12 programme genres (figure 2), and at least once in more than half of all feature films and reality TV. The majority of actual tobacco use appearances (60%) were broadcast before 21:00. Of the 13 feature films that contained actual tobacco use, 9 were broadcast on one channel (Channel 5) and 10 were broadcast, in whole or in part, before 21:00. All of the films shown had been classified by the British Board of Film Classification as suitable for viewing by children, and six of them with no age restriction (classified PG or U). When channel and genre were included in a logistic regression model, feature films were significantly more likely and soap opera, news, sport, chat show, and documentary genres less likely to include actual tobacco use in comparison with comedy (baseline); there was no significant difference between channels.

### Implied tobacco use, tobacco paraphernalia and other tobacco references

At least one appearance of implied tobacco use, tobacco paraphernalia or other reference to tobacco occurred in 618 (2.5%) intervals. Tobacco paraphernalia occurred in 504 intervals in 204 separate broadcasts (programmes and advertisement/trailer breaks combined), and predominantly comprised no-smoking signs and/or symbols (52%), followed by cigarettes, cigars, pipes, tobacco packets (23%), ashtrays (14%), lighters or matches (9%) and other (1%). Other tobacco paraphernalia appearances comprised Nicorette inhalators, a cigarette vending machine, a picture of a pipe and a metal cigarette carrying case. Implied tobacco use occurred in 82 intervals (0.3%) and was

usually non-verbal (56 intervals, 68%). Other references to tobacco occurred in 71 intervals in 33 broadcasts, most of them (97%) verbal.

### Tobacco brand appearances

There were 66 tobacco brand appearances, occurring in 27 intervals in 18 programmes. The frequency of brand appearances differed significantly between channels (Wald  $\chi^2=11.54$ ,  $p=0.02$ ), being most frequent on BBC1 and ITV1. Although some of these brand appearances occurred in historical footage, the most common source was point-of-sale tobacco displays, sometimes in news reporting, but predominantly in soap operas or other fiction (table 1). When comparing genres in which at least one 1-minute interval of tobacco brand appearance occurred, there was a significant difference before (Wald  $\chi^2=46.74$ ,  $p=0.001$ ) and after (Wald  $\chi^2=15.14$ ,  $p=0.02$ ) adjustment for differences in channels. The programme with the most brand occurrences was an ITV1 soap opera, *Coronation Street*. Almost all brand appearances (97%) occurred before 21:00. The most common brands appearing were *Silk Cut* and *Mayfair*, both of which are Gallaher Group (now Japan Tobacco International) products.

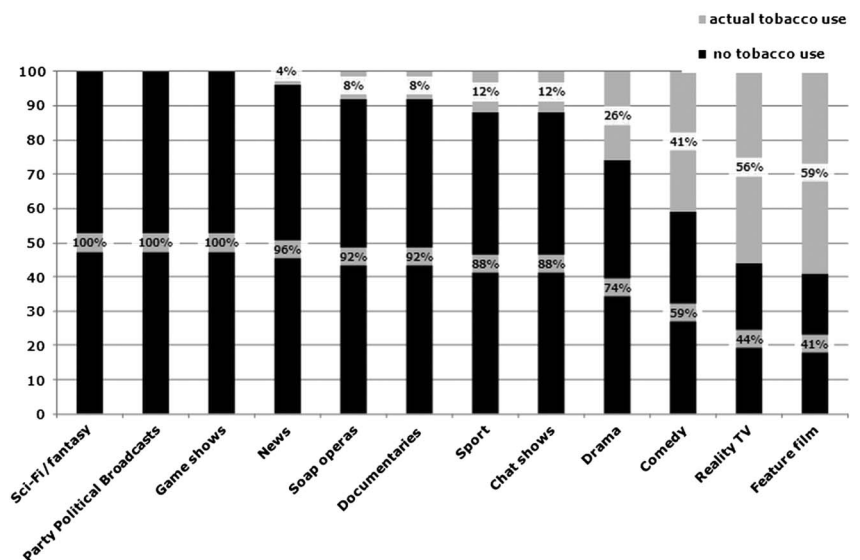
### Estimated exposure

In the 520 programmes for which viewing data were available, there were 184 programmes that included 652 intervals containing any tobacco, 65 containing 219 intervals of actual tobacco use and 15 containing 25 intervals of tobacco brand appearance. All of these programmes were watched by youth audiences, averaging 265 000 and ranging from 4600 to 1 968 000. The estimated number of youth viewers watching each programme, categorised by the number of tobacco intervals (any tobacco, actual tobacco use and tobacco brand appearance) contained is shown in a scatter plot in figure 3. These content and audience data translated into an average total number of instances of exposure of 59 million for any tobacco, 16 million for actual tobacco use and 3 million for tobacco brand appearances per week.

### DISCUSSION

This study demonstrates that although tobacco occurred much less frequently on television than has previously been documented for films,<sup>1</sup> tobacco content remains present in a third of all

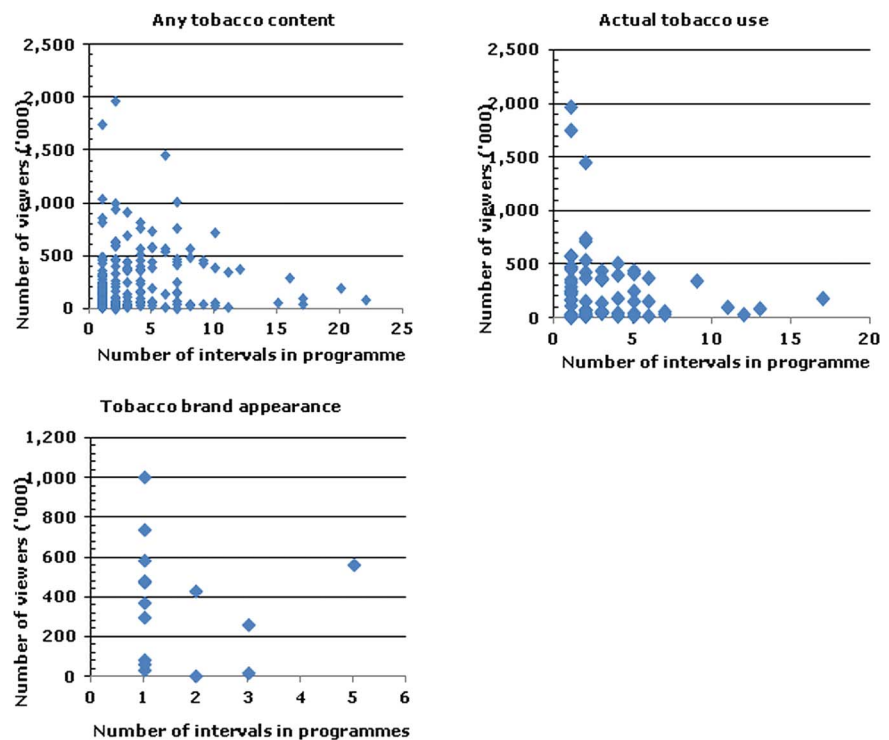
**Figure 2** The proportion of each genre that contained, and did not contain actual tobacco use (n=613).



**Table 1** Details of appearance of tobacco branding

Genre	Programme	Broadcast time*	Pre/post watershed	Intervals	No. of brands	Brands	Type of brand appearance	Description
BBC1								
Chat show	The One Show	18:58–19:27	Pre	3	12	Mayfair (2), Superkings (2); Silk Cut (2); Lambert and Butler (2); Benson and Hedges (2); Hamlet (1); Berkley (1)	Cigarette packets	Branded cigarette packets visible
Game show	A Question of sport	19:29–19:58	Pre	1	2	Rothmans (1), Marlboro (1)	Advertisement and sponsorship	Clip of Formula One racing—Large Marlboro adverts, and Rothmans branded car
News	BBC News	18:00–18:57	Pre	1	2	Benson and Hedges (1), Mayfair (1)	Cigarette packets	Branded cigarette packets visible
Soap opera	Eastenders	19:29–19:58	Pre	1	6	Richmond (1), Rizla (1), Regal (1), Superkings (1), John player (1), Lambert and Butler (1)	Cigarette packets	Branded cigarette packets visible (Also, Niquitin CQ and Nicorette visible)
BBC2								
Documentary	Mary Queen of Shops	19:03–20:02	Pre	1	3	Marlboro green (1); Marlboro gold (1); Rizla (1)	Cigarette packets	Branded cigarette packets visible
Drama	Money	21:02–22:00	Post	1	1	Winston (1)	Cigarette packet	Branded tobacco packet on table
ITV1								
Soap opera	Coronation Street	20:30–20:57	Pre	2	8	Silk cut (2); Superkings (1); Mayfair (2); Regal (1); Benson and Hedges (1); Lambert and Butler (1)	Cigarette packets	Branded cigarette packets visible
Soap opera	Coronation Street	19:31–19:58	Pre	1	1	Hamlet (1)	Cigar box	Cigar tin visible behind the bar in the Rovers Return bar
Soap opera	Coronation Street	20:29–20:57	Pre	1	3	Silk Cut (1); Regal (1); Mayfair (1)	Cigarette packets	Branded cigarette packets visible
Soap opera	Coronation Street	19:32–19:59	Pre	1	2	Lambert and Butler (1); Mayfair (1)	Cigarette packets	Branded cigarette packets visible
Soap opera	Coronation Street	20:30–20:58	Pre	5	11	Silk Cut (5); Mayfair (5); Regal (1)	Cigarette packets	Branded cigarette packets visible
Soap opera	Coronation Street	20:28–20:56	Pre	1	2	Hamlet cigars (1); Silk Cut Purple (1)	Cigarette packet and cigar tin	Branded cigarette packets visible
News	ITV News	18:00–18:57	Pre	1	3	Mayfair (1); Silk Cut (1); Benson and Hedges (1)	Cigarette packets	Branded cigarette packets visible
Channel4								
Reality TV	Big Brother	21:02–22:00	Post	1	1	Golden Virginia (1)	Tobacco packets	Branded tobacco packets visible
Channel5								
Documentary	Britain's Greatest Machines	20:02–20:59	Pre	2	5	John Player (5)	Adverts and sponsorship	Clip of 80's motor racing showing track side advert for John Player, also John Player Special branded motor racing cars
Chat show	Live from Studio 5	18:30–19:26	Pre	2	2	Marlboro (2)	Branded cigarette and merchandise	Item on show about methods of stopping smoking, a clip of a close up of someone lighting a cigarette is shown, the cigarette is Marlboro branded; close up of an ashtray showing Marlboro branded cigarettes
Feature film	Secret Window	21:01–22:00	Post	1	1	L and M (1)	Cigarette packet	Main character takes a packet of cigarettes out of his desk (L and M branded)
News	C5 News	18:59–19:01	Pre	1	1	Marlboro (1)	Branded merchandise	News item: about paying people to stop smoking, close up of Marlboro branded, ashtray visible

**Figure 3** Youth audience for programmes containing tobacco intervals, categorised by the number of intervals per programme.



prime time free-to-air television programmes broadcast in the UK. Although much of this imagery comprised paraphernalia including no smoking signs, actual tobacco use occurred in 12% of programmes, predominantly feature films, reality television and comedy genres. Brand appearances were rare and sometimes occurred in historical footage, but arose predominantly from images of point-of-sale displays broadcast in news and other factual reporting, and in fictional soap opera and other drama. Brand appearances were particularly common in one soap opera, *Coronation Street*, which is broadcast on five occasions per week by ITV1 and attracted between 6.5 and 10.4 million viewers per episode.<sup>31</sup> Tobacco appearances were similarly frequent before and after the 21:00 watershed, and were viewed by substantial British youth audiences, generating millions of episodes of exposure to smoking messages and tobacco branding per week.

Relative to feature film analysis, interval coding of television programmes is particularly time consuming because the short duration of programmes and advertisements/trailers demands the use of much shorter intervals for analysis. We used 1-minute intervals, with subdivisions to accommodate programme changes within intervals, and to make the workload manageable elected to code peak-time broadcasting over three 1-week periods. Our sample is therefore susceptible to seasonal influences on television content and news stories, but it is unlikely that this has distorted our findings because the main sources of tobacco content were programme genres that are shown throughout the year. At 420 h of broadcasting we analysed considerably more material than most other published studies,<sup>12 14 32</sup> including the 140 h of UK programming analysed by Ofcom in 2005,<sup>18</sup> and since we included all programming during 4 prime time hours each day, our sample is more representative of broadcasting viewed by children and young people in the UK than any other study. The audience viewing figures showed sizeable estimates of youth audiences for each of the programmes included in this study, suggesting significant

amounts of youth exposure to the tobacco appearances observed in our coding.

Exposure to tobacco content in films increases experimentation and uptake of smoking among children and young people,<sup>5-7</sup> and there is growing evidence that the same applies for tobacco content on television. Television viewing in general has been shown to be associated with smoking,<sup>33 34</sup> and also with earlier onset of smoking in adolescence<sup>35</sup> and increased smoking initiation.<sup>36 37</sup> Although further research would be required to determine if the effects of exposure to tobacco content in television is similar to that of film. Not all of the tobacco we observed was necessarily similarly hazardous, as the impact of tobacco paraphernalia such as no-smoking signage is likely to be very different from actual tobacco use, and indeed some tobacco content arose from smoking cessation promotions. However, actual tobacco use provides a strong behavioural model for young people likely to be as potent in television programmes as in films. Tobacco brand appearances are likely to create and reinforce brand awareness among young viewers. As has been shown both interval categories were widely viewed by young audiences.

We have previously reported high levels of tobacco content in film, including films classified as suitable for viewing by children,<sup>1</sup> so it is not surprising that these films contribute a significant component of broadcast content when they come to be shown on television. This observation, and the fact that they tend to be shown before the 21:00 watershed, provides further support to calls for films containing smoking to be classified as unsuitable for viewing by children and young people.<sup>38-40</sup> Other prominent sources of smoking content in our study included reality TV, soap operas, comedy and drama, and although smoking content in programmes shown before the 21:00 watershed is required by Ofcom to be editorially justified, that justification was rarely evident to us. The inclusion of real tobacco brands (as opposed to fictitious brands) in *Coronation Street* and other fictional programmes appeared particularly

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unnecessary, and of questionable legality given that the 2002 Tobacco Advertising and Promotions Act,<sup>19</sup> which covers programming content as well as advertisements, prohibits the display of an advertisement ‘whose purpose is to promote a tobacco product, or whose effect is to do so’.<sup>19</sup> Ofcom has been aware of the high levels of tobacco in UK soap operas since 2005<sup>18</sup>; our findings in comparison with that study<sup>18</sup> suggest that *Coronation Street* is the only soap opera that has not appreciably reduced tobacco content since then. Although much of this brand imagery arose from point-of-sale displays which are now scheduled to be prohibited in England (where *Coronation Street* is set), this change is not scheduled to apply to small retailers, such as those represented in *Coronation Street*, until 2015.

Our study thus demonstrates that tobacco content, including smoking and tobacco branding, occurs to an appreciable degree in UK television, and in programmes watched by youth audiences, and as such is likely to increase brand awareness and the risk of smoking experimentation and uptake among young children. Although our analysis was limited to UK television it is likely that similar exposures occur elsewhere, and further studies are required to investigate this; however our observations on feature films and to a lesser extent UK programmes such as *Coronation Street* that are broadcast widely in other countries translate more generally. We suggest that guidelines on tobacco content need to be revised and more carefully enforced if we are to protect children from this hazardous exposure. Therefore we would recommend that future television programming remove gratuitous depictions of tobacco, particularly actual smoking and tobacco branding, from programmes aimed at young people or, in the UK, scheduled before the 21:00 watershed.

## Key messages

- ▶ Previous studies have shown that tobacco imagery is common in films watched by children and young people, and that the film classification system used in the UK fails to protect against this exposure.
- ▶ This study demonstrates that tobacco imagery also occurs in UK prime time television and is seen by millions of children and young people. It shows that films are a major source of this exposure, but that tobacco imagery also occurs in other genres and particularly in *Coronation Street*, a soap opera popular among youth audiences, in which tobacco branding is also common. The occurrence of tobacco imagery is equally common before and after the UK’s 21:00 watershed for acceptable youth viewing.
- ▶ Tobacco content in mainstream television is thus a potentially important source of exposure of children and young people to tobacco brands and smoking behavioural modelling, which should be considered by UK television regulators.

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**Provenance and peer review** Not commissioned; externally peer reviewed.

**Data sharing statement** The dataset used for this study was compiled by the authors specifically for this study. Free-to-air television broadcasting were recorded and coded for tobacco content, then analysed with the findings reported here. In addition to this data were collected on the alcohol content of the same broadcasting and is in the process of being analysed.

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## Tobacco imagery on prime time UK television

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