The impact of the point-of-sale tobacco display ban on young people in Scotland: before-and-after study

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Scientific summary

The DISPLAY study

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Scientific summary

Background

Among young people, exposure to tobacco promotions at point of sale has been shown to increase the perceived ease of purchasing tobacco, estimated smoking prevalence, smoking susceptibility and smoking initiation. Among adults, images of tobacco packs elicit craving in smokers, while tobacco displays prompt impulse purchasing in smokers and urges to start smoking in recent ex-smokers.

Legislation that prohibits tobacco displays at point of sale has been implemented in a number of countries, including Thailand, Canada, Ireland, Norway, Australia, Finland, New Zealand, England, Wales and Northern Ireland. In Scotland, a ban on point-of-sale tobacco displays was introduced in large stores (i.e. those > 280 m^2) in April 2013. The ban was extended to small retailers in April 2015.

The aims of the current study (henceforth referred to as the DISPLAY study) were to determine the impact of the Scottish point-of-sale legislation on young people's exposure to tobacco advertising, their attitudes towards smoking and their smoking behaviour; and to identify any 'unintended consequences' of the legislation.

Methods

The study had a multimodal before-and-after design and used mixed methods to collect data in four purposively selected communities. For the purposes of the study, community was defined as the catchment areas of four secondary schools selected for study. Schools were selected to reflect two levels of urbanisation (large urban vs. other urban/small town) and two levels of deprivation (high vs. medium to low) and were located in the central belt of mainland Scotland.

The study had the following four main components.

Mapping and spatial analysis of the location and density of tobacco retail outlets

Data (address and full postcode) for all tobacco retail outlets in Scotland were downloaded from the *Register of Tobacco and Nicotine Vapour Product Retailers* at baseline (January 2013) and then annually until 2017. Data on tobacco retailers located in the four study communities were then extracted. The retail outlets selected were restricted to large supermarkets and small retailers, including off-licences; confectioners, tobacconists and newsagents; small grocers (including licensed); petrol stations; and fish and chip shops. The retail outlets identified were then verified through field visits and integrated into a Geographical Information System for analysis.

Marketing audits of tobacco retail outlets most used by young people

Researchers visited all retail outlets in the study communities in pairs to record brief information about the visibility and placement of tobacco products in the store; how tobacco products were displayed; how tobacco products were actively promoted for sale (both externally and internally); the branding of display units and pack sizes available; the most prominent brand, if any; the communication and visibility of pricing information; and tobacco control signage. The audits were discreet and did not require retailer co-operation. Data collection was by making a token purchase in each retail outlet to gain access to the tobacco counter. Observers also devised techniques to accurately recall and unobtrusively record information.

A panel of 24 retailers was also recruited from four communities matched with our main study areas. Researchers visited these retail outlets annually between July and August from 2013 to 2017 to collect observational data on point-of-sale advertising and marketing strategies and to conduct in-depth interviews with retail managers/owners from each outlet.

Cross-sectional school surveys of pupils, with embedded pupil cohorts

The school survey had a repeat cross-sectional design with embedded pupil cohorts. Data collection took place between February and March 2013 (baseline) in all study communities, with longitudinal follow-up for 4 years. In 2013 and 2014, all Secondary 2 (13-year-olds) and Secondary 4 (15-year-olds) pupils were surveyed. Between 2015 and 2016 the survey included all pupils in Secondary 1 to Secondary 6 (12- to 17-year-olds). Data were collected using an anonymous self-complete questionnaire administered by class teachers under exam conditions. The questionnaire included questions on sociodemographics; pupil smoking behaviours and attitudes; family and peer smoking behaviours and attitudes; access to tobacco products; brand awareness; frequency of visits to large supermarkets and small shops; and exposure to tobacco marketing and advertising. Questions on patterns of e-cigarette use were included from 2014 onwards; on exposure to e-cigarette marketing from 2015 onwards; and on awareness of standardised packs in 2017.

Focus group discussions with purposive samples of pupils

Four single-sex focus groups were conducted annually with Secondary 2 and Secondary 4 pupils in each study community. Focus group participants were recruited, with the help of teachers in the study schools, to include young people who were smokers or were thought to be most at risk of smoking. In order that the focus group discussions did not influence questionnaire responses, the focus groups were conducted 1–2 weeks after the school survey and audio-recorded with the permission of group participants. Groups lasted between 30 and 50 minutes and included discussions about the community; leisure time activities; local smoking behaviours and cultures; access to tobacco products, including direct, indirect/proxy and black-market; awareness of and views on tobacco promotion, including point of sale, packaging and branding; awareness and perceptions of the impact of the legislation; and views about preventing youth smoking. The subject of e-cigarettes arose spontaneously in three of the focus groups in 2013 and was included as a topic from 2014 onwards.

Results

Retailers' implementation of and compliance with point-of-sale legislation

Before the implementation of the legislation, tobacco displays were highly visible in small shops, placed at customer eye-level, and often next to products of particular interest to children, most notably confectionery. The majority of young people in the 2013 school survey (80%) recalled seeing tobacco displays both in supermarkets and in smaller shops, with young people from the least affluent backgrounds more likely to recall seeing them.

Compliance with the legislation was high when assessed by the marketing audit 2 weeks after the implementation deadlines in both supermarkets (in early May 2013) and small shops (in April 2015). A few instances of non-compliance were observed and these were mostly minor and temporary.

Although compliance with the legislation was found to be high, tobacco as a generic product continued to maintain a strong visible presence. Storage units were still clearly visible, with most located in a prominent position behind the service counter and most continuing to carry large generic signage promoting tobacco availability.

Small retailers' perspectives on the implementation and impact of point-of-sale legislation

Retailers expressed some concerns before the point-of-sale legislation was implemented in small shops, but the majority found that implementation was straightforward. Concerns that transaction times would increase proved to be unfounded, and there was no evidence of an increase in shoplifting or trade in black-market tobacco. Retailers had mixed views regarding the potential impact on consumer behaviour and tobacco sales, with some perceiving no difference and others perceiving a drop in sales, although this was not solely attributed to the point-of-sale legislation.

It is notable that the use of retailer incentives by tobacco company representatives persisted even after tobacco gantries were covered up. Retailers continued to be rewarded for product placement, availability and sales, and there was evidence that retailers were also incentivised to promote products verbally to customers.

The impacts of point-of-sale legislation on exposure to tobacco products in the retail environment

The number of retail outlets selling tobacco in the study communities remained stable, with only a small number of openings and closures over the course of the study. High levels of compliance with the Scottish point-of-sale display ban led to a considerable reduction in exposure to tobacco products in the study communities. However, the point-of-sale legislation has had very little impact on the visibility of tobacco storage units. Furthermore, at an individual level, there was evidence of an increase in socioeconomic inequalities: the decline in retailer density, when weighted by product visibility, was restricted to young people in the highest Family Affluence Scale tertile.

At a national level, tobacco retailer density fell across all deprivation quintiles between 2013 and 2015, but less so in the most deprived neighbourhoods. This was followed by a modest increase in 2016 and 2017. By the end of the study period the overall number of retailers had reduced and was similar to the number at baseline. The increase in retailer density was largely driven by an increase in the number of tobacco retailers in the most disadvantaged neighbourhoods of one-fifth of local authorities, resulting in an increase in inequality of tobacco availability.

Outcomes for young people

Previous research has suggested that point-of-sale legislation might lead to a reduction in brand awareness, perceived accessibility of tobacco products, perceived smoking prevalence, pro-smoking attitudes, smoking susceptibility and smoking initiation in young people.

Prior to implementation of the point-of-sale display ban, young people reported that tobacco displays were very eye-catching, colourful and attractive, and the number of tobacco brands they were aware of was positively associated with both regularly visiting small shops (adjusted relative rate ratio 1.19, 95% confidence interval 1.01 to 1.40; $p < 0.01$) and noticing point-of-sale displays in large supermarkets (adjusted relative rate ratio 1.15, 95% confidence interval 1.01 to 1.30; $p < 0.01$) and small shops (adjusted relative rate ratio 1.24, 95% confidence interval 1.03 to 1.51; $p < 0.01$). Brand awareness fell both after the partial ban (Secondary 2 pupils only) and after the comprehensive ban (Secondary 1 pupils only), but only among younger pupils.

Crude trends in the perceived accessibility of tobacco products and pro-smoking attitudes increased over time. However, after controlling for sociodemographics and a range of smoking-related covariates, implementation of both the partial and the comprehensive point-of-sale display bans was associated with a reduction in the perceived accessibility of tobacco (partial ban: adjusted odds ratio 0.80, 95% confidence interval 0.64 to 0.99, $p < 0.01$; comprehensive ban: adjusted odds ratio 0.72, 95% confidence interval 0.57 to 0.90, $p < 0.001$) and a reduction in pro-smoking attitudes after the comprehensive ban (adjusted odds ratio 0.67, 95% confidence interval 0.49 to 0.91; $p < 0.001$). However, it should be noted that significant reductions occurred only after e-cigarette use was included as a covariate.

Young people in the study overestimated smoking prevalence among young people by a factor of six and among adults by a factor of 2.5. Mean estimates of youth smoking prevalence fell by 3.4 percentage points (95% confidence interval −4.82 to−2.06; $p < 0.001$) after the partial ban and by 2.9 percentage points (95% confidence interval −4.34 to −1.47; $p < 0.001$) after the comprehensive ban (compared with baseline). Mean estimates of adult smoking prevalence also fell significantly but only after implementation of the comprehensive ban (1.7%, 95% confidence interval −3.0 to 0.40; $p < 0.01$). Again, when models were adjusted for e-cigarette use, the reduction in estimated smoking decreased.

A key objective of the point-of-sale display legislation was to reduce smoking susceptibility and the risk of smoking initiation in young people. Risk of smoking susceptibility in young people was significantly lower after the implementation of both the partial ban (adjusted hazard ratio 0.57, 95% confidence interval 0.46 to 0.72; $p < 0.001$) and the comprehensive ban (adjusted hazard ratio 0.44, 95% confidence interval 0.32 to 0.61; $p < 0.001$) (compared with baseline). Risk of smoking initiation also fell after the partial ban (hazard ratio 0.60, 95% confidence interval 0.46 to 0.79; $p < 0.001$) and continued to fall after the comprehensive ban (adjusted hazard ratio 0.27, 95% confidence interval 0.17 to 0.42; $p < 0.001$). Including e-cigarettes as a covariate had only a marginal effect on the risk of smoking susceptibility and smoking initiation. We found no evidence of differential impact of the legislation on Family Affluence Scale tertiles.

This study has found significant positive relationships between the implementation of point-of-sale legislation in Scotland and a range of smoking-related outcomes in young people. Using path analysis, the underlying mechanisms for two of these outcomes – perceived smoking prevalence and brand awareness – were explored. It was found that, prior to the implementation of any tobacco display ban, tobacco retail density had a direct effect on perceived smoking prevalence, but this disappeared after implementation of a partial point-of-sale ban. The analysis also demonstrated that, after the implementation of the partial point-of-sale ban in large supermarkets, tobacco retailer density had an indirect effect on brand awareness through family smoking but not after implementation of the comprehensive ban. This suggests that the point-of-sale ban has disrupted the links between tobacco retailer density and brand awareness and between tobacco retailer density and perceived youth smoking prevalence.

E-cigarettes

E-cigarettes emerged as an important contextual issue during the study. The proportion of pupils (Secondary 1 to Secondary 6) who had tried e-cigarettes rose from 19.4% in 2015 to 33.7% in 2017. Thus, by 2017, a greater proportion of young people had tried an e-cigarette than had tried smoking cigarettes (21.1%).

Young people reported that e-cigarettes were prominent and ubiquitous in the retail environment, and recall of seeing e-cigarettes for sale in small shops (adjusted odds ratio 1.49, 95% confidence interval 1.07 to 1.80; $p < 0.01$) and on the internet (adjusted odds ratio 1.35, 95% confidence interval 1.01 to 1.80; $p < 0.01$) was positively associated with young people trying e-cigarettes. In young 'never-smokers', the use of e-cigarettes was positively associated with smoking initiation both 1 year and 2 years later. The transition from e-cigarette use in 2015 to smoking initiation in 2017 was mediated by an increase in the number of smokers in friendship groups and in pro-smoking attitudes.

The rapid growth in e-cigarette use during the study is notable, and our findings suggest that the use of e-cigarettes may have disrupted the impact of the point-of-sale legislation on a number of the smoking-related outcomes. The evidence is strongest with respect to the impact of the point-of-sale legislation on perceived accessibility and acceptability of smoking. Further research is required to explore this in greater detail.

Conclusions

The Scottish legislation that bans point-of-sale tobacco displays has been successful in reducing exposure to tobacco products at both a community and an individual level. This has been accompanied by significant reductions in brand awareness (in younger pupils only), perceived accessibility of tobacco products, perceived smoking prevalence, pro-smoking attitudes, smoking susceptibility and smoking initiation in young people from the study communities.

However, even after tobacco storage units have been covered up, the storage units themselves continue to be prominent in retail outlets. Thus, the point-of-sale display ban has not fully eliminated tobacco as a generic product from the retail environment in Scotland. Cues that tobacco is for sale are still highly visible in many shops. The continuing existence of these cues in the retail environment was observed, particularly in areas of deprivation, where inequalities in storage visibility have widened since the point-of-sale ban was implemented. Furthermore, the availability and density of tobacco retailers has remained high across Scotland, with greater availability in more disadvantaged neighbourhoods. The regulation of the number of tobacco retail outlets, the size, design and position of storage units, and the use of generic signage to indicate tobacco availability are all likely to contribute to reducing these inequalities. The recent emergence of e-cigarettes may also have disrupted the impact of point-of-sale legislation.

This study suggests that further research is needed to examine the longitudinal relationships between tobacco outlet availability and product visibility and inequalities; the impact of generic tobacco cues in the retail environment on smoking behaviour; the development of social norms about the use of e-cigarettes among school leavers; and the impact of e-cigarettes and standardised packaging on smoking initiation and prevalence.

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