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Correlates of self-reported exposure to advertising of tobacco products and electronic cigarettes across 28 European Union member states

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ABSTRACT

Background Despite advertising bans in most European Union (EU) member states, outlets for promotion of tobacco products and especially e-cigarettes still exist. This study aimed to assess the correlates of self-reported exposure to tobacco products and e-cigarettee advertising in the EU.

Methods We analysed data from wave 82.4 of the Eurobarometer survey (November–December 2014), collected through interviews in 28 EU member states (n=27 801 aged ≥15 years) and data on bans of tobacco advertising extracted from the Tobacco Control Scale (TCS, 2013). We used multilevel logistic regression to assess sociodemographic correlates of self-reported exposure to any tobacco and e-cigarette advertisements.

Results 40% and 41.5% of the respondents reported having seen any e-cigarette and tobacco product advertisement respectively within the past year. Current smokers, males, younger respondents, those with financial difficulties, people who had tried e-cigarettes and daily internet users were more likely to report having seen an e-cigarette and a tobacco product advertisement. Respondents in countries with more comprehensive advertising bans were less likely to self-report exposure to any tobacco advertisements (OR 0.87; 95% CI 0.79 to 0.96 for one-unit increase in TCS advertising score), but not e-cigarette advertisements (OR 1.08; 95% CI 0.95 to 1.22).

Conclusion Ten years after ratification of the Framework Convention for Tobacco Control, self-reported exposure to tobacco and e-cigarette advertising in the EU is higher in e-cigarette and tobacco users, as well as those with internet access. The implementation of the Tobacco Products Directive may result in significant changes in e-cigarette advertising, therefore improved monitoring of advertising exposure is required in the coming years.

INTRODUCTION

Comprehensive bans on tobacco advertising, promotion and sponsorship are effective measures to decrease smoking rates.[1] Article 13 of the WHO Framework Convention for Tobacco Control[2] calls for comprehensive bans on all available media. Despite this, legislation to regulate tobacco product advertising across the globe is heterogeneous.[3] In response to the increase in e-cigarette advertising and use,[4–6] the Tobacco Products Directive (TPD) passed by the European Union (EU) in 2014[7] addresses issues pertinent to e-cigarette advertising in print and in audiovisual avenues. There are no specific provisions in the TPD, but 'a restrictive approach to advertising electronic cigarettes and refill containers' is suggested.[7] However, the speed of transposition of the TPD into national jurisdictions potentially varies, and hence discrepancies in exposure to e-cigarette advertising may exist across the EU.

As transposition of the TPD has commenced, it will be of interest to monitor changes in exposure to tobacco and e-cigarette advertising across the EU that may be potentially attributable to differing adoption of TPD articles or inherent population differences. The objective of this study was to explore factors associated with self-reported exposure of the EU population to tobacco products and electronic cigarettes advertising. For this purpose, we used a Eurobarometer survey, which was conducted before TPD implementation had commenced; hence our findings on e-cigarette advertising may act as a pre-TPD assessment of self-reported exposure to e-cigarette advertising in the past year.

METHODS

Data source

We conducted a secondary analysis of data from wave 82.4 of the Eurobarometer survey,[8] collected in 28 EU member states in November–December 2014. A multistage sampling design was employed to collect samples representative of the population aged ≥15 years. Face-to-face interviews were used to collect self-reported data from n=27 801 individuals from all 28 EU member states.

Measures

Exposure to tobacco products advertising was assessed with the question 'in the past 12 months, have you seen advertisements or promotions for tobacco products in (OUR COUNTRY)? Advertisement and promotion for electronic cigarettes or similar devices should not be reported here'. A similar question on advertising of 'electronic cigarettes or any similar devices (eg, e-shisha, e-pipe)' was also asked. Exposure to advertising was analysed as a binary variable ('often'; 'from time to time' and 'rarely' vs 'never') in order to reduce potential misclassification due to inaccurate recall of exposure frequency.

The survey also collected data on participants' smoking (current, former and never smokers), e-cigarette ever use, age (15–24, 25–39, 40-54 and ≥55 years), gender (male, female), age at which they

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stopped full-time education (≤15, 16–19 and ≥20 years), their difficulties to pay bills during the last 12 months (almost never/never and from time to time/most of the time) and internet use (everyday, occasionally, never). More details on Eurobarometer have been given elsewhere.[9 10]

Data on existing bans on tobacco advertising across the EU were extracted from the 2013 version of the Tobacco Control Scale (TCS).[11] We used each country's score on the domain 'bans of tobacco advertising', in which countries are assigned a score ranging from 0 to 12, based on the extent of advertising and promotion bans. Higher scores correspond to more comprehensive smoking bans.

Statistical analysis

We explored factors associated with reporting having seen any advertisements of tobacco products and—separately—e-cigarettes with a multilevel logistic regression model, with country being the higher level of analysis. The independent variables included in the model were sex, age, area of residence, education, difficulty to pay bills, internet use, tobacco smoking, e-cigarette ever use and TCS advertising score (at a country level). Sensitivity analyses were performed categorising only those reporting that they had seen advertisements often or from time to time as exposed. Analyses were performed with Stata V.14.0, incorporating the weights provided in the Eurobarometer data set to account for the complex survey design.

RESULTS

A total of 41.5% (95% CI 40.5% to 42.5%) and 40.0% (95% CI 39.0% to 41.0%) of the respondents reported having been exposed to a tobacco product and e-cigarette advertising or promotion in the past 12 months, respectively. Detailed results by country have been presented in the official Eurobarometer report.[9]

Current smokers were significantly more likely to report exposure to tobacco advertising (OR 1.26; 95% CI 1.17 to 1.36) and e-cigarette advertising (OR 1.11; 95% CI 1.04 to 1.19) in the past 12 months, compared with never-smokers (table 1). Former smokers were also more likely to report exposure to e-cigarette advertising compared with never smokers (OR 1.30; 95% CI 1.20 to 1.40), but not to tobacco advertising (OR 1.03; 95% CI 0.96 to 1.11). Those who had ever tried e-cigarette, occasional and daily internet users, younger respondents, men, people with financial difficulties and those with higher education were also significantly more likely to report having seen, read or heard tobacco and e-cigarette advertisements or promotions in the past 12 months. Results from the sensitivity analyses were very similar (supplementary table 1).

Respondents living in countries with more comprehensive bans in tobacco advertising were less likely to report exposure to tobacco advertisements (OR 0.87; 95% CI 0.79 to 0.96, for one-point increase in the TCS advertising score); however, this was not the case with e-cigarette advertising (OR 1.08; 95% CI 0.95 to 1.22) (table 1).

Table 1 Association of exposure to tobacco and e-cigarette advertisements or promotions with tobacco smoking, e-cigarette experimentation, internet use and sociodemographic factors in 28 European Union member states, Eurobarometer 2014

	Exposure to tobacco advertisements (n=25 454) OR (95% CI)	Exposure to e-cigarette advertisements (n=25 528) OR (95% CI)
Age (years)		
≥55 (ref.)	1.00	1.00
40–54	**1.17 (1.09 to 1.26)**	**1.17 (1.08 to 1.27)**
25–39	**1.28 (1.18 to 1.38)**	**1.28 (1.18 to 1.40)**
15–24	**1.60 (1.44 to 1.78)**	**1.46 (1.31 to 1.63)**
Gender		
Female (ref.)	1.00	1.00
Male	**1.32 (1.25 to 1.40)**	**1.14 (1.07 to 1.20)**
Difficulties paying bills		
Never/almost never (ref.)	1.00	1.00
From time to time/most of the time	**1.10 (1.04 to 1.18)**	**1.09 (1.02 to 1.16)**
Age when stopped education (years)		
Up to 15 (ref.)	1.00	1.00
16–19	**1.22 (1.12 to 1.33)**	**1.29 (1.17 to 1.42)**
≥20	**1.40 (1.27 to 1.54)**	**1.51 (1.36 to 1.67)**
Area of residence		
Rural (ref.)	1.00	1.00
Urban	**1.09 (1.03 to 1.16)**	**1.11 (1.04 to 1.18)**
Tobacco smoking		
Never smokers (ref.)	1.00	1.00
Current smoker	**1.11 (1.04 to 1.19)**	**1.26 (1.17 to 1.36)**
Former smoker	1.03 (0.96 to 1.11)	**1.30 (1.20 to 1.40)**
Internet use		
Never/no access (ref.)	1.00	1.00
Often/sometimes	**1.63 (1.47 to 1.80)**	**1.82 (1.64 to 2.03)**
Everyday	**1.71 (1.57 to 1.86)**	**2.21 (2.01 to 2.42)**
E-cigarette experimentation		
No (ref.)	1.00	1.00
Yes	**1.24 (1.13 to 1.37)**	**1.76 (1.60 to 1.94)**
Tobacco Control Scale tobacco advertising score	**0.87 (0.79 to 0.96)**	1.08 (0.95 to 1.22)

Results from a multilevel regression model adjusted for all the variables in the table; country was the higher level of analysis. Statistically significant associations are shown in bold.

DISCUSSION

Our analysis showed that sociodemographic factors were associated with the self-reported exposure to any tobacco and e-cigarette promotions in the past year, with those who had tried e-cigarettes and had frequent access to internet being more likely to report having seen an advertisement. Respondents living in member states with more comprehensive advertising bans were less likely to report exposure to tobacco advertisements, but did not differ in self-reported exposure to e-cigarette advertising.

The main outcome measure in Eurobarometer is self-reported frequency of exposure to advertising over the past 12 months, which was dichotomised to represent any exposure. While self-report is the most commonly used measure of media exposure, its validity and reliability may vary and it can be subject to recall bias,[12] especially in the current context of multiple and overlapping exposures to digital media.[13] Self-report is considered an adequate measure of the relative levels of media exposure,[12] but the timeframe (ie, 12 months) in the Eurobarometer question is considerably larger than the one typically used in tobacco surveillance; for example, the Global Adult Tobacco Survey assesses exposure in the past 30 days.[14] Additionally, we analysed the exposure measure as a binary variable which could not reflect the frequency of exposure. Nonetheless, sensitivity analyses using different level of exposure gave similar results.

Therefore, our results should be interpreted with caution and may not fully reflect actual levels of exposure.

The association between TCS advertising scores and self-reported exposure to tobacco advertising suggests that advertising bans may be effective in reducing exposure to marketing activities for tobacco products, as exemplified by the contrasting cases of Finland (maximum TCS advertising score and low self-reported exposure) and Germany (lowest TCS score and high self-reported exposure).[9 11] The lack of an association between TCS advertising scores and self-reported exposure to e-cigarette advertising could imply that other factors than the tobacco control environment, such as the market development, also play a role.

Having daily or frequent access to the internet was strongly associated with increased odds of having seen tobacco, but especially e-cigarette advertisements. E-cigarettes have a strong presence within social media[15–18] and online advertising is generally cheaper than in traditional media, allowing smaller companies to promote their products at relatively low cost. Online promotions are also harder to monitor and regulate and may attract younger users,[19] who are more likely to experiment with e-cigarettes.[20] Currently, the TPD does not address issues of online advertising of e-cigarettes, which should be further considered by policymakers, as it is a main source of e-cigarette promotions in the EU.[9] E-cigarette advertising is further complicated by the direct involvement of vapour store owners, who seem to be following strategies typical of the tobacco industry, including pricing discounts, loyalty programmes and use of print and social media[21] and of current e-cigarette users, who serve as an important source of information about e-cigarettes[19] and can disseminate information to a large number of people through social media.

The Eurobarometer survey is cross-sectional, thus precluding any conclusion on potential causal relationships, but the large and representative sample of the EU population allows for analyses that control for several confounding factors and yield results that are generalisable at an EU level.

CONCLUSIONS

The likelihood of self-reported exposure to any tobacco or e-cigarettes advertising in the past year was higher among smokers, male, young, literate, urban dwellers and users of the internet. Those living in countries with more comprehensive advertising bans were less likely to report exposure to tobacco advertising but not to e-cigarette advertising. Further longitudinal research with more sensitive measures of advertising exposure is needed to support these results and monitor potential changes on the characteristics of tobacco and e-cigarette advertising that may arise from national transposition and implementation of the TPD.

What this paper adds

- 41.5% of people aged ≥15 years self-reported past year exposure to tobacco products advertising and 40% to e-cigarette advertising in the European Union in 2014.
- E-cigarette ever-users, current smokers and those with frequent access to the internet reported higher past year exposure to tobacco and e-cigarette advertising.
- In member states with more comprehensive advertising bans, self-reported past year exposure to tobacco products advertisements was lower, but that was not the case with e-cigarettes.

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Correction notice This paper has been amended since it was published Online First. Owing to a scripting error, some of the publisher names in the references were replaced with 'BMJ Publishing Group'. This only affected the full text version, not the PDF. We have since corrected these errors and the correct publishers have been inserted into the references. The Funding statement has been added back into the paper.

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