Cessation behaviours among smokers of menthol and flavoured cigarettes following the implementation of the EU Tobacco Products Directive: findings from the EUREST-PLUS ITC Europe Surveys

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Cessation behaviours among smokers of menthol and flavoured cigarettes[AQ1]

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ABSTRACT

The European Tobacco Products Directive (TPD) introduced a ban on characterizing flavours in cigarettes (2016), including menthol (2020). The longitudinal data analysis of the EUREST-PLUS International Tobacco Control (ITC) Project Europe Surveys (n = 16 534; Wave 1 in 2016 and Wave 2 in 2018) found significant but small declines in the weighted prevalence of menthol (by 0.94%; P = 0.041) and other flavoured cigarette use (by 1.32%; P < 0.001) following the 2016 TPD. The declines tended to be driven primarily by the menthol and flavoured cigarette (MFC) smokers switching to unflavoured tobacco. Cigarette consumption declined between waves, but there were no statistically significant difference in decline between MFC and unflavoured tobacco smokers on smoking and cessation behaviours between the waves.

Introduction

The European Tobacco Product Directive (TPD) went into effect in May 2016 and, amongst other provisions, banned cigarettes and roll your own with characterizing flavours within the European Union (EU). A transition period was granted until May 2017, with the exception of menthol cigarettes that could be sold until 2020.[1,2] Implementation of the TPD offers a unique opportunity to research the profiles and behaviours of menthol and flavoured cigarette (MFC) users in European Union Member States (EU MS).[3,4]

This report used data from the EUREST-PLUS ITC Europe Surveys before and after the 2016 TPD ban to assess the changes (i) in the prevalence of different cigarette flavours [AQ5]in Europe and (ii) in the smoking status, cessation behaviours and cigarette [AQ6]flavour preferences following the 2016 ban on cigarettes with [AQ7]characterizing flavours, but before the 2020 ban on menthol cigarettes. [AQ8]The aim of the study was to understand whether, given the 2016 ban, MFC smokers changed their smoking patterns.[AQ9]

Methods

Study design and population

This was a longitudinal study of data of the EUREST-PLUS ITC Europe Surveys from eight EU MS (n = 19 691).[4,5] The baseline wave preceded the 2016 TPD ban (pre-TPD), and the second wave followed it (post-TPD, but before the implementation of the 2020 menthol flavour ban). The specific ITC waves were Wave 1 (2016) and Wave 2 (2018) of the ITC 6 European Country (6E) Survey (involving Germany, Greece, Hungary, Poland, Romania and Spain);[5] Wave 10 (2016) and Wave 11 (2017) of the ITC Netherlands (NL10) Survey;[6] and data from England collected as part of Wave 1 (2016) and Wave 2 (2018) of the Four Country Smoking and Vaping (4CV1) Survey.[7] Further details on the conceptual framework of ITC surveys can be found elsewhere.[8][AQ10]

Measures

Based on their self-reported preferred cigarette brand type, respondents were classified as: menthol, other flavoured, tobacco (unflavoured) and no usual flavour (did not indicate preference) users.[3,4]

We collected data on smoking status (pre-TPD: smoking daily/non-daily; post-TPD: smoking daily/non-daily/quit smoking/dual use of any cigarettes and electronic cigarettes); reduction in cigarettes smoked per day (CPD) (>5 CPD reduction, 1–5 CPD reduction, no change, 1–5 CPD increase, >5 CPD increase); quit attempts and success in the past 18 months to cover period since the baseline wave (no quit attempt/a failed quit attempt/quit smoking successfully).

Data on the following covariates were collected: age (18–24, 25–39, 40–54, 55+), nicotine dependence (as measured by the heaviness of smoking index) (range: 0–6[9]); sex and country.

Data analysis

All analyses were conducted using SAS-callable SUDAAN (Version 11.0.1). Descriptive statistics were estimated to characterize smoking and quitting at pre-TPD and post-TPD.

To assess the changes in prevalence of the usual flavour of cigarettes smoked between pre- and post-TPD, we used data from all respondents who provided valid information on their flavour of cigarettes smoked pre- and/or post-TPD ($n = 16\,534$). Weighted, binary generalized estimating equation regression models were used to estimate the adjusted prevalence of usual flavour of cigarettes smoked pre- and post-TPD. These models controlled for sex, age and smoking status at wave of recruitment. For each flavour, an overall Model 1 was estimated; Model 2 included a country*wave interaction effect to test whether there were differences in the adjusted prevalence of usual flavour smoked over time within each of the eight EU MS.

To assess the changes in smoking status, as well as cessation behaviours and cigarette brand preference between pre- and post-TPD; only respondents participating in both waves were included ($n = 5612$).

Results

Supplementary table S1 reports findings from Model 1 and Model 2 on changes in prevalence of different cigarette flavours from pre-TPD to post-TPD. The prevalence of menthol cigarette use post-TPD remained highest in Poland (11.1%), England (10.4%) and Romania (6.5%), and was lowest in Spain (1.4%). Spain was the country with the highest prevalence of other flavoured cigarettes pre-TPD but was replaced by Poland (3.7%) post-TPD. The proportion of other flavoured cigarette use post-TPD remained lowest in the Netherlands (0.3%). Overall, the combined prevalence of MFC use among smokers remained between 5% and 15% in all countries surveyed (and was highest in Poland at 14.9% and England at 11.7%), with the exception of Spain, where it fell to less than 2.5%

We found significant but small declines in the prevalence of menthol use (by 0.94%; $P = 0.041$) and other flavoured cigarette use (by 1.32%; $P < 0.001$) between waves in the pooled sample of all countries (see Supplementary table S1). This decline in MFC use was primarily driven by smokers switching to unflavoured tobacco, rather than quitting smoking. Almost 52% of menthol smokers continued to smoke menthol cigarettes, while 22.8% switched to unflavoured tobacco. Among other flavoured cigarette smokers these figures were 11% and 62.3%, respectively (see figure 1).

Figure 1 Changes in smoking status and preferences for the usual cigarette flavour from pre-TPD to post-TPD among smokers who were classified as menthol, other flavours and unflavoured tobacco users at the pre-TPD wave and who were successfully follow-up at the post-TPD wave. For further details see table 1. *Note*: Among menthol users at pre-TPD, by post-TPD: 51.6% continued to smoke menthol cigarettes, 22.8% switched to unflavoured tobacco, 14% quit smoking completely, 8.0% no longer reported having a usual flavour brand, 3.4% became dual users with e-cigarettes (together with any other cigarette brand type) and 0.3% witched to other flavoured tobacco. The width of the lanes is not to scale with the marginal proportions—the lanes for each flavour at Wave 1 represent 100% of the particular flavours users.

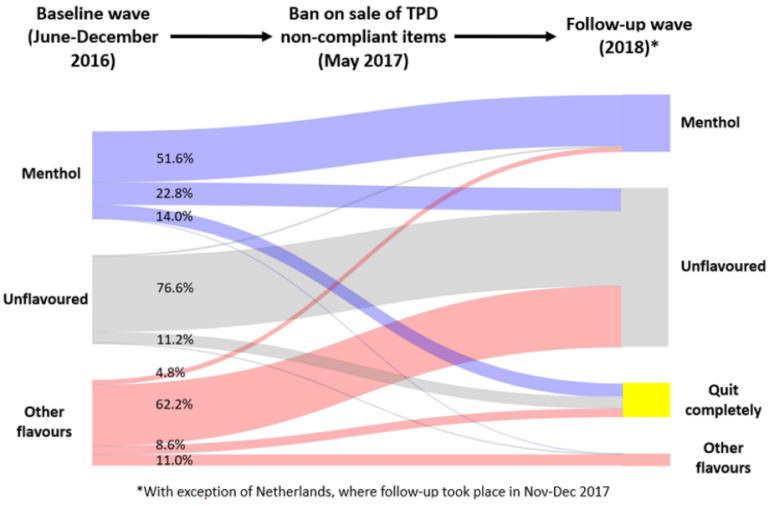

Table 1 presents changes from Wave 1 and Wave in the associations of cigarette flavoured smoked and smoking and cessation behaviours. Among smokers of menthol cigarettes 14% quit smoking altogether between waves, which was higher than the percentage of quitters among unflavoured tobacco smokers (12%), and among other flavoured cigarette smokers (9%). However, there was no significant association between the cigarette flavour at pre-TPD and

quit status at follow-up. Smokers tended to reduce how much they smoked from the pre-TPD to post-TPD wave. However, there were no statistically significant differences between MFC smokers and unflavoured tobacco post-TPD smoking status, on whether they increased or reduced the number of cigarettes smoked per day, and in cessation behaviour between waves.

Table 1 Change in smoking status, smoking behaviour and flavour type from pre-TPD to post-TPD

	Pre-TPD flavour type								
	Menthol		Other flavoured		Tobacco only (unflavoured)		No usual brand		
	n (%)	95% CI	*n* (%)	95% CI	*n* (%)	95% CI	*n* (%)	95% CI	*P*
Flavour type smoked post-TPD									
Menthol flavoured	187 (51.6)	44.4–58.7	5 (4.8)	0.8–14.9	60 (1.3)	0.8–2.1	17 (3.0)	1.4–5.6	***
Other flavoured tobacco	2 (0.3)	0.0–1.6	18 (11.0)	6.2–17.6	34 (0.8)	0.5–1.4	6 (0.9)	0.2–2.4	
Unflavoured tobacco	78 (22.8)	17.5–29.1	78 (62.3)	51.5–71.9	3450 (76.6)	74.6–78.4	270 (48.1)	41.9–54.3	
No usual brand	30 (8.0)	4.8–12.4	14 (11.9)	6.7–18.9)	276 (6.1)	5.0–7.3	199 (34.4)	28.6–40.6	
Dual user of any brand (cig + EC)	11 (3.4)	1.6–6.2	3 (1.4)	0.1–5.2	167 (4.0)	3.3–4.8	20 (3.1)	1.8–4.9	
Quit completely	54 (14.0)	9.8–19.4	13 (8.6)	3.7–16.5	507 (11.2)	9.9–12.6	59 (10.6)	7.6–14.5	
Smoking status (post-TPD)									
Still smoking	308 (86.0)	80.6–90.2	119 (91.0)	83.1–96.0	3959 (88.0)	86.6–89.3	513 (88.8)	84.7–91.8	NS
Quit completely	54 (14.0)	9.8–19.4	14 (9.0)	4.0–16.9	548 (12.0)	10.7–13.4	63 (11.2)	8.2–15.3	

	Menthol/other flavoured		Tobacco only (unflavoured)		No usual brand		
	n (%)	95% CI	*n* (%)	95% CI	*n* (%)	95% CI	*P*
Smoking status (post-TPD)							
Daily	376 (77.1)	72.0–81.5	3722 (82.8)	81.2–84.3)	437 (75.0)	69.9–79.6	***
Non-daily	51 (10.4)	7.5–14.4	237 (5.2)	4.4–6.2	76 (13.7)	10.2–18.1	
Quit	68 (12.5)	9.1–16.9	548 (12.0)	10.7–13.4	63 (11.2)	8.2–15.3	
Cig/day (difference between waves)							
>5 cig/day reduction	89 (19.1)	13.9–25.7	970 (22.0)	20.3–23.7	124 (21.1)	17.1–25.7	NS
1–5 cig/day reduction	107 (20.5)	16.6–25.1	901 (20.1)	18.6–21.7	102 (19.4)	15.0–24.8	
No change	203 (41.3)	34.5–48.4	1676 (36.1)	34.3–38.1	206 (35.4)	30.2–40.9	
1–5 cig/day increase	68 (14.3)	10.7–18.9	618 (14.3)	12.9–15.8	72 (12.7)	9.2–17.2	
>5 cig/day increase	25 (4.8)	2.7–7.8	311 (7.5)	6.3–8.9	60 (11.4)	8.2–15.8	
Tried to quit/quit successfully (between waves)							
Did not try to quit in past 18 months	302 (60.5)	53.9–66.8	2944 (66.1)	64.2–68.1	371 (65.7)	60.1–70.9	NS
Tried to quit in past 18 months	125 (27.0)	21.7–33.1	1012 (21.9)	20.3–23.6	142 (23.1)	18.5–28.4	
Quit smoking successfully (since wave 1)	68 (12.5)	9.1–16.9	548 (12.0)	10.7–13.4	63 (11.2)	8.2–15.3	

EC, electronic cigarette.

Discussion

The present study provides a number of important insights. Importantly, the declines of MFC prevalence were driven by the MFC smokers switching to unflavoured tobacco, rather than quitting smoking. This was the case of 62% flavoured cigarette users, as expected given the ban, but also 23% of menthol cigarettes users—a more surprising finding given that the ban on menthol cigarettes had not taken effect yet. Moreover, MFC smokers were not more likely to quit smoking or reduce cigarette consumption post-TPD than smokers of unflavoured cigarettes. Furthermore, despite the 2016 TPD ban, a small minority of smokers still smoked flavoured cigarettes, which could be due to the transition period in ban implementation.[1] Finally, on the whole in the eight EU MS there was a significant but very small decline in the MFC prevalence immediately following the TPD ban, although the trends of use were different in each country.

These findings should be interpreted with caution and in the wider context. The TPD ban of cigarette flavourings was motivated principally by the need to reduce the appeal of cigarettes and smoking initiation among youth, whereas this sample at recruitment included only adult smokers. Furthermore, while the EUREST-PLUS ITC Europe Surveys offer the best data available to research these policies, as it is the largest cohort study in Europe evaluating the TPD, the study has some limitations, including a considerable loss-to-follow-up in several of EUREST-Plus countries, which could have introduced selection bias.[10]

Moreover, the TPD does not include specific measures directed at increasing the predictors of quit attempt success, such as the use of evidence-based cessation support by smokers, or provisions indicated in Article 14 of the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC).[11,12] Without these additional measures we may not be able to see changes in smoking prevalence at short term. Continued monitoring is needed to ascertain the long-term impact of TPD, including if the MFC smokers who moved to unflavoured cigarettes will be more likely to quit as a next step.

Crucially, there remains an opportunity for tobacco control prior to the implementation of the 2020 ban on menthol cigarettes. Countries with relatively high menthol use among smokers (especially Poland and England, but also the Netherlands, Romania and Hungary, where prevalence of menthol is above 5%) should strengthen stop smoking campaigns alongside the menthol cigarette ban, so as to aid cessation.

Supplementary data

Supplementary data are available at *EURPUB* online.

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