

The profile of menthol cigarette smokers in the months following the removal of these products from the market in England

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Short Report

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Abstract

Introduction: In May 2020 the EU Tobacco Products Directive (TPD) ban on the sale of menthol cigarettes was implemented after a four-year transitional period. This study examined the prevalence of menthol cigarette smoking in the months following the ban, and according to sociodemographic and smoking characteristics.

Methods: Cross-sectional data came from a representative survey of current smokers (18+) in England (unweighted n=1,577) during seven months (July-January) in 2020/2021. The weighted prevalence of menthol cigarette smoking as a proportion of total cigarette smoking was calculated, and chi-squared statistics assessed the relationship between menthol smoking, sociodemographic and smoking characteristics. Sources of purchase of menthol cigarettes were also explored.

Results: The proportion of current smokers who smoked menthol cigarettes was similar in July to October 2020 (17.5%, 95% CI 15.3%-20.1%) compared with November 2020 to January 2021 (16.3%, 95% CI 13.9%-19.2%) ($\chi^2(1)=0.38$, $P=0.56$). Menthol cigarette smoking was more common among younger age groups (16-24 = 29.0%; 25-34 = 23.3%) and women (21.1%). Menthol cigarette smokers showed lower cigarette dependence compared with other cigarette smokers. Purchases of menthol cigarettes from any illicit source in the past six months declined from 34.5% in July-October 2020 to 19.0% in November 2020–January 2021.

Conclusions: A substantial proportion (just under a fifth) of current smokers in England reported menthol cigarette smoking between July-January 2020/2021 despite the ban. There was no decline in this proportion across the period, suggesting that smokers mitigated the impact of the ban by a variety of means, such as with legal menthol accessories.

Introduction

In May 2016 the European Union Tobacco Products Directive (TPD) ban on the sale of cigarettes with a characterising flavour (a smell or taste other than on of tobacco), including menthol, was written into UK law. Following a transitional period of four years to allow manufacturers to prepare for the ban on menthol, it was finally implemented in May 2020¹. The legislation applies specifically to cigarettes and roll-your-own tobacco. Menthol accessories that are sold in separate packaging to tobacco or cigarettes are exempt, as are cigars, cigarillos and pipe tobacco.

Most research into menthol cigarette smoking has taken place in the US, where African Americans and young people are more likely to smoke menthol cigarettes than other groups². Data on adult smokers from several European countries before the ban in 2016 highlighted considerable socio-demographic patterning in menthol cigarette smoking. Compared with other groups, menthol cigarette smoking prevalence was higher among younger people, women and more socio-economically advantaged³. Among adult smokers in England an estimated 12.4% smoked menthol cigarettes, and as with other

European countries prevalence in England was higher among women (17.5%) compared with men (8.0%)³.

There is general consensus that menthol in cigarettes is associated with increased dependence and progression to regular cigarette smoking, and lower likelihood of smoking cessation^{4,5}. By restricting the availability of a popular cigarette type, the menthol ban may reduce smoking initiation⁶ and increase the overall rate of smoking cessation in the population (by improving motivation to quit smoking and triggering an increase in quit attempts). However, tobacco companies have developed accessories that are exempt from the legislation such as menthol filter tips for roll-your-own (RYO) tobacco, and flavour cards that can be inserted into packs of factory-made cigarettes or RYO tobacco¹. Importantly, menthol/capsule cigarette median market share increased in the UK from 14% in 2014 to 21% 2018¹.

Using data collected on smokers in the months following implementation of the cigarette flavour ban in England, this study addressed the following research questions among current smokers:

1. What was the proportion of menthol cigarette use overall and in each month from July 2020-January 2021, and did this change over the time-period?
2. What were the sociodemographic characteristics (age, gender, occupational social grade, ethnicity) and smoking and quitting characteristics (dependence and motivation to stop smoking) of menthol cigarette smokers?
3. What were the sources of purchase of menthol cigarettes and did this change over the time period?

Methods

Study design and participants

The sample dataset consisted of adults (≥ 18 years) from the Smoking Toolkit Study (STS) in England between July 2020 to January 2021. This timeframe was selected because July 2020 was the first month in which questions on menthol cigarettes were added to the STS following the TPD ban and January 2021 is the latest month with available data. The STS is a monthly repeated cross-sectional survey of a representative sample of ~1700 adults in England. Further details on the STS, including sampling and weighting techniques are described elsewhere⁷.

Measures

Current smoking

Respondents were classified as current cigarette smokers (see supplementary materials) if they reported smoking cigarettes (including hand-rolled).

Those who indicate that they do not smoke cigarettes, but do smoke tobacco of some kind were excluded from the analysis because these products were not included in the menthol ban.

Menthol cigarette smoking

Current smokers were asked the following question:

“Cigarettes can be sold in different flavours. They can also be flavoured by capsules, filter tips, cards inserted into a packet or flavoured rolling papers. How would you describe the flavour of the cigarettes you usually smoke?”

1. Just tobacco
2. Tobacco and menthol
3. Tobacco and some other flavour
4. Refused
5. Don't know

Answers of 2) were categorised as menthol cigarette smoking, responses of 3) were categorised as other flavour smoking. Those responding with 4) and 5) were excluded (2.2%).

Motivation to stop smoking

Motivation to stop smoking was assessed using the Motivation To Stop Scale⁸, a single-item measure with seven response options representing increasing motivation to quit (see supplementary material). For ease of interpretation, responses were collapsed to reflect high (6–7) vs. low (1–5) motivation to stop smoking.

Cigarette dependence

Cigarette dependence was measured using two questions from the Fagerström Test for Cigarette Dependence: time to first cigarette in the morning after waking and the number of cigarettes smoked per day.

Socio-demographic covariates

The sociodemographic characteristics gender, and occupational social grade and ethnicity (white or non-white) were included (see supplementary materials).

Source of purchase

Data on the source of purchase of menthol cigarettes in the past six months was also collected (see supplementary materials)

Sample selection

Overall, 11,715 (unweighted) adults were surveyed of which 1,557 were smokers who answered the question on cigarette flavours.

Analysis

The overall (weighted) proportion of menthol cigarette use was calculated according to time period (July-October 2020 and November 2020-January 2021), smoking and socio-demographic characteristics. The months were collapsed into two periods to provide a broad analysis of change over time and because source of purchase data reflects self-reported purchase in the past six months, with November onwards therefore representing a period after the ban was implemented. Chi-squared statistics (with Rao & Scott second order corrections) were used to describe the strength of the relationship between menthol cigarette smoking status and the specified variables of interest, and Cramer's V was used as an effect size.

The sources of purchase of menthol cigarettes in the past six months was summarised for July-October 2020 and November 2021-January 2021 as a prevalence for each source. Chi-squared statistics were used to describe the strength of the relationship between source of purchase and the specified time periods.

Missing data on variables included in each respective chi-squared test were excluded and reported in Table 1 as 'Missing'. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guideline were used in the design and reporting of this study⁹.

Sensitivity analysis

To explore a potential shift towards or away from illicit sources of purchase of menthol cigarettes, a sensitivity analysis compared illicit sources of purchase (in the past six months) in July-October 2020 and November 2020-January 2021. Response variables for illicit sources were collapsed into a single dichotomous variable indicating 'Any illicit' or 'No illicit' purchase (see supplementary materials). Further sensitivity analyses explored the source of purchase of just tobacco cigarettes across the same time periods.

All planned analyses were pre-registered on the open science framework (<https://osf.io/d2nv6/>) and carried out in R version 4.0.3.

Results

A weighted total of 1,697 (unweighted=1,577) smokers (mean (SE) age = 42.1 (0.43); 47% women) completed the survey between July 2020 and January 2021. The proportion of current smokers who smoked menthol cigarettes was similar in July to October 2020 (17.5%, 95% CI 15.3%-20.1%) compared with November 2020 to January 2021 (16.3%, 95% CI 13.9%-19.2%) ($\chi^2(1)=0.38$, $P=0.56$) (Figure 1 and Table 1). Overall monthly cigarette smoking prevalence across the sampled period remained relatively stable at around 14-15% (Table S1).

Table 1: Sample description (weighted) by sociodemographic and smoking characteristics*

Characteristic	Other, N = 1,408 ¹	Menthol, N = 289 ¹	Test statistics ²
Age			
16-24	193 (13.7%)	79 (27.3%)	
25-34	328 (23.3%)	100 (34.5%)	X ² =70.2, p<0.001, V=0.23
35-44	283 (20.1%)	53 (18.4%)	
45-54	222 (15.8%)	31 (10.6%)	
55-64	187 (13.3%)	15 (5.4%)	
65+	195 (13.8%)	11 (3.8%)	
Missing	1	0	
Gender			
Men/other	784 (55.7%)	122 (42.2%)	X ² =16.2, p<0.001, V=0.11
Women	624 (44.3%)	167 (57.8%)	
Social grade*			
AB	218 (16.0%)	43 (15.6%)	X ² =10.8, p=0.08, V=0.08
C1	276 (20.3%)	82 (29.3%)	
C2	370 (27.2%)	70 (25.1%)	
D	310 (22.8%)	52 (18.6%)	
E	181 (13.7%)	32 (11.4%)	
Missing	47	10	
Ethnicity			
White	872 (87.2%)	191 (82.4%)	X ² =1.83, p=0.51, V=0.032
Non-white	127 (12.8%)	23 (17.6%)	
Missing	409	75	
MTSS in <3 months*			
Low	1,177 (84.4%)	230 (83.4%)	X ² =7.29 p=0.047 V=0.07
High	217 (15.6%)	49 (17.6%)	
Missing	14	9	
First cigarette after waking			
Within 5 minutes	320 (23.7%)	57 (21.1%)	X ² =25.20 P<0.001

Characteristic	Other, N = 1,408 ¹	Menthol, N = 289 ¹	V=0.138 Test statistics ²
6-30 minutes	394 (29.1%)	55 (20.4%)	
31-60 minutes	169 (12.6%)	23 (8.6%)	
More than 60 minutes	467 (34.6%)	134 (49.9%)	
Missing	57	16	
Cigarettes per day			
1-10	795 (58.5%)	205 (74.9%)	X ² =25.3
11-20	490 (36.0%)	62 (22.7%)	P<0.001
21-30	47 (3.4%)	4 (1.4%)	V=0.14
30+	29 (2.1%)	3 (1.0%)	
Missing	47	15	
¹ Unweighted n = 1,577			
² Chi-squared test with Rao & Scott's second-order correction, Cramer's V			

*Percentages are computed as proportions of cigarette smoking within each characteristic, allowing comparison of the distribution of menthol vs other cigarette smoking; MTSS = Motivation to Stop Smoking; Social grade = occupational social grade (AB: higher and intermediate managerial, administrative and professional, C1: supervisory, clerical and junior managerial, administrative and professional, C2: skilled manual workers, D: semi-skilled and unskilled manual workers and E: state pensioners, casual and lowest-grade workers, unemployed with state benefits)

Socio-demographic profile of menthol cigarette smokers

Compared with other smokers (predominantly just tobacco), menthol cigarette smoking was more common among younger age groups and women (Table 1). There was little evidence of a difference in the profile of menthol cigarette smokers according to social grade or ethnicity.

Cigarette dependence

Compared with other smokers, menthol cigarette smokers appeared less dependent by time to first cigarette and cigarettes per day, with no difference in motivation to stop.

Source of purchase

The most popular sources of purchase (not mutually exclusive) of menthol cigarettes in the past six months were newsagent/off license/corner shops, supermarkets and petrol garage shops (Table S2).

Sources of purchase appeared similar between the two time periods with the exception of some evidence of declines in newsagent/off license/corner shops (81.1% to 69.0%; $\chi^2(1)=4.92$, $P=0.04$), buying abroad and bringing back (16.9% to 8.6%; $\chi^2(1)=3.89$, $P=0.04$), buying cheap from friends (16.4% to 4.9%; $\chi^2(1)=8.28$, $P=0.003$) and the internet (5.9% to 1.2%; $\chi^2(1)=3.78$, $P=0.03$) (Table S2).

The reports of purchase from any illicit source in the past six months declined from 34.5% in July-October 2020 to 19.0% in November 2020 – January 2021 ($\chi^2(1)=7.75$, $P=0.012$) (Table S3). In contrast, purchase of just tobacco cigarettes from any illicit source appeared stable across the time period (24.2% to 21.6%; $\chi^2(1)=1.18$, $P=0.3$) (Table S3).

Discussion

Between July 2020 and January 2021, following the EU TPD ban in May 2020 on the sale of menthol cigarettes, a substantial minority of smokers (between 15%-19%) continued to report currently smoking menthol flavoured cigarettes. There are several possible reasons for this. First, stockpiling behaviour may have influenced the limited short-term changes in menthol cigarette consumption. However, over time this would be expected to drop as personal stocks dwindle, which is not consistent with the lack of change in menthol smoking across the 7-month period investigated. A second possible reason for the stable pattern of menthol cigarette smoking in England over this period is that smokers were buying from illicit sources. However, reported purchase from any illicit source was less common in November to January than between July to October. A more likely explanation is that the wording of the survey measure assessing flavoured cigarette smoking covers tobacco accessories, including menthol flavoured capsules, filter tips, cards or flavoured rolling papers that are sold separately from cigarette packs. These accessories are currently exempt from the EU TPD ban, and it is possible that smokers have shifted to using these in the absence of factory made menthol cigarettes¹. However, without data on the prevalence of use **only** of flavour accessories before the ban we cannot infer the extent to which a transition occurred or if this was a continuation of use following increases in the UK market share of capsule cigarettes in recent years¹. Finally, it is also possible that menthol cigarettes continue to be sold at some retailers despite the ban. While there was some evidence of a drop in reporting of purchase from the most popular source (newsagents/off-licenses/corner shops), most other legal sources of purchase were reported at similar levels between the two time periods we examined. It is unclear to what extent these sources were selling banned menthol cigarettes or legal menthol accessories. Further monitoring is necessary, including examining changes in the proportion of cigarettes bought by type (factory-made vs RYO tobacco) and whether substitution occurred with other nicotine products such as e-cigarettes which are currently exempt from the flavour ban.

Regarding the sociodemographic profile of menthol smokers, our findings support evidence on the popularity of menthol cigarettes among younger age groups¹⁰ and women¹¹. This pattern of prevalence of menthol smoking among women compared with men likely reflects established preferences for menthol during smoking initiation¹² and the misconception that menthol cigarettes are 'cleaner' and

'safer' than non-menthol tobacco cigarettes¹³. There is also some evidence for a genetic component influencing taste preference of menthol cigarettes among women¹⁴.

In contrast with evidence regarding the higher dependence potential of menthol cigarettes^{4,15}, our results indicate that menthol smokers were generally less dependent than tobacco smokers according to two measures from the heaviness of smoking index (cigarettes per day and first cigarette after waking). However, given that cigarette dependence increases for several years before plateauing, the lower dependence profile of menthol smokers in our sample may reflect the younger age profile of menthol compared with just tobacco smoking¹⁶. The divergence may also reflect different regulatory and tobacco industry contexts; e.g. most research on menthol smoking and dependence is from the US where more disadvantaged and dependent smokers are targeted by menthol advertising campaigns¹⁶.

Inferences from our data are limited by a relatively small sample size, with no measures on menthol smoking before the ban was implemented. Further limitations relate to the self-reporting of smoking status, menthol smoking and source of purchase, the latter of which may lack accuracy due to recall bias given that the question measures purchase behaviour in the past six months.

Our findings suggest that the ban on factory made menthol cigarettes in England has not led to a precipitous decline in menthol smoking in the short-term. However, research in Ontario, Canada found increased probability of quitting among daily menthol smokers compared with non-menthol smokers two years following the menthol ban¹⁷. Further research in England is therefore needed to examine the longer-term trends in use and evaluate the potential impact the ban has had on smoking cessation among the considerable proportion of smokers who use menthol cigarettes. This will be challenging considering the ban coincided with the COVID-19 pandemic, which has had a measurable influence on smoking and quitting behaviour in England¹⁸.

Declarations

Role of funding sources

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Contributors

LK, JB and LS conceived of the study. All authors contributed to the study analysis plan. LK conducted the analysis and write up. All authors contributed to the final manuscript. LK is the guarantor of this work

and, as such, had full access to all the data and take responsibility for the integrity of the data and the accuracy of the data analysis.

Conflict of interest

Authors are members of the UK Prevention Research Partnership, an initiative funded by UK Research and Innovation Councils, the Department of Health and Social Care (England), and the UK devolved administrations and leading health research charities. JB reports receiving grants from Cancer Research UK during the conduct of the study and receiving unrestricted research funding from pharmaceutical companies who manufacture smoking cessation medications to study smoking cessation outside the submitted work. LS reports receiving honoraria for talks, receiving an unrestricted research grant and travel expenses to attend meetings and workshops by pharmaceutical companies that make smoking cessation products (Pfizer and Johnson & Johnson), and acting as a paid reviewer for grant-awarding bodies and as a paid consultant for health care companies. LK and IB have no competing interests to declare.

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Figures

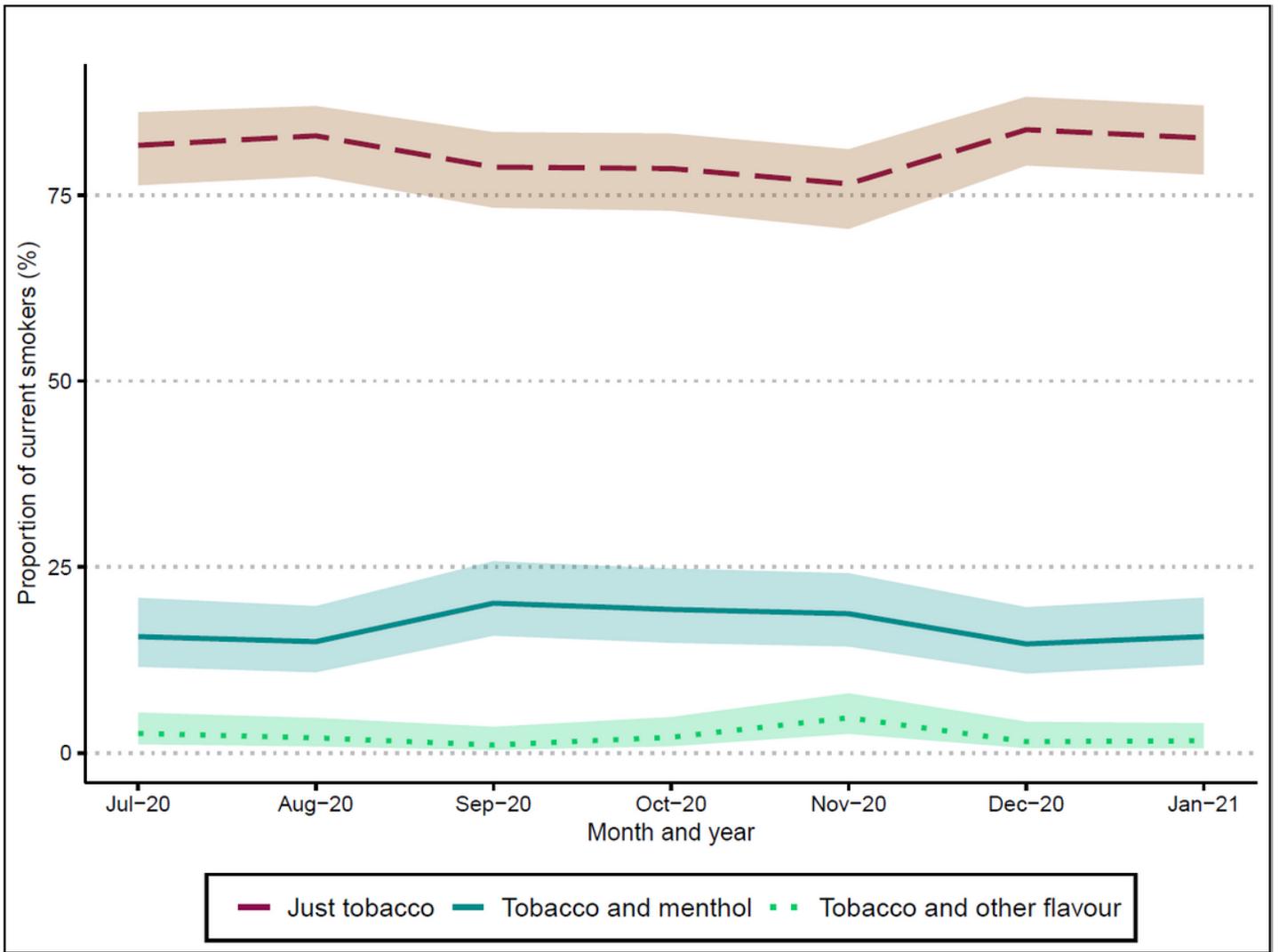


Figure 1

Proportion of smokers who smoke just tobacco, tobacco and menthol or tobacco and other flavour cigarettes between July 2020 and January 2021 (weighted data). Data come from the Smoking Toolkit Study, University College London, England