Tobacco Control

# Beyond the European Union Tobacco Products Directive: smokers' and recent quitters' support for further tobacco control measures (2016-2018).



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# Beyond the European Union Tobacco Products Directive: smokers' and recent quitters' support for further tobacco control measures (2016-2018)

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## ABSTRACT

**Background**: Several measures recommended by the World Health Organization Framework Convention on Tobacco Control have not been implemented in the European Union, despite changes in the legislation such as the Tobacco Products Directive (TPD). This study aims to understand smokers' and recent quitters' levels of support for tobacco control measures that go beyond the TPD during and after its implementation.

**Methods:** Data from Wave 1 (2016, n=6011) and Wave 2 (2018, n=6027) of the EUREST-PLUS ITC 6 European Country Survey, a cohort of adult smokers in Germany, Greece, Hungary, Poland, Romania, Spain were used to estimate the level of support for seven different tobacco control measures, overall, and by country.

**Results:** In 2018, the highest support was for implementing measures to further regulate tobacco products (50.5%) and for holding tobacco companies accountable for the harm caused by smoking (48.8%). Additionally, in 2018, 40% of smokers and recent quitters supported a total ban on cigarettes and other tobacco products within ten years, if assistance to quit smoking is provided. Overall, support for tobacco control measures among smokers and recent quitters after the implementation of the TPD remained stable over time.

**Conclusion**: There is considerable support among smokers and recent quitters for tobacco control measures that go beyond the current measures implemented. A significant percentage of smokers would support a ban on tobacco products in the future if the government provided assistance to quit smoking. This highlights the importance of implementing measures to increase smoking cessation in conjunction with other policies.



## KEYWORDS

Public opinion, public policy, end game.

## WHAT THIS PAPER ADDS

### What is already known on this topic

- Public opinion plays an important role in adoption and effective implementation of tobacco control measures' and their effect on tobacco-related behaviours.

### What important gaps in knowledge exist on this topic

- There is limited research on smokers' and recent quitters' support for tobacco control measures in European countries.

### What this study adds

- Using data from 6 European Union Member States, this study found considerable support among smokers and recent quitters for approaches to tobacco control that go beyond the current implemented measures, including Tobacco Endgame measures.

## INTRODUCTION

The prevalence of smoking in European Union (EU) Member States (MS) has decreased over the past decades. However, 26% of EU adults still smoke and approximately 810,000 die prematurely every year due to smoking.[1,2] In recent years, progress has been made in tackling the tobacco epidemic in the EU through policy. The most recent EU Tobacco Products Directive (TPD), implemented in 2016, introduced new regulation regarding tobacco products labelling, packaging, ingredients and additives.[3] Despite the introduction of the TPD, other measures recommended by the World Health Organization (WHO) Framework Convention on Tobacco Control (FCTC)[4] and its guidelines have not been implemented homogeneously across EU MS.

Public opinion influences the impact of tobacco control measures; it plays a role in measures' adoption,[5] effective implementation,[6] and in policy-related changes in smoking behaviours.[7] As smokers constitute approximately one in four of the EU adult population and are affected by tobacco control measures, it is important to understand their level of support for such measures. Therefore, we examine support for seven tobacco control measures that go beyond the EU TPD in nationally representative samples of adult smokers in six EU MS during and after the implementation of the TPD.

## METHODS

### Design

We used data from the International Tobacco Control Policy Evaluation Project Six European Countries (ITC 6E) Survey, a prospective cohort study of representative samples of smokers from Germany, Greece, Hungary, Poland, Romania, and Spain.[8–11]

Wave 1 data were collected between June and September 2016, the year of TPD implementation, and the Wave 2 data between February and May 2018, post-TPD implementation. Computer-assisted interviews were conducted face-to-face. The samples comprise current smokers (at least monthly smokers who smoked >100 cigarettes in their lifetime) aged 18 or older. Respondents were recruited using a multi-stage stratified random sampling procedure of the general population of smokers to produce nationally representative samples of smokers. The respondents participating in Wave 1 (N=6,011) were re-contacted in Wave 2, given they had provided consent to be re-contacted. Respondents not successfully re-contacted (N=2,816) were replaced by newly recruited smokers (N=2,832) from newly sampled households selected with the same sampling frame and design. Hence, a total of 6,027 individuals participated in Wave 2. Further details about the ITC 6E methodology can be found elsewhere.[8–11]

**Measures**

Outcomes were seven indicators of support for different tobacco control measures. Participants were asked about their support for, or agreement with, the following measures: 1) Tobacco products being subjected to more rules and regulations; 2) a total ban on tobacco products within 10 years, if the government provided assistance to help smokers quit; 3) holding tobacco companies accountable for the harm caused by smoking; 4) plain cigarette packaging; 5) restricting the number of places where cigarettes could be purchased; 6) a ban on all slim cigarettes; 7) cigarettes display ban at points of sale. Responses to these questions were dichotomised as ‘strongly support’ or ‘support’ vs otherwise (measures #2, 5, 6), ‘strongly agree’ or ‘agree’ vs otherwise (measures #1,3,4), and ‘a lot’ vs otherwise (measure #7). The otherwise category comprised the responses ‘no’ and ‘don’t know’. Supplemental table S1 shows a full description of all the outcome measures.

Sociodemographic measures and measures assessing smoking-related beliefs and behaviours were collected.[12–14] Supplemental table S2 presents a full description of all correlate measures.

**Statistical analysis**

All analyses were weighted to ensure the sample represented the population of adult smokers in each country and accounted for the complex multi-stage sampling design.[9,11] We estimated percentages of support for each tobacco control measure, overall and by country for each wave of the survey. All respondents from Wave 1 and Wave 2 were included in the analysis, irrespective of their smoking status by Wave 2. A Bonferroni correction adjusted for multiple testing of country differences in support between waves. Regression models were used to examine the association between sociodemographic factors, smoking-related beliefs and behaviours, and binary outcome measures of support at Wave 2. Supplemental table S3 presents details on this analysis.

**RESULTS**

Figure 1 presents the percentages and 95% confidence intervals (CI) of support for tobacco control measures by country and overall at both survey waves. Overall, support was highest for measures to further regulate tobacco products (50.5%; 95% CI: 47.9-53.3 in Wave 2), and for holding tobacco companies accountable for the harms caused by smoking (48.7%; 95% CI: 45.9-51.5 in Wave 2). Almost 40% of participants (37.8%; 95% CI: 35.3-40.4 in Wave 2) supported a total ban on tobacco products within 10 years if assistance to quit smoking is provided. Support for plain cigarette packaging was reported by 34.2% (95% CI: 31.7-36.7 in Wave 2) of the overall sample.

Across all countries combined, the rates of support for tobacco control measures after the TPD implementation presented no significant changes. In country-specific analysis, there was a significant increase between waves in the percentage of participants supporting the adoption of plain cigarette packaging in Spain (from 28.3%; 95% CI: 23.5-33.6 in Wave 1 to 40.9%; 95% CI: 34.9-47.1 in Wave 2), as also in supporting further accountability of the tobacco industry for the harms caused by smoking (from 38.1%; 95% CI: 33.1-43.4 in Wave 1 to 55.1%; 95% CI: 48.7-61.3 in Wave 2). Supplemental table S3 shows results of sociodemographic factors and smoking-related beliefs and behaviours associated with support for all evaluated tobacco control measures in 2018.

## DISCUSSION

This study examined support for tobacco control measures beyond the EU TPD current scope. Overall, support for tobacco control measures among smokers and recent quitters after TPD implementation remained stable, except for Spain where an increase in support for a few measures was observed.

In 2018, there was considerable variation in the support for different measures across countries, although some measures were endorsed by most smokers and recent quitters. The measure with the highest support was more regulation of tobacco products (50.6% in Wave 2). Also, approximately 50% of smokers and recent quitters in all countries, with exception of Germany (33.5%), were in favour of the tobacco industry being held accountable for the harms caused by smoking. One of the most striking results was that almost 50% of smokers and recent quitters supported a total ban on tobacco products sales within 10 years if the government provided cessation aids. Our findings support the possibility for innovative tobacco control measures to be proposed and supported by smokers. For instance, policies aligned with tobacco endgame

strategies aiming for a *tobacco-free future*,[15] such as lowering the nicotine content of tobacco products to make them less addictive,[16,17] and/or restricting sales of cigarettes to citizens born in or after a certain year with the goal of phasing out the sale of cigarettes in the future.[18]

Variations were observed in the country-specific results with some measures reaching very high rates of endorsement, while others were supported by a restricted number of smokers and recent quitters. For instance, 80.2% of smokers and recent quitters in Greece and 64.7% in Spain supported more tobacco products regulation. In contrast, the lowest support overall was for the ban on display of cigarettes at point of sale, with rates varying from 7.8% in Germany to 23.4% in Hungary. As previously pointed out, differences in support for tobacco control measures might reflect respondents' ambivalence about their efficacy, practicality and effectiveness[19] and/or the lack of knowledge about the benefits such measures could bring to smokers and non-smokers. Therefore, we assume that the low levels of support in Germany might be influenced by its generally pro-tobacco environment, as exemplified by heavy marketing for tobacco products due to limited marketing restrictions,[20] which normalises smoking and diminishes smokers' harm perception.

The levels of support for tobacco control measures among smokers in European countries tend to be lower than in the general population,[1,21–24] Nevertheless, population-based studies have shown an increase in support among smokers for diverse tobacco control measures after their adoption. For instance, in Australia, support for plain packaging among smokers has increased significantly after its implementation, from 28.2% in 2008-09 to 49.0% in 2013.[25] Therefore, our findings should not be used to argue against the introduction of further tobacco control measures. In fact, the countries in our study, as Parties of the WHO FCTC treaty, are encouraged to implement measures beyond those required by the Convention and its protocols.[4]

This study has some limitations. First, question wording might have influenced respondents' answers. For instance, one of the tobacco control measures assessed was: "Do you support complete bans on displays of cigarettes inside shops and stores?", which aims to assess whether tobacco products should be kept "out of sight in points of sale". A question with the latter wording was asked to smokers in the Eurobarometer Survey of 2017 in which 39.0% of smokers supported the measure while only 15.4% of smokers in our study supported it. Both measures touch very similar points, but the wording of the question might bias the response. Secondly, there were different levels of attrition across countries between waves, with retention rates ranging from 35.7% in Hungary to 70.5% in Germany and Spain, with an average of 53.2% for the total sample. Despite these limitations, our study is, to the best of our knowledge, the most thorough evaluation of support for these tobacco control measures, with nationally representative samples of smokers in the six European countries included in the survey.

## CONCLUSIONS

There is considerable support among smokers for approaches to tobacco control that go beyond the current measures implemented. Most smokers support stronger government action to control the tobacco epidemic and many of them believe the tobacco industry should be held accountable for the harms caused by smoking. Additionally, a significant percentage of smokers would support a ban on tobacco products in the future if the government provided assistance to quit smoking. This highlights the importance of implementing measures to increase smoking cessation in conjunction with other policies.

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## COMPETING INTERESTS

The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results. Geoffrey T. Fong has served as an expert witness on behalf of governments in litigation involving the tobacco industry. Krzysztof Przewoźniak reports grants and personal fees from the Polish League Against Cancer, outside the submitted work.

## CONTRIBUTORSHIP STATEMENT

Conceptualised and designed the study: SON, PD, UM, TD, AT, KP, PAK, GTF, CIV and EF. Contributed to the strategy of analysis: SON, PD, UM, MF, OT, YC, and EF. Analysed data:

PD. Interpreted data results: SON, PD, MF, UM, SCH, CK, MZ, EF. Drafted manuscript: SON. Critically revised manuscript: All authors. Approved final manuscript version: All authors.

## RESEARCH ETHICS APPROVAL

Study procedures and material including the survey questionnaires were approved by the ethics research committee at the University of Waterloo (Ontario, Canada - ID: ORE # 21262), and ethics committees in Germany (Ethikkommission der Medizinischen Fakulta¨t Heidelberg - ID: 196/2016), in Greece (Medical School, University of Athens—Research and Ethics Committee - ID: 1516023880), in Hungary (Medical Research Council – Scientific and Research Committee - ID: 46344), in Poland (State College of Higher Vocational Education—Committee and Dean of the Department of Health Care and Life Sciences - ID:1/2016), in Romania (Iuliu Hatieganu University of Medicine and Pharmacy - ID: 114/5.04.2016), and in Spain (Clinical Research Ethics Committee of Bellvitge, Hospital Universitari de Bellvitge, Catalonia - ID: PR100/2016).

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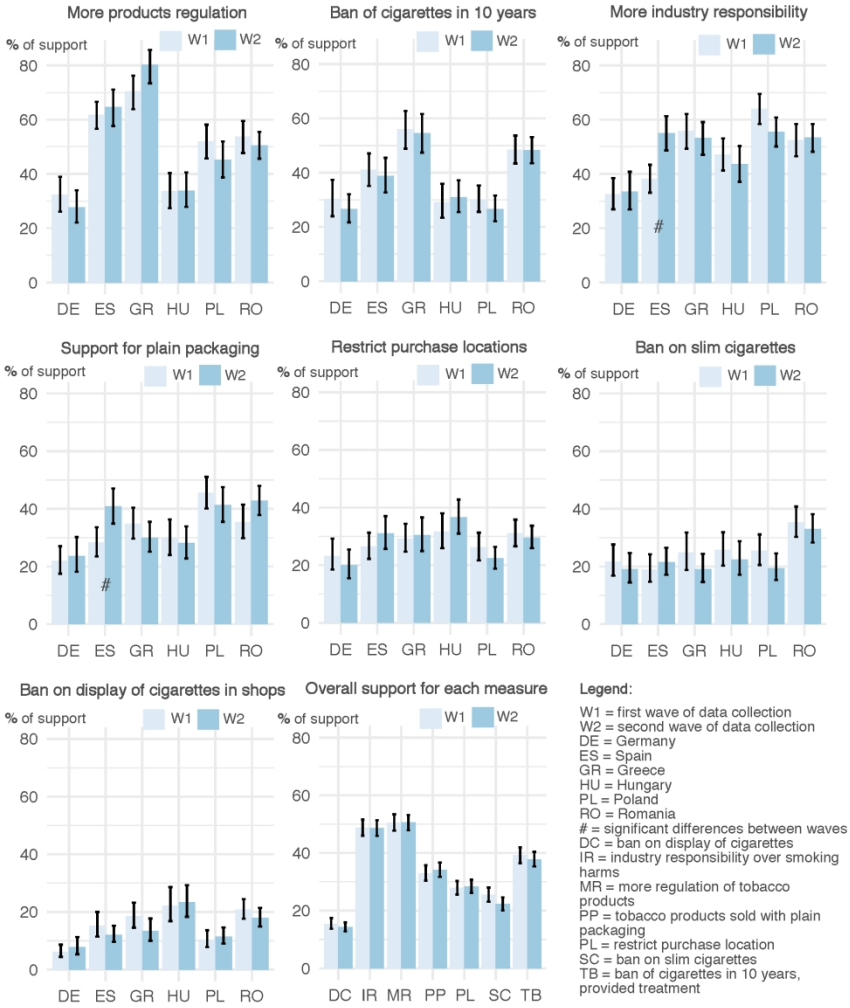


Figure 1. Smokers' and recent quitters'* support for seven tobacco control measures in six European countries, EUREST-PLUS ITC Survey, 2016-2018. Estimated percentages are adjusted percentages from GEE models testing the wave-country interaction to estimate support for each measure in each wave. GEE models adjusted for sex, age group, residence, education, employment status, smoking status, time-in-sample (country and wave included as main effects in addition to the interaction effect). *at Wave 2 there were 95.8% current smokers and 4.2% recent quitters.

173x233mm (300 x 300 DPI)

Table S1. Tobacco control measures and response options, ITC 6E Survey, 2016-2018

| **Outcome measures** | **Response options** |
|---|---|
| "How much do you agree with the following statement: tobacco products should be subject to more rules and regulations" | strongly agree, agree, neither agree or disagree, disagree, strongly disagree refused, don't know |
| "Would you support or oppose a total ban on cigarettes and other smoked tobacco within 10 years, if the government provided assistance such as cessation clinics to help smokers quit?" | strongly support, support, oppose, strongly oppose, refused, don't know |
| "How much do you agree with the following statement: tobacco companies should take responsibility for the harm caused by smoking" | strongly agree, agree, neither agree or disagree, disagree, strongly disagree, refused, don't know |
| "Tobacco companies should be required to sell cigarettes in plain packages -- that is, in packs without the usual brand colours and symbols, but keeping the warning labels" | strongly agree, agree, neither agree nor disagree, strongly disagree, refused, don't know |
| "Would you support or oppose a law that restricted the number of places where cigarettes could be purchased?" | strongly support, support, oppose, strongly oppose, refused, don't know |
| "Do you support complete bans on displays of cigarettes inside shops and stores?" | not at all, somewhat, a lot, refused, don't know |

Table S2. Smoking-related indices, measures, and sociodemographics, ITC 6E Survey, 2016-2018

| **Indices, measures and internal consistency (Cronbach's alpha)** | **Variables** |
|---|---|
| Knowledge of health effects of active smoking (10-item index) (***α***=0.88) | "Based on what you know or believe, does smoking cause: heart disease, impotence, lung cancer, blindness, mouth cancer, throat cancer, stroke, COPD and emphysema, bronchitis, tuberculosis?" (yes/no/refused/don't know) |
| Secondhand smoke harm (3-item index) (***α***=0.74) | "Based on what you know or believe, does smoking cause: 'Lung cancer in non-smokers from second-hand smoke', 'Heart attack in non-smokers from second-hand smoke', 'Asthma in children from second-hand smoke?'" (yes/no/refused/don't know) |
| Smoking restrictions (2-item index) (***α***=0.81) | "To what extent, if at all, were each of the following things reasons for your quitting: 'Smoking restrictions at work?', 'Smoking restrictions in public places like restaurants, cafes and pubs?'" (not at all/somewhat/very much/refused/don't know) |
| Self-exemption beliefs (2-item index) (***α***=0.56) | "The medical evidence that smoking is harmful is exaggerated" and "Smoking is no more risky than lots of other things that people do" (strongly agree/agree/neither agree nor disagree/disagree/strongly disagree/refused/don't know) |
| Smoking has damaged your health | "To what extent has smoking damaged your health?" (a little/somewhat/a lot/refused/don't know) |
| Overall attitude to smoking | "What is your overall opinion of smoking ordinary cigarettes?" (very positive/positive/neither positive nor negative/very negative/refused/don't know) |
| Smoking status | Daily smoker, non-daily smoker, quitter (only Wave 2) |

| | |
|---|---|
| Sociodemographics | Sex (male/female), age (18-24/25-39/40-54/55+), residence (rural/medium/urban), highest level of formal education completed (low - primary, lower pre-vocational secondary, middle pre-vocational secondary/moderate - secondary vocational; senior general secondary and pre-university/high - higher professional and university bachelor, university master), employment status (employed/otherwise), country, and survey wave |

Table S3. Association of sociodemographic factors, smoking-related beliefs and behaviours with smokers' and recent quitters'* support for seven tobacco control measures, EUREST-PLUS ITC Survey, 2018.

| | Products regulation | | Ban in 10 years | | Industry responsibility | | Plain packaging | |
|---|---|---|---|---|---|---|---|---|
| | % | aOR (95% CI)** | % | aOR (95% CI)** | % | aOR (95% CI)** | % | aOR (95% CI)** |
| **Variables** | **(n=5562)** | | **(n=5567)** | | **(n=5569)** | | **(n=5562)** | |
| ***Sociodemographic factors*** | | | | | | | | |
| Sex (male) | 51.0 | 1.06 (0.92-1.22) | 38.6 | 1.04 (0.90-1.19) | 50.7 | 1.20 (1.05-1.37) | 35.5 | 1.11 (0.96-1.30) |
| Sex (female) | 51.9 | Ref. | 38.5 | Ref. | 46.9 | Ref. | 34.2 | Ref. |
| Age (18-24 years) | 51.9 | 0.95 (0.70-1.30) | 36.7 | 0.95 (0.70-1.28) | 54.1 | 1.03 (0.76-1.38) | 38.5 | 1.16 (0.86-1.57) |
| Age (25-39 years) | 51.0 | 0.98 (0.79-1.21) | 36.0 | 0.92 (0.75-1.13) | 45.7 | 0.77 (0.63-0.94) | 35.1 | 1.08 (0.89-1.31) |
| Age (40-54 years) | 51.2 | 0.87 (0.71-1.07) | 39.8 | 1.07 (0.89-1.27) | 49.1 | 0.85 (0.71-1.02) | 35.1 | 1.06 (0.87-1.30) |
| Age (55+ years) | 52.1 | Ref. | 40.9 | Ref. | 51.3 | Ref. | 33.3 | Ref. |
| Residence (urban) | 50.2 | 0.92 (0.68-1.26) | 36.0 | 1.00 (0.75-1.32) | 47.1 | 0.93 (0.71-1.22) | 34.4 | 0.94 (0.72-1.24) |
| Residence (intermediate) | 55.2 | 1.08 (0.81-1.44) | 43.7 | 1.28 (0.97-1.68) | 51.7 | 1.11 (0.84-1.47) | 36.1 | 1.07 (0.82-1.39) |
| Residence (rural) | 48.0 | Ref. | 35.2 | Ref. | 48.4 | Ref. | 34.1 | Ref. |
| Education (low) | 47.3 | 0.86 (0.67-1.11) | 36.9 | 1.00 (0.76-1.31) | 49.0 | 1.34 (1.02-1.76) | 31.1 | 1.10 (0.82-1.50) |
| Education (intermediate) | 52.4 | 0.85 (0.67-1.06) | 38.7 | 0.95 (0.75-1.20) | 49.8 | 1.24 (0.99-1.56) | 38.1 | 1.14 (0.88-1.48) |
| Education (high) | 60.3 | Ref. | 43.0 | Ref. | 44.9 | Ref. | 32.2 | Ref. |
| Employment status (employed) | 49.3 | 0.93 (0.78-1.11) | 37.2 | 0.81 (0.69-0.96) | 47.0 | 0.96 (0.82-1.13) | 33.8 | 0.86 (0.72-1.03) |
| Employment status(otherwise) | 54.7 | Ref. | 40.9 | Ref. | 52.5 | Ref. | 37.0 | Ref. |
| Smoking status (daily smoker) | 50.4 | 0.99 (0.71-1.39) | 37.4 | 0.89 (0.63-1.26) | 48.8 | 1.28 (0.97-1.69) | 34.5 | 1.12 (0.83-1.53) |
| Smoking status (non-daily smoker) | 58.0 | 1.91 (1.14-3.19) | 41.9 | 1.12 (0.69-1.83) | 55.7 | 2.12 (1.30-3.46) | 40.0 | 1.49 (0.88-2.51) |
| Smoking status (quitter) | 60.9 | Ref. | 53.1 | Ref. | 47.9 | Ref. | 38.7 | Ref. |
| ***Smoking-related beliefs and behaviours*** | | | | | | | | |
| Knowledge of smoking health harms | - | 0.98 (0.94-1.02) | - | 0.99 (0.95-1.03) | - | 1.02 (0.97-1.06) | - | 0.99 (0.95-1.03) |
| Knowledge of SHS harms | - | 1.14 (1.03-1.25) | - | 1.15 (1.05-1.26) | - | 1.09 (0.99-1.20) | - | 1.26 (1.15-1.39) |
| Smoking restrictions index | - | 1.31 (1.12-1.53) | - | 1.54 (1.34-1.77) | - | 1.28 (1.11-1.48) | - | 1.68 (1.45-1.94) |
| Self-exempting beliefs | - | 0.87 (0.78-0.98) | - | 0.86 (0.79-0.94) | - | 1.00 (0.91-1.10) | - | 1.06 (0.95-1.19) |
| Smoking has damaged health | - | 1.03 (0.92-1.15) | - | 1.26 (1.12-1.41) | - | 1.06 (0.96-1.18) | - | 0.96 (0.86-1.06) |
| Negative attitude to smoking | - | 1.26 (1.13-1.40) | - | 1.42 (1.26-1.59) | - | 1.06 (0.96-1.17) | - | 1.13 (1.02-1.27) |

(Continuation) Table S3

| Variables | Restrict purchase location | | Ban slim cigarettes | | Ban display in shops | |
|---|---|---|---|---|---|---|
| | % (n=5569) | aOR (95% CI)** | % (n=5551) | aOR (95% CI)** | % (n=5568) | aOR (95% CI)** |
| ***Sociodemographic factors*** | | | | | | |
| Sex (male) | 29.1 | 1.09 (0.94-1.27) | 25.1 | 1.33 (1.14-1.56) | 15.7 | 1.28 (1.09-1.51) |
| Sex (female) | 28.8 | Ref. | 20.5 | Ref. | 14.1 | Ref. |
| Age (18-24 years) | 29.4 | 0.92 (0.65-1.30) | 27.1 | 1.26 (0.90-1.77) | 7.9 | 0.37 (0.23-0.59) |
| Age (25-39 years) | 28.1 | 0.94 (0.74-1.18) | 23.5 | 1.16 (0.93-1.43) | 14.4 | 0.93 (0.73-1.20) |
| Age (40-54 years) | 27.9 | 0.88 (0.73-1.07) | 22.1 | 1.01 (0.81-1.26) | 15.4 | 0.95 (0.76-1.20) |
| Age (55+ years) | 31.4 | Ref. | 22.2 | Ref. | 18.1 | Ref. |
| Residence (urban) | 26.7 | 0.84 (0.65-1.09) | 22.7 | 1.03 (0.76-1.39) | 13.9 | 0.88 (0.64-1.21) |
| Residence (intermediate) | 31.9 | 1.01 (0.78-1.29) | 24.0 | 1.03 (0.78-1.36) | 15.4 | 0.94 (0.67-1.31) |
| Residence (rural) | 28.5 | Ref. | 22.4 | Ref. | 16.1 | Ref. |
| Education (low) | 28.2 | 0.81 (0.60-1.09) | 22.7 | 1.36 (1.00-1.85) | 16.2 | 1.00 (0.70-1.43) |
| Education (intermediate) | 28.5 | 0.79 (0.63-0.99) | 24.1 | 1.34 (1.02-1.74) | 14.1 | 0.97 (0.73-1.29) |
| Education (high) | 33.5 | Ref. | 19.3 | Ref. | 15.5 | Ref. |
| Employment status (employed) | 28.0 | 0.87 (0.72-1.05) | 22.6 | 0.90 (0.75-1.08) | 13.8 | 0.69 (0.55-0.86) |
| Employment status(otherwise) | 30.7 | Ref. | 24.0 | Ref. | 17.1 | Ref. |
| Smoking status (daily smoker) | 26.8 | 0.60 (0.44-0.84) | 22.1 | 0.84 (0.57-1.24) | 13.7 | 0.62 (0.43-0.91) |
| Smoking status (non-daily smoker) | 46.4 | 1.31 (0.94-2.46) | 32.5 | 1.56 (0.97-2.50) | 20.7 | 1.16 (0.68-1.98) |
| Smoking status (quitter) | 48.8 | Ref. | 30.3 | Ref. | 29.0 | Ref. |
| ***Smoking-related beliefs and behaviours*** | | | | | | |
| Knowledge of smoking health harms | - | 0.96 (0.92-1.00) | - | 0.93 (0.89-0.98) | - | 1.00 (0.93-1.07) |
| Knowledge of SHS harms | - | 1.16 (1.07-1.27) | - | 1.23 (1.12-1.36) | - | 1.21 (1.06-1.39) |
| Smoking restrictions index | - | 1.67 (1.43-1.94) | - | 1.96 (1.70-2.26) | - | 1.16 (0.97-1.38) |
| Self-exempting beliefs | - | 0.87 (0.80-0.96) | - | 1.02 (0.92-1.14) | - | 0.87 (0.78-0.97) |
| Smoking has damaged health | - | 1.17 (1.05-1.31) | - | 1.22 (1.07-1.40) | - | 1.10 (0.97-1.25) |
| Negative attitude to smoking | - | 1.46 (1.30-1.63) | - | 1.16 (1.03-1.30) | - | 1.51 (1.32-1.72) |

Results of weighted logistic regression analyses. aOR= adjusted odds ratio; CI= confidence interval; SHS=secondhand smoke, *at Wave 2 there were 95.8% current smokers and 4.2% recent quitters.**Logistic regression models controlled for sex, age, area of residence, level of education, employment status, country, knowledge of smoking harms, knowledge of secondhand smoke harms, smoking restriction index, smoking damaged health, self-exemption beliefs and overall attitude to smoking.

Daily smokers had significantly lower odds of supporting restricting purchase locations (OR=0.60; 95% CI: 0.44-0.84) and of banning the display of tobacco products in shops (OR=0.62; 95% CI: 0.43-0.91) compared to quitters.

Having more negative attitudes towards smoking was significantly associated with higher support for all tobacco control measures except for support of further industry responsibility, with the highest association being for support for cigarette display bans in shops (OR=1.51; 95% CI: 1.32-1.72) and for restricting purchase location (OR=1.46; 95% CI: 1.30-1.63).

Those with high knowledge of the harms of secondhand smoke exposure were significantly more likely to support six of the seven tobacco control measures, with the highest odds of support being for plain packaging implementation (OR=1.26; 95% CI: 1.15-1.39) and for ban on slim cigarettes (OR=1.23; 95% CI: 1.12-1.36).

Participants who believed that smoking had damaged their health had significantly higher odds of supporting the restriction of purchase locations (OR=1.17; 95% CI: 1.05-1.31), a ban on slim cigarettes (OR=1.22; 95% CI:1.07-1.40) and a ban on cigarettes sale in 10 years, if the government provided cessation aid (OR=1.26; 95% CI: 1.12-1.41).

Self-exempting beliefs were significantly associated with lower support for four tobacco control measures, particularly: more tobacco products rules and regulation (OR=0.87; 95% CI: 0.78-0.98), a ban on cigarettes in 10 years, given assistance to quit smoking is provided (OR=0.86; 95% CI: 0.79-0.94), restriction in purchase locations (OR=0.87; 95% CI: 0.80-0.96), and a ban on the display of cigarettes in shops (OR=0.87; 95% CI: 0.78-0.97).

Table S1. Tobacco control measures and response options, ITC 6E Survey, 2016-2018

| **Outcome measures** | **Response options** |
|---|---|
| "How much do you agree with the following statement: tobacco products should be subject to more rules and regulations" | strongly agree, agree, neither agree or disagree, disagree, strongly disagree refused, don't know |
| "Would you support or oppose a total ban on cigarettes and other smoked tobacco within 10 years, if the government provided assistance such as cessation clinics to help smokers quit?" | strongly support, support, oppose, strongly oppose, refused, don't know |
| "How much do you agree with the following statement: tobacco companies should take responsibility for the harm caused by smoking" | strongly agree, agree, neither agree or disagree, disagree, strongly disagree, refused, don't know |
| "Tobacco companies should be required to sell cigarettes in plain packages -- that is, in packs without the usual brand colours and symbols, but keeping the warning labels" | strongly agree, agree, neither agree nor disagree, strongly disagree, refused, don't know |
| "Would you support or oppose a law that restricted the number of places where cigarettes could be purchased?" | strongly support, support, oppose, strongly oppose, refused, don't know |
| "Do you support complete bans on displays of cigarettes inside shops and stores?" | not at all, somewhat, a lot, refused, don't know |

Table S2. Smoking-related indices, measures, and sociodemographics, ITC 6E Survey, 2016-2018

| **Indices, measures and internal consistency (Cronbach's alpha)** | **Variables** |
|---|---|
| Knowledge of health effects of active smoking (10-item index) (***α***=0.88) | "Based on what you know or believe, does smoking cause: heart disease, impotence, lung cancer, blindness, mouth cancer, throat cancer, stroke, COPD and emphysema, bronchitis, tuberculosis?" (yes/no/refused/don't know) |
| Secondhand smoke harm (3-item index) (***α***=0.74) | "Based on what you know or believe, does smoking cause: 'Lung cancer in non-smokers from second-hand smoke', 'Heart attack in non-smokers from second-hand smoke', 'Asthma in children from second-hand smoke?'" (yes/no/refused/don't know) |
| Smoking restrictions (2-item index) (***α***=0.81) | "To what extent, if at all, were each of the following things reasons for your quitting: 'Smoking restrictions at work?', 'Smoking restrictions in public places like restaurants, cafes and pubs?'" (not at all/somewhat/very much/refused/don't know) |
| Self-exemption beliefs (2-item index) (***α***=0.56) | "The medical evidence that smoking is harmful is exaggerated" and "Smoking is no more risky than lots of other things that people do" (strongly agree/agree/neither agree nor disagree/disagree/strongly disagree/refused/don't know) |
| Smoking has damaged your health | "To what extent has smoking damaged your health?" (a little/somewhat/a lot/refused/don't know) |
| Overall attitude to smoking | "What is your overall opinion of smoking ordinary cigarettes?" (very positive/positive/neither positive nor negative/very negative/refused/don't know) |
| Smoking status | Daily smoker, non-daily smoker, quitter (only Wave 2) |

| | |
|---|---|
| Sociodemographics | Sex (male/female), age (18-24/25-39/40-54/55+), residence (rural/medium/ urban), highest level of formal education completed (low - primary, lower pre-vocational secondary, middle pre-vocational secondary/moderate - secondary vocational; senior general secondary and pre-university/high - higher professional and university bachelor, university master), employment status (employed/otherwise), country, and survey wave |

Table S3. Association of sociodemographic factors, smoking-related beliefs and behaviours with smokers' and recent quitters'* support for seven tobacco control measures, EUREST-PLUS ITC Survey, 2018.

| | Products regulation | | Ban in 10 years | | Industry responsibility | | Plain packaging | |
|---|---|---|---|---|---|---|---|---|
| | % | aOR (95% CI)** | % | aOR (95% CI)** | % | aOR (95% CI)** | % | aOR (95% CI)** |
| **Variables** | (n=5562) | | (n=5567) | | (n=5569) | | (n=5562) | |
| ***Sociodemographic factors*** | | | | | | | | |
| Sex (male) | 51.0 | 1.06 (0.92-1.22) | 38.6 | 1.04 (0.90-1.19) | 50.7 | 1.20 (1.05-1.37) | 35.5 | 1.11 (0.96-1.30) |
| Sex (female) | 51.9 | Ref. | 38.5 | Ref. | 46.9 | Ref. | 34.2 | Ref. |
| Age (18-24 years) | 51.9 | 0.95 (0.70-1.30) | 36.7 | 0.95 (0.70-1.28) | 54.1 | 1.03 (0.76-1.38) | 38.5 | 1.16 (0.86-1.57) |
| Age (25-39 years) | 51.0 | 0.98 (0.79-1.21) | 36.0 | 0.92 (0.75-1.13) | 45.7 | 0.77 (0.63-0.94) | 35.1 | 1.08 (0.89-1.31) |
| Age (40-54 years) | 51.2 | 0.87 (0.71-1.07) | 39.8 | 1.07 (0.89-1.27) | 49.1 | 0.85 (0.71-1.02) | 35.1 | 1.06 (0.87-1.30) |
| Age (55+ years) | 52.1 | Ref. | 40.9 | Ref. | 51.3 | Ref. | 33.3 | Ref. |
| Residence (urban) | 50.2 | 0.92 (0.68-1.26) | 36.0 | 1.00 (0.75-1.32) | 47.1 | 0.93 (0.71-1.22) | 34.4 | 0.94 (0.72-1.24) |
| Residence (intermediate) | 55.2 | 1.08 (0.81-1.44) | 43.7 | 1.28 (0.97-1.68) | 51.7 | 1.11 (0.84-1.47) | 36.1 | 1.07 (0.82-1.39) |
| Residence (rural) | 48.0 | Ref. | 35.2 | Ref. | 48.4 | Ref. | 34.1 | Ref. |
| Education (low) | 47.3 | 0.86 (0.67-1.11) | 36.9 | 1.00 (0.76-1.31) | 49.0 | 1.34 (1.02-1.76) | 31.1 | 1.10 (0.82-1.50) |
| Education (intermediate) | 52.4 | 0.85 (0.67-1.06) | 38.7 | 0.95 (0.75-1.20) | 49.8 | 1.24 (0.99-1.56) | 38.1 | 1.14 (0.88-1.48) |
| Education (high) | 60.3 | Ref. | 43.0 | Ref. | 44.9 | Ref. | 32.2 | Ref. |
| Employment status (employed) | 49.3 | 0.93 (0.78-1.11) | 37.2 | 0.81 (0.69-0.96) | 47.0 | 0.96 (0.82-1.13) | 33.8 | 0.86 (0.72-1.03) |
| Employment status(otherwise) | 54.7 | Ref. | 40.9 | Ref. | 52.5 | Ref. | 37.0 | Ref. |
| Smoking status (daily smoker) | 50.4 | 0.99 (0.71-1.39) | 37.4 | 0.89 (0.63-1.26) | 48.8 | 1.28 (0.97-1.69) | 34.5 | 1.12 (0.83-1.53) |
| Smoking status (non-daily smoker) | 58.0 | 1.91 (1.14-3.19) | 41.9 | 1.12 (0.69-1.83) | 55.7 | 2.12 (1.30-3.46) | 40.0 | 1.49 (0.88-2.51) |
| Smoking status (quitter) | 60.9 | Ref. | 53.1 | Ref. | 47.9 | Ref. | 38.7 | Ref. |
| ***Smoking-related beliefs and behaviours*** | | | | | | | | |
| Knowledge of smoking health harms | - | 0.98 (0.94-1.02) | - | 0.99 (0.95-1.03) | - | 1.02 (0.97-1.06) | - | 0.99 (0.95-1.03) |
| Knowledge of SHS harms | - | 1.14 (1.03-1.25) | - | 1.15 (1.05-1.26) | - | 1.09 (0.99-1.20) | - | 1.26 (1.15-1.39) |
| Smoking restrictions index | - | 1.31 (1.12-1.53) | - | 1.54 (1.34-1.77) | - | 1.28 (1.11-1.48) | - | 1.68 (1.45-1.94) |
| Self-exempting beliefs | - | 0.87 (0.78-0.98) | - | 0.86 (0.79-0.94) | - | 1.00 (0.91-1.10) | - | 1.06 (0.95-1.19) |
| Smoking has damaged health | - | 1.03 (0.92-1.15) | - | 1.26 (1.12-1.41) | - | 1.06 (0.96-1.18) | - | 0.96 (0.86-1.06) |
| Negative attitude to smoking | - | 1.26 (1.13-1.40) | - | 1.42 (1.26-1.59) | - | 1.06 (0.96-1.17) | - | 1.13 (1.02-1.27) |

(Continuation) Table S3

| | Restrict purchase location | | Ban slim cigarettes | | Ban display in shops | |
|---|---|---|---|---|---|---|
| | % | aOR (95% CI)** | % | aOR (95% CI)** | % | aOR (95% CI)** |
| **Variables** | **(n=5569)** | | **(n=5551)** | | **(n=5568)** | |
| ***Sociodemographic factors*** | | | | | | |
| Sex (male) | 29.1 | 1.09 (0.94-1.27) | 25.1 | 1.33 (1.14-1.56) | 15.7 | 1.28 (1.09-1.51) |
| Sex (female) | 28.8 | Ref. | 20.5 | Ref. | 14.1 | Ref. |
| Age (18-24 years) | 29.4 | 0.92 (0.65-1.30) | 27.1 | 1.26 (0.90-1.77) | 7.9 | 0.37 (0.23-0.59) |
| Age (25-39 years) | 28.1 | 0.94 (0.74-1.18) | 23.5 | 1.16 (0.93-1.43) | 14.4 | 0.93 (0.73-1.20) |
| Age (40-54 years) | 27.9 | 0.88 (0.73-1.07) | 22.1 | 1.01 (0.81-1.26) | 15.4 | 0.95 (0.76-1.20) |
| Age (55+ years) | 31.4 | Ref. | 22.2 | Ref. | 18.1 | Ref. |
| Residence (urban) | 26.7 | 0.84 (0.65-1.09) | 22.7 | 1.03 (0.76-1.39) | 13.9 | 0.88 (0.64-1.21) |
| Residence (intermediate) | 31.9 | 1.01 (0.78-1.29) | 24.0 | 1.03 (0.78-1.36) | 15.4 | 0.94 (0.67-1.31) |
| Residence (rural) | 28.5 | Ref. | 22.4 | Ref. | 16.1 | Ref. |
| Education (low) | 28.2 | 0.81 (0.60-1.09) | 22.7 | 1.36 (1.00-1.85) | 16.2 | 1.00 (0.70-1.43) |
| Education (intermediate) | 28.5 | 0.79 (0.63-0.99) | 24.1 | 1.34 (1.02-1.74) | 14.1 | 0.97 (0.73-1.29) |
| Education (high) | 33.5 | Ref. | 19.3 | Ref. | 15.5 | Ref. |
| Employment status (employed) | 28.0 | 0.87 (0.72-1.05) | 22.6 | 0.90 (0.75-1.08) | 13.8 | 0.69 (0.55-0.86) |
| Employment status(otherwise) | 30.7 | Ref. | 24.0 | Ref. | 17.1 | Ref. |
| Smoking status (daily smoker) | 26.8 | 0.60 (0.44-0.84) | 22.1 | 0.84 (0.57-1.24) | 13.7 | 0.62 (0.43-0.91) |
| Smoking status (non-daily smoker) | 46.4 | 1.31 (0.94-2.46) | 32.5 | 1.56 (0.97-2.50) | 20.7 | 1.16 (0.68-1.98) |
| Smoking status (quitter) | 48.8 | Ref. | 30.3 | Ref. | 29.0 | Ref. |
| ***Smoking-related beliefs and behaviours*** | | | | | | |
| Knowledge of smoking health harms | - | 0.96 (0.92-1.00) | - | 0.93 (0.89-0.98) | - | 1.00 (0.93-1.07) |
| Knowledge of SHS harms | - | 1.16 (1.07-1.27) | - | 1.23 (1.12-1.36) | - | 1.21 (1.06-1.39) |
| Smoking restrictions index | - | 1.67 (1.43-1.94) | - | 1.96 (1.70-2.26) | - | 1.16 (0.97-1.38) |
| Self-exempting beliefs | - | 0.87 (0.80-0.96) | - | 1.02 (0.92-1.14) | - | 0.87 (0.78-0.97) |
| Smoking has damaged health | - | 1.17 (1.05-1.31) | - | 1.22 (1.07-1.40) | - | 1.10 (0.97-1.25) |
| Negative attitude to smoking | - | 1.46 (1.30-1.63) | - | 1.16 (1.03-1.30) | - | 1.51 (1.32-1.72) |

Results of weighted logistic regression analyses. aOR= adjusted odds ratio; CI= confidence interval; SHS=secondhand smoke, *at Wave 2 there were 95.8% current smokers and 4.2% recent quitters.**Logistic regression models controlled for sex, age, area of residence, level of education, employment status, country, knowledge of smoking harms, knowledge of secondhand smoke harms, smoking restriction index, smoking damaged health, self-exemption beliefs and overall attitude to smoking.

Daily smokers had significantly lower odds of supporting restricting purchase locations (OR=0.60; 95% CI: 0.44-0.84) and of banning the display of tobacco products in shops (OR=0.62; 95% CI: 0.43-0.91) compared to quitters.

Having more negative attitudes towards smoking was significantly associated with higher support for all tobacco control measures except for support of further industry responsibility, with the highest association being for support for cigarette display bans in shops (OR=1.51; 95% CI: 1.32-1.72) and for restricting purchase location (OR=1.46; 95% CI: 1.30-1.63).

Those with high knowledge of the harms of secondhand smoke exposure were significantly more likely to support six of the seven tobacco control measures, with the highest odds of support being for plain packaging implementation (OR=1.26; 95% CI: 1.15-1.39) and for ban on slim cigarettes (OR=1.23; 95% CI: 1.12-1.36).

Participants who believed that smoking had damaged their health had significantly higher odds of supporting the restriction of purchase locations (OR=1.17; 95% CI: 1.05-1.31), a ban on slim cigarettes (OR=1.22; 95% CI:1.07-1.40) and a ban on cigarettes sale in 10 years, if the government provided cessation aid (OR=1.26; 95% CI: 1.12-1.41).

Self-exempting beliefs were significantly associated with lower support for four tobacco control measures, particularly: more tobacco products rules and regulation (OR=0.87; 95% CI: 0.78-0.98), a ban on cigarettes in 10 years, given assistance to quit smoking is provided (OR=0.86; 95% CI: 0.79-0.94), restriction in purchase locations (OR=0.87; 95% CI: 0.80-0.96), and a ban on the display of cigarettes in shops (OR=0.87; 95% CI: 0.78-0.97).