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RESEARCH ARTICLE

REVISED Smokers' support for the ban on sale of slim cigarettes in six European countries: findings from the EUREST-PLUS ITC Europe Surveys

[version 4; peer review: 3 approved, 1 not approved]

Enkeleint A. Mechili[1-3], Krzysztof Przewoźniak[4-6], Pete Driezen[7,8], Christina N Kyriakos[9], Charis Girvalaki[2,3], Ute Mons[10,11], Anne CK Quah[7], Esteve Fernández[12-15], Antigona C Trofor[16,17], Tibor Demjén[18], Paraskevi A Katsaounou[19], Witold Zatoński[5,20], Geoffrey T Fong[7,8,21], Constantine I Vardavas[2,3]

[1]Department of Health Care, Faculty of Health,, University of Vlora, Vlora, 9401, Albania
[2]European Network for Smoking and Tobacco Prevention, Chausse d'Ixelles 144, Brussels, 1050, Belgium
[3]School of Medicine, University of Crete, Voutes, Heraklion, 71409, Greece
[4]Maria Skłodowska-Curie National Research Institute of Oncology, 15B Wawelska Street, Warsaw, 02-034, Poland
[5]Health Promotion Foundation, Mszczonowska, Nadarzyn, 05-830, Poland
[6]Collegium Civitas, plac Defilad 1, Warsaw, 00-901, Poland
[7]Department of Psychology, University of Waterloo, Waterloo, Ontario, N2L 3G1, Canada
[8]School of Public Health Sciences, University of Waterloo, University Avenue West 200, Waterloo, Ontario, N2L 3G1, Canada
[9]Department of Primary Care and Public Health, School of Public Health, Imperial College London, 310 Reynolds Building, St. Dunstan's Road, London, W6 9RP, UK
[10]Cancer Prevention Unit and WHO Collaborating Centre for Tobacco Control, German Cancer Research Center (DKFZ), Im Neuenheimer Feld 280, Heidelberg, 69120, Germany
[11]Heart Center, Faculty of Medicine and University Hospital Cologne, University of Cologne, Kerpener Straße 62, Cologne, 50937, Germany
[12]Tobacco Control Unit, Catalan Institute of Oncology (ICO), Av Gran Via De L'Hospitalet 199-203, L'Hospitalet de Llobregat, Catalonia, 08908, Spain
[13]Tobacco Control Research Group, Bellvitge Biomedical Research Institute (IDIBELL), Av Gran Via De L'Hospitalet 199-203, L'Hospitalet de Llobregat, Catalonia, 08908, Spain
[14]School of Medicine and Health Sciences, Bellvitge Campus, Universitat de Barcelona, L'Hospitalet de Llobregat, Catalonia, 08908, Spain
[15]Center for Biomedical Research in Respiratory Diseases (CIBER of Respiratory Diseases, CIBERES), Instituto de Salud Carlos III, C/ Monforte de Lemos 3-5, Madrid, 28029, Spain
[16]University of Medicine and Pharmacy 'Grigore T. Popa' Iasi, Strada Universității 16, Iași, 700115, Romania
[17]AerPur Romania, Street Argentina 35 Sector 1, Bucharest, 011753, Romania
[18]Smoking or Health Hungarian Foundation, Fiumei 18/B IB IV LPH I 2, Budapest, 1044, Hungary
[19]First ICU Evaggelismos Hospital Athens, National and Kapodistrian University of Athens, Ipsilantou 45-47, Athens, 10676, Greece
[20]European Observatory of Health Inequalities, President Stanisław Wojciechowski State University of Applied Sciences, Nowy Świat 4 st, Kalisz, 62-800, Poland
[21]Ontario Institute for Cancer Research, 661 University Avenue, Toronto, Ontario, M5G 0A3, Canada

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Abstract

Background: Efforts to regulate tobacco products and reduce consumption in the European Union (EU) include the European Tobacco Products Directive (TPD), which went into force in May 2016. Despite the initial discussion to include a ban on sale of slim cigarettes, it was excluded in the final TPD. The main goal of this study was to examine support for a ban on slim cigarettes among smokers in six European Countries.

Methods: Data from the 2018 (Wave 2) International Tobacco Control Policy Evaluation Project 6 European Country (ITC 6E) EUREST-PLUS project survey, a cross sectional study of adult smokers (n=5592) from Germany, Greece, Hungary, Poland, Romania, and Spain, was analysed. Descriptive statistics were used to estimate support for a ban on slim cigarettes by sociodemographic characteristics and smoking behaviors. Logistic regression analysis was used to examine factors associated with support for a ban on slim cigarettes and perceptions of harm.

Results: Support for a ban on slims varied across countries, with highest support in Romania (33.8%), and lowest in Greece (18.0%). Female smokers (OR=0.78; 95%CI=0.67-0.91, daily smokers (OR=0.68; 95%CI=0.47-0.97), menthol smokers (OR=0.55; 95%CI=0.36-0.86), and smokers who did not have plans to quit within next six months (OR=0.45; 95%CI=0.36-0.56) had significantly lower odds of supporting a ban on slim cigarettes. Overall, 21% of smokers perceived slim cigarettes as less harmful than regular cigarettes.

Conclusions: Support for a ban of slim cigarettes was relatively low among smokers, while misperceptions that slim cigarettes are less harmful is high, particularly among countries where slim cigarette use is more prevalent. Findings support a ban on slim cigarettes to reduce misperceptions around slim cigarettes being less harmful.

Keywords

Tobacco Products Directive, slim cigarettes, tobacco policy, European Union



1. **Anish Thekkumkara Surendran Nair**, Government Medical College Thiruvananthapuram, Thiruvananthapuram, India
2. **Shu Xu**, New York University, New York, USA
3. **Jaana Sepp**, Tallinn Health Care College, Tallinn, Estonia
4. **Camilla Wikström-Grotell**, Arcada UAS, Helsinki, Finland
Mälardalen University, Västerås, Sweden

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Corresponding author: Enkeleint A. Mechili (mechili@univlora.edu.al)

Author roles: Mechili EA: Writing – Original Draft Preparation, Writing – Review & Editing; **Przewoźniak K**: Conceptualization, Funding Acquisition, Investigation, Methodology, Writing – Review & Editing; **Driezen P**: Data Curation, Formal Analysis, Writing – Review & Editing; **Kyriakos CN**: Project Administration, Writing – Original Draft Preparation, Writing – Review & Editing; **Girvalaki C**: Writing – Review & Editing; **Mons U**: Funding Acquisition, Investigation, Methodology, Writing – Review & Editing; **Quah AC**: Project Administration, Writing – Review & Editing; **Fernández E**: Funding Acquisition, Investigation, Methodology, Writing – Review & Editing; **Trofor AC**: Funding Acquisition, Investigation, Methodology, Writing – Review & Editing; **Demjén T**: Funding Acquisition, Investigation, Methodology, Writing – Review & Editing; **Katsaounou PA**: Writing – Review & Editing; **Zatoński W**: Writing – Review & Editing; **Fong GT**: Writing – Review & Editing; **Vardavas CI**: Project Administration, Writing – Review & Editing

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REVISED **Amendments from Version 3**

In this new version we made the changes proposed by the two reviewers. Initially we have added the potential biases that could have an impact on the study results. Additionally, we added a short text about the assumptions, limitations, and potential pitfalls associated with the statistical analyses used. This was requested by the reviewers due to the complex sampling design and weighting adjustments. One of the additions made in the new version is about the implications of the study and possible future strategies that could address the existing misperceptions about the harm of slim cigarettes. Lastly, we made some statements about the complexity of tobacco consumption by mentioning that banning is not the solution that will solve the problem, but also other activities and actions are needed.

Any further responses from the reviewers can be found at the end of the article

Introduction

Around 700,000 people die annually in the European Union (EU) due to tobacco use[1]. Despite recent efforts undertaken to reduce misperceptions of tobacco products, implementation of tobacco control policies is still needed[2].

Within the EU countries, around half of smokers use cigarettes with special characteristics such as additive-free or organic, light, menthol flavor, slim, etc. Slim cigarettes are consumed by around 5% of EU smokers[1]. Slim cigarettes have a diameter of 5 or 6 millimeters and a length that varies from 68–121 mm according to the category (from regular to extra-long)[3]. Tobacco companies have historically targeted women by promoting slim cigarettes as stylish and feminine[3]. A qualitative study among young women concluded that slim cigarettes are perceived to be correlated with glamour, cleanliness, and safety[4]. Similarly, in a Scottish study, slim cigarettes were considered as lovely, pretty, fun, cool, and cute by teenage girls and young women[5]. A Polish study among young population aged 13–19 years (secondary and high school students) found that that slim cigarettes were perceived to be less harmful[6]. In light of such misperceptions, supporters (both smokers and non-smokers) of a ban on slim cigarettes argued that slim cigarettes are as harmful as normal cigarettes but that their promotion and design features reinforce smoker's misconceptions on these products to be less harmful and, therefore, make quitting smoking more difficult. The study of Siu *et al.* concluded that is a misconception to consider less harmful the super slim cigarette[7]. Authors report that this kind of tobacco can emission higher levels of toxicants such as phenol, ammonia etc. while the amount of nicotine is similar to other regular cigarettes[7]. Another study found that levels of cadmium were found 20% and 27% higher on women smoking long and ultra-long cigarette in comparison to normal cigaretts[8]. From all the above it is clear that the slim cigarette consumption could improve the health status of the population. Exposure to some toxicants such as formaldehyde, ammonia and the phenols increases in super slim cigarettes according to a study conducted in Canada[9]. Tobacco is a multicomplex problem that is not depending just on the nicotine dependence but also on social and psychological factors. A study in San Francisco shows that banning of flavored tobacco use can decrease the prevalence but not in high rates[10]. This clearly states that banning is not the only measure possible but comprehensive polices are needed for tobacco control.

The revised EU Tobacco Products Directive (TPD) came into force in May 2016. The TPD aims to improve protection of the health of EU citizens from the harms of tobacco[11]. The main objective of the TPD provisions was to reduce misperceptions around reduced harm often associated with special characteristics of tobacco products. Such features of cigarettes and roll-your-own tobacco banned under the TPD include characterizing flavors, misleading labels, packs resembling a food or cosmetic product and pack sizes less than 20 cigarettes or 30g of tobacco, but did not include information on banning slim cigarettes. Population support for tobacco control policies is an important determinant of successful policy implementation. However, there is a lack of data on the factors that are associated with harm perceptions and support for a slim cigarettes ban in the EU. Given that the TPD implementation report is being prepared in 2021, it is important to understand support for banning slim cigarettes. The main goal of this study was to examine support for a ban on slim cigarettes among a representative sample of smokers in six EU countries.

Methods

The survey protocols and all materials, including the survey questionnaires, information letter and consent, were cleared for ethics by the ethics research committee at the University of Waterloo (Ontario, Canada, REB#21262), and ethics committees in Germany (Ethikkommission der Medizinischen Fakultät Heidelberg, No. DV-097-160401), Greece (Medical School, University of Athens - Research and Ethics Committee, No. 156023993), Hungary (Medical Research Council – Scientific and Research Committee, No. 46344-2/2017/EKY), Poland (State College of Higher Vocational Education - Committee and Dean of the Department of Health Care and Life Sciences, No. dnia 22.09.2017 r), Romania (Iuliu Hatieganu University of Medicine and Pharmacy, No. 155), and Spain (Clinical Research Ethics Committee of Bellvitge, Hospital Universitari de Bellvitge, Catalonia, PR100/16). Eligible respondents were male or female adult (aged 18+) cigarette smokers who reported smoking at least once a month. After a respondent was selected, an information letter was provided and consent was taken. Informed written consent for participation and publication of data was obtained at the time of data collection, in which participants were informed that, "All personal information you provide is treated as strictly confidential, subject to legal requirements and limitations. It will be held in secure storage and password protected at the University of Waterloo, Canada and only be accessed by this research team. Any identifying information about you will be removed before the data are securely stored, so that your answers cannot be linked back to you. After two years, the survey data, but not your name or other identifying information, will be shared with authorized researchers in other countries, as it will be used to make comparisons of smoking behaviour and attitudes across countries."

Data came from the 2018 (Wave 2) International Tobacco Control Evaluation Project 6 European Country (ITC 6E) Survey, a cohort study of 6,027 adult smokers (aged 18+ years) who reported having smoked at least 100 cigarettes in their lifetime and smoked at least monthly from Germany, Greece, Hungary, Poland, Romania, and Spain. Respondents were recruited via multi-stage stratified random sampling. Sampling was based on geographic strata created according to Nomenclature of Territorial Units for Statistics (NUTS) regions and degree of urbanization. Respondents consisted of two sample types: (1) re-contacted (cohort) respondents (n=3,195) from Wave 1 of the ITC 6E Survey and (2) new respondents (current smokers) to replenish those who were lost to attrition. Re-contact respondents were followed up regardless of their current smoking status (retention rates ranged from 36% in Hungary to 71% in Germany and Spain, with an average of 53% for the full sample). The replenishment sample (n=2,832) was recruited from newly selected households, and approached in the same manner as Wave 1, with the random-walk procedure beginning at a new (random) starting point. Smokers followed from Wave 1 who had quit smoking by Wave 2 were excluded (n=415) leaving 5,612 current smokers eligible for analysis, the group directly affected by regulations banning the sale of slim cigarettes.

Face-to-face interviews were conducted from February to May 2018. After providing written consent, respondents completed the survey via a computer-assisted personal interview conducted in each country's official language. The ITC 6E Survey is part of the European Commission Horizon-2020 funded study European Regulatory Science on Tobacco: Policy Implementation to Reduce Lung Diseases (EUREST_PLUS-HCO-06-2015), which aimed to evaluate the impact of the EU TPD[12]. Further details about the study methodology are provided elsewhere[13–16].

The primary outcome of this study, support for a ban on slim cigarettes, was assessed with the question: "Would you support or oppose a law that banned all slim cigarettes, that is, those cigarettes that are slimmer in size than regular cigarettes?" (strongly support, support, oppose, strongly oppose, don't know). The 'support for a slim ban' variable was transformed into a binary variable (supports or strongly supports vs. otherwise = oppose/strongly oppose/ don't know). Demographic measures were sex (male, female), age group (18–24, 25–39, 40–54, 55+), degree of urbanisation (low, intermediate, high)[13,14], education (low, moderate, high), and income (low, moderate, high, not reported). In all countries, low education was defined as pre-primary/no education, primary, and lower secondary. Moderate education was defined as upper secondary, post-secondary non-tertiary, and short-cycle tertiary. High education was defined as bachelor or equivalent, master or equivalent, and doctoral or equivalent. Country-specific income thresholds were used to classify household income into low, moderate, or high[17]. Respondents who refused to provide income information were classified as income not reported. Additional independent measures were smoking behaviours, as defined in Table 1. Smoking status was classified as daily or non-daily (at least once a week or at least once a month). Respondents also reported beliefs about the harm of their own cigarette brand vs other brands and whether they believed that slim cigarettes are less harmful than regular cigarettes (agree/strongly agree that slims are less harmful vs. neither agree nor disagree/disagree/strongly disagree/don't know). Unless otherwise indicated, respondents who provided "refused" or "don't know" responses for any of the measures were excluded from the analysis.

Descriptive statistics were used to estimate support for a ban on slim cigarettes by sociodemographic characteristics and smoking behaviors. Wald χ^2 tests were used to test for an

Table 1. Support for a ban on slim cigarettes among smokers from six European countries, International Tobacco Control Evaluation Project Six European Country Survey Wave 2 (2018) (N=5577).

	% Supporting Slim Ban*			Odds of Support†		Test		
Covariate	**(Unwtd Freq)**	**%**	**(95% CI)**	**aOR**	**(95% CI)**	**ChiSq**	**DF**	**p**
Country								
Germany	(182 / 939)	19.2	(14.6, 24.9)	0.99	(0.64, 1.52)	23.95	5	<.001
Greece	(174 / 944)	18.0	(13.7, 23.3)	0.91	(0.61, 1.37)			
Hungary	(188 / 942)	21.7	(16.7, 27.8)	1.12	(0.77, 1.64)			
Poland	(177 / 947)	20.0	(15.5, 25.4)	1.00	(0.68, 1.47)			
Romania	(291 / 916)	33.8	(29.2, 38.8)	2.00	(1.41, 2.82)			
Spain	(193 / 889)	20.2	(16.9, 24.1)	1.00				

	% Supporting Slim Ban*			Odds of Support†		Test		
Covariate	**(Unwtd Freq)**	**%**	**(95% CI)**	**aOR**	**(95% CI)**	**ChiSq**	**DF**	**p**
Urban/rural residence								
Urban	(389 / 1932)	21.8	(18.5, 25.5)	1.14	(0.82, 1.57)	1.19	2	0.550
Intermediate	(487 / 2134)	22.7	(20.0, 25.8)	1.18	(0.88, 1.57)			
Rural	(329 / 1511)	21.8	(18.1, 26.1)	1.00				
Sex								
Female	(536 / 2715)	19.5	(17.4, 21.9)	0.78	(0.67, 0.91)	10.03	1	0.002
Male	(669 / 2862)	24.2	(21.9, 26.6)	1.00				
Age group								
18–24	(96 / 432)	24.1	(19.1, 30.0)	1.22	(0.88, 1.71)	1.94	3	0.586
25–39	(351 / 1533)	22.9	(20.2, 25.8)	1.12	(0.90, 1.39)			
40–54	(416 / 1940)	21.7	(19.2, 24.4)	1.10	(0.89, 1.35)			
55+	(342 / 1672)	21.1	(18.3, 24.1)	1.00				
Income								
Not stated	(260 / 1543)	17.7	(14.9, 20.9)	0.88	(0.65, 1.19)	12.23	3	0.007
Low	(226 / 993)	22.3	(18.7, 26.3)	1.14	(0.84, 1.54)			
Moderate	(452 / 1800)	25.8	(22.8, 29.1)	1.34	(1.05, 1.71)			
High	(267 / 1241)	22.4	(18.9, 26.3)	1.00				
Education								
Low	(379 / 1790)	21.5	(18.6, 24.8)	1.08	(0.79, 1.49)	0.47	2	0.790
Moderate	(698 / 3126)	22.8	(20.5, 25.3)	1.10	(0.83, 1.46)			
High	(121 / 640)	19.9	(16.3, 24.1)	1.00				
Smoking status								
Daily smoker	(1135 / 5343)	21.8	(19.8, 23.9)	0.68	(0.47, 0.97)	4.46	1	0.035
Non-daily smoker	(70 / 234)	29.3	(23.4, 35.9)	1.00				
Cigarettes smoked/day								
≤ 10	(485 / 2072)	23.1	(20.7, 25.7)	0.98	(0.62, 1.54)	1.60	3	0.659
11–20	(577 / 2796)	21.4	(19.1, 23.9)	0.92	(0.61, 1.41)			
21–30	(91 / 475)	22.2	(17.4, 27.9)	1.11	(0.69, 1.80)			
31+	(46 / 214)	21.7	(14.8, 29.9)	1.00				
Flavour smoked								
Menthol	(44 / 277)	15.2	(10.8, 20.5)	0.55	(0.36, 0.86)	8.44	3	0.038
Other flavour	(20 / 115)	19.8	(11.0, 31.6)	0.79	(0.40, 1.59)			
Unflavoured	(974 / 4545)	22.0	(20.0, 24.2)	0.95	(0.73, 1.23)			
No usual brand	(167 / 640)	25.9	(21.5, 30.9)	1.00				

	% Supporting Slim Ban*			Odds of Support†		Test		
Covariate	**(Unwtd Freq)**	**%**	**(95% CI)**	**aOR**	**(95% CI)**	**ChiSq**	**DF**	**p**
Smokes factory-made(FM)/roll-your-own(RYO)								
FM	(919 / 4165)	22.7	(20.6, 24.8)	1.00	(0.73, 1.37)	0.24	2	0.885
RYO	(204 / 1027)	20.5	(16.9, 24.6)	1.06	(0.73, 1.52)			
Both	(79 / 382)	20.2	(15.6, 25.9)	1.00				
Attempts to quit in past year								
Has not tried to quit in last 12 months	(989 / 4773)	21.2	(19.2, 23.3)	0.91	(0.72, 1.15)	0.57	1	0.452
Tried to quit last 12 months	(215 / 798)	27.8	(23.9, 32.1)	1.00				
Plans to quit smoking								
No plans to quit	(983 / 4966)	20.1	(18.2, 22.2)	0.45	(0.36, 0.56)	48.35	1	<.001
Plans to quit in next 6 months	(222 / 611)	38.8	(34.1, 43.7)	1.00				
Harm of own cigarette brand vs. other brands								
Don't know	(14 / 129)	12.7	(6.1, 22.4)	0.58	(0.29, 1.19)	2.99	3	0.394
A little less harmful	(191 / 803)	25.2	(21.6, 29.3)	1.04	(0.82, 1.30)			
A little more harmful	(66 / 199)	31.8	(24.9, 39.8)	1.17	(0.80, 1.72)			
No different	(932 / 4444)	21.4	(19.3, 23.7)	1.00				
Slim cigarettes are less harmful than regular cigarettes								
Don't know	(80 / 532)	16.5	(12.9, 20.9)	0.79	(0.58, 1.08)	50.06	3	<.001
Strongly agree/Agree	(402 / 1190)	33.4	(29.3, 37.6)	2.14	(1.69, 2.71)			
Neither	(264 / 1249)	22.2	(18.8, 25.9)	1.26	(0.99, 1.60)			
Strongly disagree/ disagree	(457 / 2589)	18.3	(16.0, 20.9)	1.00				

* Weighted percent

† Odds ratios from a weighted multivariable logistic regression model including all covariates listed in table.

Unwtd freq – unweighted frequency; CI – confidence interval; aOR, adjusted odds ratio; ChiSq, chi-square statistic; DF – degrees of freedom. 65 respondents were excluded from the logistic regression model due to missing data (refused/ don't know responses) for one or more independent variables.

association between independent variables and support for a ban on slim cigarettes. Multivariable logistic regression was used to estimate adjusted odds ratios (OR) and the corresponding 95% confidence intervals (CI). All statistical analyses were conducted using SAS-callable SUDAAN (Version 11.0.3) to account for the complex sampling design and cross-sectional sampling weights. In addition to standard sociodemographic measures, covariates for regression models were selected because they were used in the construction of sampling weights[13,16] or because they were used in previous empirical research on slim cigarettes[18,19] or perceptions of the harmfulness of different tobacco products[20]. "Harm of own cigarette brand vs other brands" was included as a covariate in the model examining support for a slim ban because respondents were not directly asked whether they smoked a slim brand. However, previous research found that people who smoked slim cigarettes were more likely to believe their own brand was less harmful than other brands[18,21]. Therefore, perceptions about the harm of one's one brand might be related to support for a ban on slim cigarettes.

Results

Sample characteristics

Of 5592 respondents who smoked on a daily (96%) or non-daily basis (4%), 51% were male, 28% were 25–39 years of age, 35% were 40–54 years of age, and 30% were 55 or older.

About 35% of respondents from Germany, Hungary, Poland, and Romania lived in urban areas, 53% of respondents from Spain lived in urban areas, while only 17% of respondents from Greece lived in urban areas. Across all countries, more than half of all respondents (56%) had a moderate education and 12% had a high education; 32% had a moderate household income, 22% had a high income, and 28% chose not to report their income.

Support for a ban on slim cigarettes

Support for a ban on slims varied across the six European countries, with highest support in Romania (33.8%; 95% CI=29.2-38.8), and lowest in Greece (18.0%; 95%CI=13.7-23.3). Smokers from Romana had significantly higher odds (aOR=2.00; 95%CI =1.41-2.82) of supporting a ban on slim cigarettes than smokers from Spain. Those who had a moderate income in comparison to those with high income (aOR=1.34; 95%CI =1.05-1.71) were more likely to support a ban on slim cigarettes. Female smokers (aOR=0.78; 95%CI=0.67-0.91; ref=males), daily smokers (aOR=0.68; 95%CI=0.47-0.97; ref=non-daily smokers), menthol smokers (aOR=0.55; 95%CI=0.36-0.86; ref=no usual brand), and smokers who did not have plans to quit within next six months (aOR=0.45; 95%CI=0.36-0.56; ref=smokers with plans to quit in the next six months) had significantly lower odds of supporting a ban on slim cigarettes. Smokers who agreed or strongly agreed that slim cigarettes are less harmful than regular cigarettes were more likely to support a ban on slim cigarettes compared to those who disagreed or strongly disagreed (OR=2.14, 95%CI=1.69-2.71) (Table 1).

Perceptions that slim cigarettes are less harmful

Perceptions that slim cigarettes are less harmful than regular cigarettes also varied significantly across the six countries, ranging from 8.1% (95%CI=5.8-11.3) among German smokers to over one-quarter among Hungarian (29.1%; 95%CI=24.0-34.8), Polish (28.9%, 95%CI=24.3-33.9), and Romanian (26.8%, 95%CI=23.0-31.1) smokers. Smokers who reported not having plans to quit within the next six months were less likely to report that slim cigarettes are less harmful compared to those with plans to quit (aOR=0.70; 95%CI=0.54-0.91). Lastly, smokers who believed that their own cigarette brand is less harmful than other brands were more likely to report that slims are less harmful compared to those who perceived no difference in harm between their own and others' brand (aOR=1.84; 95%CI=1.45-2.33) (Table 2).

Table 2. Perceptions that slim cigarettes are less harmful among smokers from six European countries, International Tobacco Control Evaluation Project Six European Country Survey Wave 2 (2018) (N=5592).

	% Slims Less Harmful			Odds Slims Less Harmful†		Test		
Covariate	(Unwtd Freq)	%*	(95%CI)	aOR	(95%CI)	ChiSq	DF	p
Country								
Germany	(75 / 939)	8.1	(5.8, 11.3)	0.34	(0.21, 0.53)	71.32	5	<.001
Greece	(132 / 951)	13.1	(10.0, 17.0)	0.63	(0.42, 0.94)			
Hungary	(263 / 949)	29.1	(24.0, 34.8)	1.77	(1.22, 2.56)			
Poland	(290 / 947)	28.9	(24.3, 33.9)	1.48	(1.04, 2.11)			
Romania	(252 / 918)	26.8	(23.0, 31.1)	1.23	(0.86, 1.78)			
Spain	(180 / 888)	19.5	(15.7, 24.0)	1.00				
Urban/rural residence								
Urban	(405 / 1943)	19.6	(17.1, 22.3)	0.80	(0.60, 1.06)	2.78	2	0.249
Intermediate	(433 / 2137)	20.1	(17.6, 23.0)	0.92	(0.69, 1.24)			
Rural	(354 / 1512)	24.0	(20.3, 28.1)	1.00				
Sex								
Female	(624 / 2724)	22.3	(20.3, 24.5)	1.17	(1.00, 1.37)	4.02	1	0.045
Male	(568 / 2868)	19.8	(17.8, 22.0)	1.00				
Age group								
18–24	(95 / 432)	20.5	(16.2, 25.6)	0.83	(0.60, 1.15)	2.67	3	0.445
25–39	(324 / 1538)	20.7	(18.2, 23.4)	0.87	(0.71, 1.08)			

	% Slims Less Harmful			Odds Slims Less Harmful[‡]		Test		
Covariate	**(Unwtd Freq)**	**%***	**(95%CI)**	**aOR**	**(95%CI)**	**ChiSq**	**DF**	**p**
40–54	(390 / 1948)	20.1	(17.7, 22.7)	0.86	(0.70, 1.06)			
55+	(383 / 1674)	22.4	(19.9, 25.2)	1.00				
Income								
Not stated	(353 / 1555)	21.5	(18.5, 24.8)	0.91	(0.69, 1.18)	2.14	3	0.544
Low	(189 / 995)	18.8	(15.6, 22.4)	1.00	(0.73, 1.36)			
Moderate	(389 / 1801)	21.1	(18.5, 23.9)	1.08	(0.86, 1.36)			
High	(261 / 1241)	21.6	(18.6, 25.0)	1.00				
Education								
Low	(358 / 1799)	20.1	(17.3, 23.2)	1.03	(0.75, 1.42)	0.69	2	0.708
Moderate	(703 / 3129)	21.8	(19.9, 23.9)	1.10	(0.82, 1.46)			
High	(125 / 645)	18.8	(15.1, 23.1)	1.00				
Smoking status								
Daily smoker	(1153 / 5356)	21.1	(19.4, 23.0)	1.38	(0.86, 2.21)	1.76	1	0.185
Non-daily smoker	(39 / 236)	16.4	(11.2, 22.8)	1.00				
Cigarettes smoked/day								
≤ 10	(456 / 2085)	21.9	(19.7, 24.4)	1.14	(0.71, 1.82)	5.88	3	0.118
11–20	(614 / 2795)	21.8	(19.5, 24.2)	1.14	(0.72, 1.79)			
21–30	(79 / 477)	13.0	(10.0, 16.8)	0.77	(0.47, 1.26)			
31+	(34 / 215)	17.0	(11.6, 23.8)	1.00				
Flavour smoked								
Menthol	(84 / 278)	26.5	(20.4, 33.7)	0.79	(0.52, 1.18)	7.17	3	0.067
Other flavour	(33 / 114)	28.0	(15.2, 44.1)	1.41	(0.70, 2.82)			
Unflavoured	(900 / 4562)	19.7	(17.9, 21.6)	0.75	(0.58, 0.98)			
No usual brand	(175 / 638)	25.8	(21.5, 30.7)	1.00				
Smokes factory-made/roll-your-own								
FM	(942 / 4175)	21.8	(20.1, 23.7)	1.25	(0.85, 1.83)	7.86	2	0.020
RYO	(180 / 1032)	18.2	(14.8, 22.2)	0.90	(0.58, 1.41)			
Both	(68 / 382)	18.1	(13.5, 23.9)	1.00				
Attempts to quit in past year								
Has not tried to quit in last 12 months	(1013 / 4782)	21.0	(19.2, 23.0)	1.13	(0.89, 1.44)	1.03	1	0.310
Tried to quit last 12 months	(178 / 804)	20.6	(17.6, 23.9)	1.00				
Plans to quit smoking								
No plans to quit	(1012 / 4974)	20.0	(18.2, 21.9)	0.70	(0.54, 0.91)	7.23	1	0.007
Plans to quit in next 6 months	(180 / 615)	28.8	(24.5, 33.5)	1.00				

	% Slims Less Harmful			Odds Slims Less Harmful†		Test		
Covariate	**(Unwtd Freq)**	**%***	**(95%CI)**	**aOR**	**(95%CI)**	**ChiSq**	**DF**	**p**
Harm of own cigarette brand vs. other brands								
Don't know	(30 / 133)	21.8	(13.8, 31.9)	0.86	(0.50, 1.48)	27.57	3	<.001
A little less harmful	(240 / 804)	30.6	(26.3, 35.2)	1.84	(1.45, 2.33)			
A little more harmful	(63 / 199)	28.9	(22.0, 36.9)	1.37	(0.92, 2.04)			
No different	(858 / 4454)	18.9	(17.1, 20.8)	1.00				

* Weighted percent.

† Odds ratios from a weighted multivariable logistic regression model including all covariates listed in table.

Unwtd freq – unweighted frequency; CI – confidence interval; aOR, adjusted odds ratio; ChiSq, chi-square statistic; DF – degrees of freedom. 51 respondents were excluded from the logistic regression model due to missing data (refused/don't know responses) for one or more independent variables.

Discussion

This study has found that approximately 20% of smokers supported a ban on slim cigarettes. Country, gender, daily/non-daily smoking status, and quitting plans were key correlates of supporting a ban on slim cigarettes. Women were less likely to support a ban on slims than men, which is not surprising given that slim cigarettes have historically been specifically marketed to females by the tobacco industry[22]. The fact that slim cigarettes are associated with perceptions of glamour, cleanliness, and safety[4], which are mainly characteristics of femininity, may be the reason[5,23]. According to the 2017 Special Eurobarometer 458, women in the EU are more likely than men to smoke slim cigarettes (10% vs 2%) and find slim cigarettes attractive (e.g., feminine, elegant) (20% vs. 15%)[1]. Non-daily smokers and those smokers planning to quit were more likely to support a ban of slim cigarettes. This is similar to a study that found that menthol smokers who had plans to quit were more likely to support a menthol ban in comparison to those with no plans to quit[24].

We found considerable country differences in reporting that slim cigarettes are less harmful, with misperceptions significantly higher in Hungary, Poland, and Romania (>25%) than in Germany (8%). Variation may be partly explained by differences in popularity of slim cigarettes. According to the 2017 Eurobarometer, use of slim cigarettes among the observed countries also varied (1% in Spain, 2% in Germany, 5% in Hungary, 6% in Greece, 6% in Romania, and 16% in Poland). Given that slim cigarettes are as harmful as other cigarettes, the high levels of misperceptions that slim cigarettes are less harmful in our sample of EU smokers is concerning. However, we found some counter-intuitive results that smokers who agreed (rather than disagreed) that slim cigarettes are less harmful were more likely to a support a ban on slim cigarettes. While the existing literature is limited, other studies have found harm perceptions and social norms to be associated with support for tobacco control policies and related to the choice of tobacco product used[25–27].

While the initial draft TPD included a ban on slim cigarettes, the final version lacked such a ban. This was proposed to be due to the strong tobacco industry lobbying to dilute the regulation[28]. As previous research has shown that smokers perceptions are impacted by cigarette pack and stick design, and as other provisions included in the TPD were aimed at reducing misperceptions about reduced harm, results from this study further illustrate how banning slim cigarettes would support this goal[29,30]. While this study uses data from large representative samples of smokers from six EU Member States, there are some limitations to be considered. First, the survey did not directly ask respondents if they smoke slim cigarettes, which precluded analysis of this variable as a possible covariate. Second, the cross-sectional nature of the analysis does not allow for any causal conclusions. Moreover, due to the nature of the study some possible bias can be such as social desirability bias and/or societal impact. Lastly, our study relies on self-report data, which might be subject to information bias, leading to misclassification[31]. The statistical approach used for analysis of the ITC 6 European Country (ITC 6E) Survey data is considered standard for the analysis of population health survey data employing complex sampling designs using unequal weighting and clustering. Statistical approaches that ignore the complex design will produce variances and probability levels of hypothesis tests that are too small, potentially leading to erroneous conclusions[31]. Therefore, it was essential to account for the sampling design and sampling weights in the analysis of the ITC 6E data. The statistical procedures implemented in SUDAAN provide the ability to correctly compute variances and hypothesis tests under complex sampling when only minimal design information is employed[31]. However, the approximations used are generally considered to be conservative, so that estimated variances will be slightly larger[31]; thus, p-values reported here may be somewhat conservative.

In conclusion, our results indicate that among a sample of smokers from six EU Member States, the percentage of

smokers who support a slims ban is low, while misperceptions that slim cigarettes are less harmful is high, particularly among countries where slim cigarette use is more prevalent. Findings of the current study provide evidence that can be used when discussing a ban on slim cigarette in order to further mitigate misperceptions that certain tobacco products are less harmful than others. The European Commission should consider this evidence in the next revision of the TPD. Future activities should focus on the strategies for addressing misperceptions about the harm of slim cigarette. Moreover, it is important policy makers to assess the effectiveness of different tobacco control policies and to better implement them in different EU settings. Policymakers should focus also on prevention activities and health promotion campaigns regarding slim cigarettes.

Funding

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Data availability

In each country participating in the international Tobacco Control Policy Evaluation (ITC) Project, the data are jointly owned by the lead researcher(s) in that country and the ITC Project at the University of Waterloo. Data from the ITC Project are available to approved researchers 2 years after the date of issuance of cleaned data sets by the ITC Data Management Centre. Researchers interested in using ITC data are required to apply for approval by submitting an International Tobacco Control Data Repository (ITCDR) request application and subsequently to sign an ITCDR Data Usage Agreement. The criteria for data usage approval and the contents of the Data Usage Agreement are described online (http://www.itcproject.org).

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*EUREST-PLUS CONSORTIUM MEMBERS:

European Network on Smoking and Tobacco Prevention (ENSP), Belgium: Constantine I. Vardavas, Andrea Glahn, Christina N. Kyriakos, Dominick Nguyen, Katerina Nikitara, Cornel Radu-Loghin, Polina Starchenko, Enkeleint A. Mechili. University of Crete (UOC), Greece: Aristidis Tsatsakis, Charis Girvalaki, Chryssi Igoumenaki, Sophia Papadakis, Aikaterini Papathanasaki, Manolis Tzatzarakis, Alexander I. Vardavas. Kantar Public, Belgium: Nicolas Bécuwe, Lavinia Deaconu, Sophie Goudet, Christopher Hanley, Oscar Rivière. Smoking or Health Hungarian Foundation (SHHF), Hungary: Tibor Demjén, Judit Kiss, Anna Piroska Kovacs. Catalan Institute of Oncology (ICO) and Bellvitge Biomedical Research Institute (IDIBELL), Spain: Esteve Fernández, Yolanda Castellano, Marcela Fu, Sarah O. Nogueira, Olena Tigova. Kings College London (KCL), United Kingdom: Ann McNeill, Katherine East, Sara C. Hitchman, Máirtín McDermott, Sarah Aleyan. German Cancer Research Center (DKFZ), Germany: Ute Mons, Sarah Kahnert. National and Kapodistrian University of Athens (UoA), Greece: Yannis Tountas, Panagiotis Behrakis, Filippos T. Filippidis, Christina Gratziou, Paraskevi Katsaounou, Theodosia Peleki, Ioanna Petroulia, Chara Tzavara. AerPur Romania, Romania: Antigona C. Trofor, Marius Eremia, Lucia Lotrean, Florin Mihaltan. European Respiratory Society (ERS), Switzerland: Gernot Rohde, Tamaki Asano, Claudia Cichon, Amy Far, Céline Genton, Melanie Jessner, LinneaHedman, ChristerJanson, Ann Lindberg, Beth Maguire, Sofia Ravara, Valérie Vaccaro, Brian Ward. Maastricht University, the Netherlands: Marc Willemsen, Hein de Vries, Karin Hummel, Gera E. Nagelhout. Health Promotion Foundation (HPF), Poland: Witold A. Zatoński, Aleksandra Herbeć, Kinga Janik - Koncewicz, Krzysztof Przewoźniak, Mateusz Zatoński. University of Waterloo (UW), Canada: Geoffrey T. Fong, Thomas K. Agar, Pete Driezen, Shannon Gravely, Anne C. K. Quah, Mary E. Thompson.

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Version 4

Reviewer Report 06 July 2023

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✔ **Camilla Wikström-Grotell**
[1] Arcada UAS, Helsinki, Finland
[2] Mälardalen University, Västerås, Sweden

I am satisfied with the revision. The added short text about the impact of the slim cigarettes on health status with a new reference as well as the added text at the end that focuses on prevention and health promotion campaigns corresponds to the requests I made.

The revised article brings out the importance of health promotion and preventive activities also at a policy level and fulfills thereby the requirements for improvement that I recommended. I have no further comments.

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 04 July 2023

https://doi.org/10.21956/openreseurope.17478.r32951

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✔ **Jaana Sepp**
Academic and International Affairs Office, Tallinn Health Care College, Tallinn, Estonia

The authors have made commendable improvements to the article based on the feedback provided by the reviewers. The inclusion of potential biases that could impact the study results is a

crucial addition, as it enhances the transparency and strengthens the interpretation of the findings. By explicitly addressing these biases, the authors have shown a commitment to providing a comprehensive and rigorous analysis.

The authors have also taken into account the complexity of the statistical analyses used, particularly in relation to the complex sampling design and weighting adjustments. By discussing the assumptions, limitations, and potential pitfalls associated with these analyses, the authors have demonstrated a clear understanding of the statistical nuances and have provided readers with a better understanding of the strengths and limitations of the study.

The expanded discussion on the implications of the findings and future research directions is a notable improvement. By exploring strategies to address misperceptions about the harm of slim cigarettes and considering the effectiveness of different tobacco control policies, the authors have shown a proactive approach towards addressing a significant public health issue. This addition enhances the practical relevance of the study and provides valuable insights for policymakers and researchers.

Furthermore, the authors' acknowledgment of the complexity of tobacco consumption and the need for multifaceted approaches is a commendable addition to the article. By recognizing that banning slim cigarettes alone will not solve the problem, the authors highlight the importance of comprehensive tobacco control strategies that encompass various activities and actions. This nuanced perspective adds depth to the discussion and reflects a well-rounded understanding of the topic.

Overall, the authors' improvements demonstrate a high level of responsiveness to the reviewers' feedback and a commitment to enhancing the scientific soundness of the article. The revised version reflects a comprehensive analysis, thoughtful considerations of biases and limitations, and valuable insights for future research and policy development.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Safety management, occupational health and safety, human behaviour.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 3

Reviewer Report 19 May 2023

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Camilla Wikström-Grotell
[1] Arcada UAS, Helsinki, Finland
[2] Mälardalen University, Västerås, Sweden
[3] Arcada UAS, Helsinki, Finland
[4] Mälardalen University, Västerås, Sweden

Your paper, which deals with an important problem regarding public health, is on an overall level well-structured and written. Objective, method and results are well reported. I only miss a clarification of the problem with smoking and the banning of slim cigarettes in a deeper understanding of the problem from a health promotion perspective, which includes preventive and health behaviour change interventions.

The main goal of this study was to examine support for a ban on slim cigarettes among smokers in six European Countries. You aim to answer a specific question, which you do. However, the smoking is a multicomplex problem that is based on nicotine dependence but also on social and psychological factors. It can be seen as a chronic, severe disease, which should be prevented and which is difficult to treat. The problem cannot be solved simply by banning certain tobacco products. It is important to demonstrate this understanding of the problem in the introduction, and possibly follow this up in the discussion with some type of statement that the ban is a step in the right direction but not sufficient as only measure or intervention. This can be supported with one or a few relevant sources.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: My areas of expertise are health promotion, health behavior and evidence-based health care & medicine, qualitative research methods. I am not an expert on statistical methods.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 08 Jun 2023

Enkeleint A. Mechili

Point by point. We would like to warmly thank the reviewers for their kind words and valuable suggestions which improve significantly this paper. We have followed them strictly in order to improve our manuscript. All our revisions are with track changes in the revised manuscript. **Review 1:** Summary: The article investigates the support for a ban on slim cigarettes among smokers in six European countries and explores the factors associated with this support. The study employs descriptive statistics, Wald χ2 tests, and multivariable logistic regression to analyze data obtained from a large representative sample of smokers. The findings indicate that approximately 20% of smokers supported a ban on slim cigarettes, with significant variations across countries. Gender, smoking status, quitting plans, and perceptions of harm were identified as key correlates of supporting a ban. The article highlights the importance of addressing misperceptions regarding the harm of slim cigarettes and recommends the inclusion of a ban on slim cigarettes in tobacco control policies.

Response 1: Thank you very much for your general comment. **Review 2:** Strengths:

1. Utilization of a representative sample: The study benefits from a large representative sample of smokers from six European countries, which enhances the generalizability of the findings to the target population.
2. Use of statistical analyses: The study employs appropriate statistical methods, including descriptive statistics, Wald χ2 tests, and multivariable logistic regression, to examine the relationships between independent variables and support for a ban on slim cigarettes.
3. Inclusion of relevant covariates: The article includes covariates in the regression models that have been previously used in constructing sampling weights and identified in empirical research on slim cigarettes and perceptions of tobacco product harm, which strengthens the validity of the analysis.

Response 2: Thank you for pointing some of the key strengths of the current article. It is true that the number of participants, the statistical analyses used, and the inclusion of covariates are some key strengths of the current article.

Review 3: Weaknesses and Suggestions for Improvement:

1. Limited discussion on potential sources of bias: The article fails to discuss potential biases that could impact the findings, such as social desirability bias or recall bias. Addressing these potential biases explicitly will allow readers to better interpret the results and understand their limitations.
2. Limited discussion of statistical limitations: The article does not adequately discuss the assumptions, limitations, and potential pitfalls associated with the statistical analyses employed, particularly in the context of the complex sampling design and weighting adjustments. Providing a clear discussion of these statistical limitations will

help readers understand the strengths and limitations of the study's findings.

3. Incomplete implications and future research discussion: The article could benefit from an expanded discussion of the implications of the findings and potential future research directions. Specifically, exploring strategies to address misperceptions about the harm of slim cigarettes and assessing the effectiveness of different tobacco control policies would enhance the practical relevance and impact of the study.

Response 3: We would like toto warmly thank the reviewer for the kind and important comments that improve significantly the current article. We have responded to the raised issues accordingly. Please see below for each comment our response as well as in the text the proposed changes. **Review 4:** Discuss potential biases, such as social desirability bias or recall bias, that may have influenced the self-report data and provide strategies to mitigate their impact on the study findings.

Response 4: We warmly thank the reviewer for this very important comment. We have added a sentence about this limitation in the limitation paragraph. In this paragraph we mentioned that *"Moreover, due to the nature of the study some possible bias can be such as social desirability bias and/or societal impact".* We consider that is better not to include recall bias in this case as the data collected are not of a retrospective nature. However, if the reviewer consider important to include, we will do it with great pleasure. **Review 5:** Provide a thorough discussion of the assumptions, limitations, and potential pitfalls associated with the statistical analyses used, particularly considering the complex sampling design and weighting adjustments. Response 5: Thank you for the comment. We have added the below text and reference. The statistical approach used for analysis of the ITC 6 European Country (ITC 6E) Survey data is considered standard for the analysis of population health survey data employing complex sampling designs using unequal weighting and clustering. Statistical approaches that ignore the complex design will produce variances and probability levels of hypothesis tests that are too small, potentially leading to erroneous conclusions (LaVange et al., 1996). Therefore, it was essential to account for the sampling design and sampling weights in the analysis of the ITC 6E data. The statistical procedures implemented in SUDAAN provide the ability to correctly compute variances and hypothesis tests under complex sampling when only minimal design information is employed (LaVange et al., 1996). However, the approximations used are generally considered to be conservative, so that estimated variances will be slightly larger (LaVange et al., 1996); thus, p-values reported here may be somewhat conservative. Reference to add: LaVange LM, Stearns SC, Lafata JE, Koch GG, Shah BV. Innovative strategies using SUDAAN for analysis of health surveys with complex samples. *Statistical Methods in Medical Research,* 1996; 5: 311-329. https://doi.org/10.1177/096228029600500306 **Review 6:** Expand the implications and future research discussion to explore strategies for addressing misperceptions about the harm of slim cigarettes and assessing the effectiveness of different tobacco control policies. This would enhance the practical relevance and impact of the study. Response 6: Thank you for your important comment. In the end of the manuscript, we have added two sentences about this issue. *"Future activities should focus on the strategies for addressing misperceptions about the harm of slim cigarette. Moreover, it is important policy makers to assess the effectiveness of different tobacco control policies and to better implement them in different EU settings".* **Review 7:** Your paper, which deals with an important problem regarding public health, is on an overall level well-structured and written. Objective, method and results are well reported. I only miss a clarification of the problem with smoking and the banning of slim cigarettes in a deeper understanding of the problem from a health

promotion perspective, which includes preventive and health behaviour change interventions. Response 7: Thank you for your comment. The banning of the slim cigarettes can improve health of the population as they have similar ingredients to normal cigarettes. We have mentioned some of the key health problems at references 7 and 8. Moreover, we added a short text about the impact of the slim cigarettes on health status. We have added a reference that strengthen this issue. *"From all the above it is clear that the slim cigarette consumption could improve the health status of the population. Exposure to some toxicants such as formaldehyde, ammonia and the phenols increases in super slim cigarettes according to a study conducted in Canada [9]."* Moreover, at the end of the manuscript we added a text that focuses on prevention and health promotion campaigns. **Review 8:** The main goal of this study was to examine support for a ban on slim cigarettes among smokers in six European Countries. You aim to answer a specific question, which you do. However, the smoking is a multicomplex problem that is based on nicotine dependence but also on social and psychological factors. It can be seen as a chronic, severe disease, which should be prevented and which is difficult to treat. The problem cannot be solved simply by banning certain tobacco products. It is important to demonstrate this understanding of the problem in the introduction, and possibly follow this up in the discussion with some type of statement that the ban is a step in the right direction but not sufficient as only measure or intervention. This can be supported with one or a few relevant sources. Response 8: Thank you for the very important and significant comment. We have added a text and a reference to strengthen this issue. *"Tobacco is a multicomplex problem that is not depending just on the nicotine dependence but also on social and psychological factors. A study in San Francisco shows that banning of flavored tobacco use can decrease the prevalence but not in high rates [10]. This clearly states that banning is not the only measure possible but comprehensive polices are needed for tobacco control."*

Competing Interests: No competing interests were disclosed.

Reviewer Report 16 May 2023

https://doi.org/10.21956/openreseurope.16334.r31298

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Jaana Sepp
[1] Academic and International Affairs Office, Tallinn Health Care College, Tallinn, Estonia
[2] Academic and International Affairs Office, Tallinn Health Care College, Tallinn, Estonia

Summary: The article investigates the support for a ban on slim cigarettes among smokers in six European countries and explores the factors associated with this support. The study employs descriptive statistics, Wald χ2 tests, and multivariable logistic regression to analyze data obtained from a large representative sample of smokers. The findings indicate that approximately 20% of smokers supported a ban on slim cigarettes, with significant variations across countries. Gender,

smoking status, quitting plans, and perceptions of harm were identified as key correlates of supporting a ban. The article highlights the importance of addressing misperceptions regarding the harm of slim cigarettes and recommends the inclusion of a ban on slim cigarettes in tobacco control policies.

Strengths:

1. Utilization of a representative sample: The study benefits from a large representative sample of smokers from six European countries, which enhances the generalizability of the findings to the target population.

2. Use of statistical analyses: The study employs appropriate statistical methods, including descriptive statistics, Wald $\chi 2$ tests, and multivariable logistic regression, to examine the relationships between independent variables and support for a ban on slim cigarettes.

3. Inclusion of relevant covariates: The article includes covariates in the regression models that have been previously used in constructing sampling weights and identified in empirical research on slim cigarettes and perceptions of tobacco product harm, which strengthens the validity of the analysis.

Weaknesses and Suggestions for Improvement:

1. Limited discussion on potential sources of bias: The article fails to discuss potential biases that could impact the findings, such as social desirability bias or recall bias. Addressing these potential biases explicitly will allow readers to better interpret the results and understand their limitations.

2. Limited discussion of statistical limitations: The article does not adequately discuss the assumptions, limitations, and potential pitfalls associated with the statistical analyses employed, particularly in the context of the complex sampling design and weighting adjustments. Providing a clear discussion of these statistical limitations will help readers understand the strengths and limitations of the study's findings.

3. Incomplete implications and future research discussion: The article could benefit from an expanded discussion of the implications of the findings and potential future research directions. Specifically, exploring strategies to address misperceptions about the harm of slim cigarettes and assessing the effectiveness of different tobacco control policies would enhance the practical relevance and impact of the study.

Scientifically Sound Recommendations:

1. Discuss potential biases, such as social desirability bias or recall bias, that may have influenced the self-report data and provide strategies to mitigate their impact on the study findings.

2. Provide a thorough discussion of the assumptions, limitations, and potential pitfalls associated with the statistical analyses used, particularly considering the complex sampling design and weighting adjustments.

3. Expand the implications and future research discussion to explore strategies for addressing misperceptions about the harm of slim cigarettes and assessing the effectiveness of

different tobacco control policies. This would enhance the practical relevance and impact of the study.

By addressing these points, the authors can strengthen the scientific soundness of the article, improve its transparency, and provide a more comprehensive understanding of the factors associated with support for a ban on slim cigarettes among smokers in the European context.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Safety management, occupational health and safety, human behaviour.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 08 Jun 2023

Enkeleint A. Mechili

Point by point. We would like to warmly thank the reviewers for their kind words and valuable suggestions which improve significantly this paper. We have followed them strictly in order to improve our manuscript. All our revisions are with track changes in the revised manuscript. **Review 1:** Summary: The article investigates the support for a ban on slim cigarettes among smokers in six European countries and explores the factors associated with this support. The study employs descriptive statistics, Wald $\chi 2$ tests, and multivariable logistic regression to analyze data obtained from a large representative sample of smokers. The findings indicate that approximately 20% of smokers supported a ban on slim cigarettes, with significant variations across countries. Gender, smoking status, quitting plans, and perceptions of harm were identified as key correlates of supporting a ban. The article highlights the importance of addressing misperceptions regarding the harm of slim

cigarettes and recommends the inclusion of a ban on slim cigarettes in tobacco control policies.

Response 1: Thank you very much for your general comment. **Review 2:** Strengths:

1. Utilization of a representative sample: The study benefits from a large representative sample of smokers from six European countries, which enhances the generalizability of the findings to the target population.
2. Use of statistical analyses: The study employs appropriate statistical methods, including descriptive statistics, Wald $\chi 2$ tests, and multivariable logistic regression, to examine the relationships between independent variables and support for a ban on slim cigarettes.
3. Inclusion of relevant covariates: The article includes covariates in the regression models that have been previously used in constructing sampling weights and identified in empirical research on slim cigarettes and perceptions of tobacco product harm, which strengthens the validity of the analysis.

Response 2: Thank you for pointing some of the key strengths of the current article. It is true that the number of participants, the statistical analyses used, and the inclusion of covariates are some key strengths of the current article.

Review 3: Weaknesses and Suggestions for Improvement:

1. Limited discussion on potential sources of bias: The article fails to discuss potential biases that could impact the findings, such as social desirability bias or recall bias. Addressing these potential biases explicitly will allow readers to better interpret the results and understand their limitations.
2. Limited discussion of statistical limitations: The article does not adequately discuss the assumptions, limitations, and potential pitfalls associated with the statistical analyses employed, particularly in the context of the complex sampling design and weighting adjustments. Providing a clear discussion of these statistical limitations will help readers understand the strengths and limitations of the study's findings.
3. Incomplete implications and future research discussion: The article could benefit from an expanded discussion of the implications of the findings and potential future research directions. Specifically, exploring strategies to address misperceptions about the harm of slim cigarettes and assessing the effectiveness of different tobacco control policies would enhance the practical relevance and impact of the study.

Response 3: We would like toto warmly thank the reviewer for the kind and important comments that improve significantly the current article. We have responded to the raised issues accordingly. Please see below for each comment our response as well as in the text the proposed changes. **Review 4:** Discuss potential biases, such as social desirability bias or recall bias, that may have influenced the self-report data and provide strategies to mitigate their impact on the study findings.

Response 4: We warmly thank the reviewer for this very important comment. We have added a sentence about this limitation in the limitation paragraph. In this paragraph we mentioned that *"Moreover, due to the nature of the study some possible bias can be such as social desirability bias and/or societal impact".* We consider that is better not to include recall bias in this case as the data collected are not of a retrospective nature. However, if the reviewer consider important to include, we will do it with great pleasure. **Review 5:** Provide a thorough discussion of the assumptions, limitations, and potential pitfalls

associated with the statistical analyses used, particularly considering the complex sampling design and weighting adjustments. Response 5: Thank you for the comment. We have added the below text and reference. The statistical approach used for analysis of the ITC 6 European Country (ITC 6E) Survey data is considered standard for the analysis of population health survey data employing complex sampling designs using unequal weighting and clustering. Statistical approaches that ignore the complex design will produce variances and probability levels of hypothesis tests that are too small, potentially leading to erroneous conclusions (LaVange et al., 1996). Therefore, it was essential to account for the sampling design and sampling weights in the analysis of the ITC 6E data. The statistical procedures implemented in SUDAAN provide the ability to correctly compute variances and hypothesis tests under complex sampling when only minimal design information is employed (LaVange et al., 1996). However, the approximations used are generally considered to be conservative, so that estimated variances will be slightly larger (LaVange et al., 1996); thus, p-values reported here may be somewhat conservative. Reference to add: LaVange LM, Stearns SC, Lafata JE, Koch GG, Shah BV. Innovative strategies using SUDAAN for analysis of health surveys with complex samples. *Statistical Methods in Medical Research,* 1996; 5: 311-329. https://doi.org/10.1177/096228029600500306 **Review 6:** Expand the implications and future research discussion to explore strategies for addressing misperceptions about the harm of slim cigarettes and assessing the effectiveness of different tobacco control policies. This would enhance the practical relevance and impact of the study. Response 6: Thank you for your important comment. In the end of the manuscript, we have added two sentences about this issue. *"Future activities should focus on the strategies for addressing misperceptions about the harm of slim cigarette. Moreover, it is important policy makers to assess the effectiveness of different tobacco control policies and to better implement them in different EU settings".* **Review 7:** Your paper, which deals with an important problem regarding public health, is on an overall level well-structured and written. Objective, method and results are well reported. I only miss a clarification of the problem with smoking and the banning of slim cigarettes in a deeper understanding of the problem from a health promotion perspective, which includes preventive and health behaviour change interventions. Response 7: Thank you for your comment. The banning of the slim cigarettes can improve health of the population as they have similar ingredients to normal cigarettes. We have mentioned some of the key health problems at references 7 and 8. Moreover, we added a short text about the impact of the slim cigarettes on health status. We have added a reference that strengthen this issue. *"From all the above it is clear that the slim cigarette consumption could improve the health status of the population. Exposure to some toxicants such as formaldehyde, ammonia and the phenols increases in super slim cigarettes according to a study conducted in Canada [9]."* Moreover, at the end of the manuscript we added a text that focuses on prevention and health promotion campaigns. **Review 8:** The main goal of this study was to examine support for a ban on slim cigarettes among smokers in six European Countries. You aim to answer a specific question, which you do. However, the smoking is a multicomplex problem that is based on nicotine dependence but also on social and psychological factors. It can be seen as a chronic, severe disease, which should be prevented and which is difficult to treat. The problem cannot be solved simply by banning certain tobacco products. It is important to demonstrate this understanding of the problem in the introduction, and possibly follow this up in the discussion with some type of statement that the ban is a step in the right direction but not sufficient as only measure or intervention. This can be supported with one or a few relevant sources. Response 8: Thank

you for the very important and significant comment. We have added a text and a reference to strengthen this issue. *"Tobacco is a multicomplex problem that is not depending just on the nicotine dependence but also on social and psychological factors. A study in San Francisco shows that banning of flavored tobacco use can decrease the prevalence but not in high rates [10]. This clearly states that banning is not the only measure possible but comprehensive polices are needed for tobacco control."*

Competing Interests: No competing interests were disclosed.

Version 2

Reviewer Report 31 August 2022

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Anish Thekkumkara Surendran Nair
[1] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India
[2] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India
[3] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India

I found that the authors addressed all my previous queries. I hereby approve the manuscript.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Reviewer Report 15 August 2022

https://doi.org/10.21956/openreseurope.16103.r29649

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Shu Xu
[1] New York University, New York, NY, USA
[2] New York University, New York, NY, USA
[3] New York University, New York, NY, USA

The aim of this manuscript was to identify the factors that are associated with perceptions and support for a slim cigarette ban in the EU. This review emphasized the statistical methodology and results reporting. The manuscript failed to adequately address major issues below.

1. In Introduction, authors added two sentences to justify that “slim cigarettes are less harmful than cigarettes” is a misperception. Two citations were added. One was Wang *et al* (2021), titled “Slim cigarette smoking in Urban China: Who are the early adopters and why,” which provided no empirical evidence and did not conclude on “slim cigarettes are less harmful.” The other citation from the NCI website referred to no specific published articles. Authors were supposed to conduct a literature search more thoroughly.

2. Study population and participants. It was unclear why data from established cigarettes smokers were used to study the perceptions and support for a slim cigarette ban. What is the rationale behind it? It was also unclear what the study population was.

3. Study variables:

   Authors have added more descriptions about the measures in the revised version. Some of the measures were presented in the paragraph for data analysis plan, which is inappropriate.

   Importantly, authors need to explain why potential covariates were selected for this study based on literature review. For example, it was unclear why “Harm of own cigarette brand vs other brands” reported by cigarette smokers was considered to study “Odds of support

for slim cigarette ban.

Results could be more interpretable if reference category of a categorical variable were properly selected. For example, it is difficult to interpret an odds ratio when using “No usual brand" as the reference for Flavor Smoked. Typically, the ‘Unflavored” is used as the reference.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Yes

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Author Response 09 Sep 2022

Enkeleint A. Mechili

We would like to warmly thank the reviewers for the kind words and valuable suggestions which improve significantly this paper. We have followed them strictly in order to improve our manuscript. All our revisions are with track changes in the revised manuscript.

Reviewer Comment 1: *The aim of this manuscript was to identify the factors that are associated with perceptions and support for a slim cigarette ban in the EU. This review emphasized the statistical methodology and results reporting. The manuscript failed to adequately address major issues below. In Introduction, authors added two sentences to justify that “slim cigarettes are less harmful than cigarettes” is a misperception. Two citations were added. One was Wang et al (2021), titled “Slim cigarette smoking in Urban China: Who are the early adopters and why,” which provided no empirical evidence and did not conclude on “slim cigarettes are less harmful.” The other citation from the NCI website referred to no specific published articles. Authors were*

supposed to conduct a literature search more thoroughly.

Response 1: Thank you very much for your kind comment. We have replaced these articles with some more appropriate according to your comments. The text added now is: The study of Siu et al. concluded that is a misconception to consider less harmful the super slim cigarette.[7] Authors report that this kind of tobacco can emission higher levels of toxicants such as phenol, ammonia etc. while the amount of nicotine is similar to other regular cigarettes[7]. Another study found that levels of cadmium were found 20% and 27% higher on women smoking long and ultra-long cigarette in comparison to normal cigaretts[8].

Reviewer Comment 2: *Study population and participants. It was unclear why data from established cigarettes smokers were used to study the perceptions and support for a slim cigarette ban. What is the rationale behind it? It was also unclear what the study population was.*

Response 2:

- The analysis was based on current smokers only because smokers (and not quitters) are directly affected by regulations banning the sale of slim cigarettes. This is consistent with other studies using ITC data examining support for different tobacco control policies (for example, Smith et al., 2021).
- The study population is described in more detail in the second paragraph of the methods section, describing the total number of respondents participating in Wave 2 of the ITC EUREST-PLUS Survey, the number of smokers followed from Wave 1 who quit smoking (n=415), and the number of current smokers remaining who were eligible for analysis (n=5612).

Reviewer Comment 3: *Study variables: Authors have added more descriptions about the measures in the revised version. Some of the measures were presented in the paragraph for data analysis plan, which is inappropriate. Importantly, authors need to explain why potential covariates were selected for this study based on literature review. For example, it was unclear why "Harm of own cigarette brand vs other brands" reported by cigarette smokers was considered to study "Odds of support for slim cigarette ban. Results could be more interpretable if reference category of a categorical variable were properly selected. For example, it is difficult to interpret an odds ratio when using "No usual brand" as the reference for Flavor Smoked. Typically, the 'Unflavored" is used as the reference.*

Response 3:

- The statistical analysis paragraph was revised so that the description of "support for a slim ban" and "beliefs about the harm of slim cigarettes" was moved to the previous paragraph describing all measures used for analysis. This ensures that the statistical analysis paragraph only describes the statistical methods used.
- Standard sociodemographic measures were included in regression models as well as variables used to construct the sampling weights (see Thompson *et al.* 2020 and ITC Project, 2018, reference #s 11 and 14 in the paper). Other covariates were included in regression models based on previous empirical research on slim cigarettes (e.g., Mutti *et al*., 2011; Minaker *et al*., 2017) or perceptions of the harmfulness of different tobacco products (e.g., Gravely et al., 2020). This additional information was added to the paragraph describing the measures. The "harm of own cigarette brand vs other brands" was included as a covariate in the model examining support for a slim ban

because respondents were not directly asked whether they smoked a slim brand. However, previous research (e.g., Mutti *et al*., 2011; Ford *et al*., 2016) found that people who smoked slim cigarettes were more likely to believe their own brand was less harmful than other brands. Therefore, perceptions about the harm of one's own brand might be related to support for a ban on slim cigarettes and was included as a covariate.
- The menthol variable was recoded so that "unflavoured" formed the reference category in regression models. Tables 1 and 2 were revised to reflect this change.

Additional references to add:

- Mutti S, Hammond D, Borland R, Cummings KM, O'Connor RJ, Fong GT. Beyond light and mild: cigarette brand descriptors and perceptions of risk in the International Tobacco Control (ITC) Four Country Survey. *Addiction.* 2011; **106**: 1166-1175.
- Minaker LM, Tait H, Ong M, Nguyen N. Slim cigarette smoking prevalence among Canadian youth smokers: Implications for federal standardized packaging legislation. *Canadian Journal of Public Health.* 2017; **108(5-6)**: e565-e570.
- Ford A, Moodie C, Purves R, MacKintosh AM. Adolescent girls and young adult women's perceptions of superslims cigarette packaging: a qualitative study. *BMJ Open.* 2016; **6**:e010102.
- Gravely S, Driezen P, Kyriakos CN, Thompson ME, Balmford J, Demjén, Fernández E, Mons U, Tountas Y, Janik-Koncewicz K, Zatoński W, Trofor AC, Vardavas CI, Fong GT. European adult smokers' perceptions of the harmfulness of e-cigarettes relative to combustible cigarettes: cohort findings from the 2016 and 2018 EUREST-PLUS ITC Europe Surveys. *European Journal of Public Health.* 2020; **30 (Suppl 3)**: iii38-iii45.
- Smith TT, Nahhas GJ, Borland R. Cho YJ, Chung-Hall J, Fairman RT, Fong GT, McNeill A, Popova L, Thrasher JF, Cummings KM. Which tobacco control policies do smokers support? Findings from the International Tobacco Control Four Country Smoking and Vaping Survey. *Preventive Medicine.* 2021; **149**: 106600.

Competing Interests: No competing interests were disclosed.

Version 1

Reviewer Report 19 April 2022

https://doi.org/10.21956/openreseurope.14475.r28904

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Shu Xu
[1] New York University, New York, NY, USA

[2] New York University, New York, NY, USA
[3] New York University, New York, NY, USA

The aim of this manuscript was to identify the factors that are associated with perceptions and support for a slim cigarettes ban in the EU. This review emphasized the statistical methodology and results reporting.

1. Introduction: Add a few sentences to explain why "slim cigarettes are less harmful" than cigarettes is a misperception. Explain why this is misspecification. In the same paragraph, explain what are the correct perceptions.

2. Methods.

- To allow replication by other researchers, authors need to provide a complete and detailed introduction to all the study variables and their measures. Specifically, authors need to provide (1) a complete set of dependent and independent variables, (2) all response categories of categorical, and (3) all the response categories of a categorical variable if it was recoded. For example, it is unclear how one of the dependent variables, "support of a slim ban," was recoded. The authors stated that the response to the original variable has three categories (i.e., "support," "oppose," and "don't know."). In another paragraph, the authors stated the response categories as "supports or strong supports, " "otherwise." It is also unclear how these responses were recoded into binary responses (i.e., "oppose/strong oppose/don't know"). A similar problem exists in the other dependent variable. Another example is the variable, "income." It is unclear how the "Low," "Moderate," and "High" income categories were defined. This problem exists in multiple other independent variables.

- One of the dependent variables, "perceptions that slim cigarettes are less harmful" was recoded into two response categories (agree/strongly agree that slims are less harmful v.s. neither agree nor disagree/disagree/strong disagree/don't know). Those who responded "neither agree nor disagree" may be considered as "slim cigarette smokers are not less or more harmful than cigarettes." However, those who "disagree/strongly disagree" considered "slim cigarette smokers are more harmful than cigarettes." This mixture of different responses in the reference group may lead to biased results, hence, invalid conclusions. Authors need to justify why the reference group contains multiple responses ("neither agree nor disagree/disagree/strongly disagree/don't know") with citations, and discuss its implication. Alternatively, authors may consider the dependent variable multi-categorical.

- If R was not used for data analysis, then remove the following sentence. "The analyses can be done in most software packages that handle complex data design, such as R, an open-access software, using the 'svytable" and "svyglm" commands from the survey package."

- Add 1-2 sentences to explain the size of the study sample, and how the authors handled missing data.

3. Results.

- Add one paragraph summarizing the characteristics of the study sample.

- Replace "OR" with "aOR" in text and Tables 1 & 2 because multivariable logistic regressions were conducted. Update the footnotes accordingly.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
No

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Partly

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: My area is biostatistics. This review emphasized the statistical methodology and results reporting.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 05 April 2022

https://doi.org/10.21956/openreseurope.14475.r28929

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Anish Thekkumkara Surendran Nair
[1] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India
[2] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India
[3] Community Medicine, Government Medical College Thiruvananthapuram, Thiruvananthapuram, Kerala, India

It is a well written article based on ITC6E data.

However, the following points may be addressed

1. Under 'Methods' section, it is written that "Once a respondent was selected, an information letter was provided and consent was taken". But the selection criteria was not clearly mentioned.

2. It is given that "The primary outcome of this study, support for a ban on slim cigarettes, was assessed with the question: “Would you support or oppose a law that banned all slim cigarettes, that is, those cigarettes that are slimmer in size than regular cigarettes?” (support; oppose; don’t know)". But it is not clear that how this variable was used in analysis. Is it support vs non-support, counting 'don't know' category also along with 'oppose' group.

3. Last part of 'Methods' session, it is given that "The analyses can be done in most software packages that handle complex data design, such as R, an open-access software, using the ‘svytable” and “svyglm” commands from the survey package." It is not clear whether the investigators used the statistical package. If not, this sentence could be deleted.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and does the work have academic merit?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Yes

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Public Health and Epidemiology

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.