Scientific Opinion: Recommendation Against E-Cigarette Flavour Bans

A flavour ban cannot substantially decrease youth use of e-cigarettes because curiosity is the primary motivation for youth to experiment with e-cigarettes. A 2016 German survey reported that 73.1% of 14 to 19 year olds said curiosity was their motivation to try e-cigarettes [1]. A 2018 survey of French 15-16 year olds found curiosity to be the most common reason for trying e-cigarettes [2]. The United States National Youth Tobacco Survey 2019 reported that 56.1% endorsed curiosity as their major reason for trying e-cigarettes, and 23.9% stated that e-cigarette use by peers or family was their motivation, with flavours ranking third at one in five [3].

Another attraction for youth use of e-cigarettes is playing tricks with the vapour – "vape tricks" - the same type of activity as blowing smoke rings. A US survey indicated that 54.4% of experimenters did vape tricks [4]. Although there is no study on Dutch youth, a survey of Dutch adult e-cigarette users found that 24.6% enjoyed doing vape tricks [5].

Furthermore, youth who use flavoured e-cigarettes are less likely to take up smoking than youth who use tobacco flavoured e-cigarettes. A large US study of youth e-cigarette users demonstrated that over five years youth using flavoured e-cigarettes were 34% less likely to start smoking than youth who used tobacco flavoured e-cigarettes [6].

In the Netherlands 43.8% of adults who smoke use e-cigarettes for their quit attempt [7]. A flavour ban will certainly reduce the number of adults who will successfully quit smoking by substituting e-cigarettes for cigarettes. A US study calculated that adults under 55 years old who used non-tobacco flavoured e-cigarettes were 228% more successful at quitting smoking than adults who used tobacco flavoured e-cigarettes [6]. Another study found that adults who quit smoking with flavoured e-cigarettes were 283% more successful at being quit for one year or more than adults who used tobacco-flavoured e-cigarettes [8].

Current evidence compiled by the highly respected *Cochrane Review* conclusively demonstrates that e-cigarettes are an effective cessation aid [9]. A ban on e-cigarette flavours will substantially decrease their effectiveness at helping people to quit smoking. A ban on e-cigarette flavours will jeopardize the health outcomes for nearly half of the adults in the Netherlands who are trying to quit smoking.

The stated goal of enacting an e-cigarette flavour ban is to deter youth from trying them. Unfortunately a flavour ban is no panacea for reducing youth experimentation with e-cigarettes. Curiosity and playing vape tricks will continue to motivate youth experimentation even in the absence of flavoured e-cigarettes. Adequate health education and strict enforcement of bans of sales to youth are effective measures to reduce youth use of e-cigarettes.

Therefore, we strongly recommend against a ban on e-cigarette flavours. The projected outcome of a ban would be that substantially fewer adults in the Netherlands will be successful at quitting smoking and only a very small number of youth will be deterred from e-cigarette experimentation.

R. O'Leary, External Researcher; R. Polosa, Founder; and G. Li Volti, Director, Center for the Acceleration of Harm Reduction, University of Catania, Italy.

This Opinion is endorsed by the following members of CoEHAR (listed alphabetically):

- 1. Salvatore **ALAIMO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 2. Carmelina Daniela **ANFUSO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 3. Ignazio BARBAGALLO, Department of Drug Sciences, University of Catania, Italy
- 4. Francesco **BASILE**, Department of General Surgery and Medical-Surgical Specialties, University of Catania, Italy
- 5. Sebastiano **BATTIATO**, Department of Mathematics and Computer Sciences, University of Catania, Italy
- 6. Gaetano **BERTINO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 7. Alberto **BIANCHI**, Department of General Surgery and Medical-Surgical Specialties, University of Catania, Italy
- 8. Antonio G. **BIONDI**, Department of General Surgery and Medical-Surgical Specialties, University of Catania, Italy
- 9. Maria Luisa BRANDI, National Observatory of Fragility Fractures, Italy
- 10. Emma **CACCIOLA**, Department of Medical, Surgical Sciences and Advanced Technologies, University of Catania, Italy
- 11. Rossella R. CACCIOLA, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 12. Bruno Santi **CACOPARDO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 13. Aldo E. **CALOGERO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 14. Maria Teresa **CAMBRIA**, Department of Biological, Geological and Environmental Sciences, University of Catania, Italy
- 15. Davide **CAMPAGNA**, Department of Emergency Medicine, University of Catania Teaching Hospital Policlinico, Italy
- 16. Filippo CARACI, Department of Drug Sciences, University of Catania, Italy
- 17. Agatino CARIOLA, Department of Law Sciences, University of Catania, Italy
- 18. Massimo **CARUSO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 19. Pasquale **CAPONNETTO**, Department of Educational Sciences, University of Catania, Italy
- 20. Adriana CIANCIO, Department of Law Sciences, University of Catania, Italy
- 21. Fabio **CIBELLA**, Institute of Biomedicine and Molecular Immunology, National Research Council, Italy
- 22. Maurizio **DI MAURO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 23. Santo DI NUOVO, Department of Educational Sciences, University of Catania, Italy
- 24. Adriana **DI STEFANO**, Department of Law Sciences, University of Catania, Italy
- 25. Salvatore FAILLA, Department of Chemical Sciences, University of Catania, Italy
- 26. Rosario FARACI, Department of Economics and Business, University of Catania, Italy
- 27. Salvatore **FERLITO**, Department of Medical, Surgical Sciences and Advanced Technologies, University of Catania, Italy
- 28. Margherita **FERRANTE**, Department of Medical, Surgical Sciences and Advanced Technologies, University of Catania, Italy
- 29. Alfredo FERRO, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 30. Giancarlo A. FERRO, Department of Law Sciences, University of Catania, Italy
- 31. Francesco **FRASCA**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 32. Lucia **FRITTITTA**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 33. Pio M. **FURNERI**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 34. Antonio **GAGLIANO**, Department of Electrical, Electronics and Computer Engineering, University of Catania, Italy

- 35. Giovanni **GALLO**, Department of Mathematics and Computer Sciences, University of Catania, Italy
- 36. Fabio **GALVANO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 37. Giuseppe GRASSO, Department of Chemical Sciences, University of Catania, Italy
- 38. Francesca **GUARINO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 39. Antonino GULINO, Department of Chemical Sciences, University of Catania, Italy
- 40. Emmanuele A. JANNINI, Department of Systems Medicine, University of Rome Tor Vergata
- 41. Sandro **LA VIGNERA**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 42. Giuseppe **LAZZARINO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 43. Antonio **LONGO**, Department of General Surgery and Medical-Surgical Specialties, University of Catania, Italy
- 44. Gabriella **LUPO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 45. Mario MALERBA, Department of Translational Biomedicine, University of Eastern Piedmont, Italy
- 46. Luigi **MARLETTA**, Department of Electrical, Electronics and Computer Engineering, University of Catania, Italy
- 47. Guido NICOLOSI, Department of Political and Social Sciences, University of Catania, Italy
- 48. Francesco **NOCERA**, Department of Electrical, Electronics and Computer Engineering, University of Catania, Italy
- 49. Gea **OLIVERI CONTI**, Department of Medical, Surgical Sciences and Advanced Technologies, University of Catania, Italy
- 50. Rosalba **PARENTI**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 51. Alfredo **PULVIRENTI**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 52. Francesco **PURRELLO**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 53. Francesco **RAPISARDA**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 54. Venerando **RAPISARDA**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 55. Michele **REIBALDI**, Department of General Surgery and Medical-Surgical Specialties, University of Catania, Italy
- 56. Renata RIZZO, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 57. Simone **RONSISVALLE**, Department of Drug Sciences, University of Catania, Italy
- 58. Martino **RUGGIERI**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 59. Maria C. **SANTAGATI**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 60. Cristina SATRIANO, Department of Chemical Sciences, University of Catania, Italy
- 61. Laura SCIACCA, Department of Clinical and Experimental Medicine, University of Catania, Italy
- **62.** Maria Salvina **SIGNORELLI**, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 63. Marco TATULLO, Technologica Research Institute, Marrelli Hospital, Italy
- 64. Daniele **TIBULLO**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy
- 65. Venera TOMASELLI, Department of Political and Social Sciences, University of Catania, Italy
- 66. Luca ZANOLI, Department of Clinical and Experimental Medicine, University of Catania, Italy
- 67. Agata **ZAPPALÀ**, Department of Biomedical and Biotechnological Sciences, University of Catania, Italy

## References

- 1. Eichler, M., M. Blettner, and S. Singer, *The use of e-cigarettes: A population-based cross-sectional survey of 4002 individuals in 2016.* Deutsches Ärzteblatt International, 2016. **113**(50): p. 847.
- 2. Denis-Vatant, C., et al., [*Relationship between vaping and smoking among 15-year-olds in high school. Results of a descriptive cross-sectional and monocentric observational study conducted in the metropolitan area of Saint-Étienne*]. Revue des Maladies Respiratoires, 2019. **36**(7): p. 850-860.
- 3. Wang, T.W., et al., *Tobacco product use and associated factors among middle and high school students—United States, 2019.* MMWR Surveillance Summaries, 2019. **68**(12).
- 4. Kong, G., et al., *Dripping and vape tricks: Alternative e-cigarette use behaviors among adolescents*. Addictive Behaviors, 2020. **107**: p. 106394.
- 5. Romijnders, K.A., et al., *E-Liquid Flavor Preferences and Individual Factors Related to Vaping: A Survey among Dutch Never-Users, Smokers, Dual Users, and Exclusive Vapers.* Int J Environ Res Public Health, 2019. **16**(23).
- 6. Friedman, A.S. and S. Xu, Associations of Flavored e-Cigarette Uptake With Subsequent Smoking Initiation and Cessation. JAMA Network Open, 2020. **3**(6): p. e203826.
- 7. Hummel, K., et al., *Quitting activity and use of cessation assistance reported by smokers in eight European countries: Findings from the EUREST-PLUS ITC Europe Surveys.* Tob Induc Dis, 2018. **16**(Suppl 2).
- 8. Glasser, A., et al., *Patterns of e-cigarette use and subsequent cigarette smoking cessation over two years (2013/2014 to 2015/2016) in the Population Assessment of Tobacco and Health (PATH) Study.* Nicotine Tob Res, 2020.
- 9. Hartmann-Boyce, J., et al., *Electronic cigarettes for smoking cessation*. Cochrane database of systematic reviews, 2020(10).