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COMMENTARY

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Commentary on Titus *et al.*: Understanding how smoke-free policies can contribute to smoke-free generations

Titus et al. *add important results to the compelling evidence on the impact of smoke-free policies on youth smoking in the United States. Challenges for further research include: including and comparing various countries, understanding how these policies can be effective, defining how disadvantaged youth would benefit most and evaluating policies for smoke-free outdoor venues.*

The study by Titus *et al*. provides new evidence on the impact on youth smoking of smoke-free (SF) policies for work-places and hospitality venues [1]. The results add to those from nine previous studies, which were suggestive of a positive impact of SF policies on smoking initiation [2]. SF policies do not seem to influence the risk of smoking experimentation, but they appear to reduce the risk of progressing from an intermittent to an established smoker. This previous evidence, enriched with the study by Titus *et al*., supports the widespread implementation and enforcement of SF laws as part of comprehensive policies for a smoke-free generation.

The paper illustrates the unique possibilities that the United States offers for the evaluation of tobacco control policies. The diversity between states and counties in policy trends makes the United States an excellent laboratory of tobacco control, full of 'natural experiments' waiting to be analysed. Such analyses can be made thanks to nation-wide surveys with repeat cross-sectional or longitudinal designs. These surveys may not be perfect given, for example, their limited statistical power to detect socio-economic inequalities in the impact of policies. Moreover, the risk of residual confounding looms over any evaluation based on comparisons between geographic units. However, accepting that a randomized controlled trial cannot be applied to real-world policies, the next-best evidence regarding their impact on youth smoking may come from rigorous evaluations such as those of Titus *et al*. [1].

However, despite the compelling results of these evaluations, there remain important gaps in the evidence that call for further research. Four of them are listed below.

First, as most of the current evidence on the impact of SF policies comes from the United States, it is important to perform similar studies from other countries. The positive impacts as observed by Titus *et al*. [1] may or may not be found elsewhere, depending on the ways in which SF policies are implemented and enforced. Take the example of Indonesia, where local SF policies were not related to levels of youth smoking, probably due to limited enforcement of these policies by local authorities [3]. Studies in various national settings, with comparable designs and approaches, are needed to determine under what conditions SF policies will succeed or fail to reduce youth smoking.

Secondly, although rigorous study designs and statistical approaches such as those applied by Titus *et al*. are essential to demonstrate and quantify the potential impact of SF laws, they do not tell us why and how SF policies can be effective. Such questions call for in-depth studies on the perspectives and experiences of young experimenters and smokers. For example, a mixed-methods study in Portugal showed that 16-year-old adolescents still smoked in bars and clubs, as they would smoke everywhere 'where parents won't see', and could enter these venues despite being under-aged [4]. Further understanding of how young people respond to SF policies is needed to determine how these policies can be made more effective in practice.

Thirdly, the study of socio-economic inequalities may need a re-focus. Titus *et al*. conclude that SF policies may have a neutral impact on health inequalities. This contrasts with previous US studies suggesting that SF policies have a greater effect among more privileged adolescents [5, 6]. A similar inconsistency is observed between studies based on comparisons throughout European countries [7, 8]. These inconsistencies might be an artefact to be resolved by greater uniformity in methods. However, we may need to accept that inconsistencies will remain, due to the complex nature of health inequalities. If so, the scientific challenge is not to reach a generalizable conclusion on the equity impact of SF policies, but instead to be able to define when and how SF policies could bring the greatest benefit to socio-economically disadvantaged youth.

Finally, as indoor SF policies are now becoming adopted in increasingly more countries around the world, sometimes already for more than two decades, attention has broadened to outdoor places. This calls for the use of equally rigorous evaluations, using both quantitative and qualitative approaches, but then attuned to the particularities of different outdoor venues. These methods have been applied to assess SF school premises, resulting in evidence on their potential impact on youth smoking and insights into how SF schools can be

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more effective in practice [9, 10]. However, school-yards are not the same as, for example, sports clubs, parks, beaches, stations or shopping malls. At every venue where young people meet, tobacco researchers may join in to understand how creating SF places would contribute to SF generations.

DECLARATION OF INTERESTS

None.

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AUTHOR CONTRIBUTIONS

Anton E. Kunst wrote the commentary by himself.

KEYWORDS

Outdoor places, policy evaluation, smoke-free policies, smoking initiation, social inequalities, youth

Anton E. Kunst

Department of Public and Occupational Health, Amsterdam UMC, University of Amsterdam, Amsterdam, Netherlands
Email: a.e.kunst@amsterdamumc.nl

ORCID

Anton E. Kunst https://orcid.org/0000-0002-3313-5273

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