**Population-level interventions and health disparities -the devil is in the detail**

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More than a billion people use tobacco worldwide and an estimated eight million die as a result (1). In the 66th World Health Assembly, the World Health Organization (WHO) member states set themselves a target of 30% reduction in the prevalence of tobacco use in persons aged 15 and above, by 2025 (2). Despite substantial reductions in tobacco consumption in many parts of the world, the above target appears ambitious (3). There are still glaring disparities in tobacco use both between nations based on their incomes and within nations based on social divisions. In most instances, reduction in tobacco use has followed the existing social gradient inadvertently increasing health disparities.

To speed up progress towards curbing the global tobacco epidemic, there have been calls for population-level interventions aimed at reducing both the prevalence and uptake of tobacco (4). Carefully designed population-level interventions may reduce tobacco-related health disparities too (5). Conversely, if these interventions are not sensitive to the existing social gradient between population subgroups, they can inadvertently widen inequalities (6). In this editorial, we focus on three articles published in the current issue that promote population-level interventions to control tobacco and discuss the play of social inequalities on their potential success.

The article by Breunis et al. (7), reports on the impact of introducing an inner-city “smoke-free zone” on outdoor smoking. Although at the time of the study, the intervention uptake was voluntary and not formally enforced, there was a marked reduction of 45% in the number of smokers in the smoke-free zones on weekdays, after its implementation. The increase in the number of smokers outside the zone was much lower than the decrease inside the zone. The intervention thus demonstrates a great potential in denormalising smoking, while also reducing secondhand smoking exposure. It is, however, noteworthy that the smoke-free zone was established in an inner-city location that housed a tertiary care hospital and two educational institutions, with most of the smokers either being employees or students at the baseline. The study population might vary significantly from that in the suburbs or other inner-city localities, where the level of education and employment differ significantly. On the other hand, targeting areas based on tobacco-related disparities, inner-city or otherwise, might have the desired differential effect on smoking prevalence and second-hand smoke exposure. Furthermore, evaluations of such population-level measures must assess differential effectiveness across all social groups.

Tobacco 21 (T21) is a national law currently implemented in 39 states of the United States of America, which sets the minimum legal age for tobacco sale at 21 (8). Roberts et al. (9) assessed the neighborhood factors associated with the compliance of T21 by retailers. Their findings revealed the existence of a socioeconomic gradient in the compliance of the policy, whereby lower compliance was recorded in more impoverished neighborhoods compared to other neighborhoods. This became even more significant considering the finding that awareness regarding T21 was high among most retailers, ruling out the possibility of lack of awareness among retailers as an explanation for non-compliance in the poorer areas. The study further reports that a lack of scanning devices was associated with lower compliance, which can also be attributed to a lack of resources in socio-economically disadvantaged areas (10). In order to optimize the impact of population-level measures like Tobacco 21 and not exacerbate health disparities, the study highlights the need for additional resources and surveillance in impoverished areas.

In 2016 the State of California passed new legislation by the name of “proposition 56”, whereby tobacco taxes were increased by $2.00, bringing the total tobacco tax up to $2.87 per pack of cigarettes (11). The resulting revenue increase was earmarked for improving access to health care for low-income Californians; in essence, the policy intervention was rolled out to address health inequalities. However, the policy was criticized as being a potential source of widening the very inequalities it was intended to address, by marginalizing low-income smokers who want to quit but do not have the resources to do so (12). Another critique of the policy was based on the “law of diminishing returns”, with California already having the lowest smoking rates in the country, whether the intervention would be enough to bring the rates further down, and at what cost. The article by Keeler et al. (13), addresses these concerns and notes a reduction in smoking prevalence overall, and across different ethnic and socioeconomic groups, following proposition 56. However, the authors found that the tax intervention did not have any effect on the intensity of smoking (number of cigarettes smoked per day), in minorities and economically vulnerable populations. This study highlights the potential of even the most progressive population-level interventions to have less than an optimum effect on reducing tobacco-related harm in at-risk populations. To effectively tackle these disparities, there may be a need to supplement such interventions with other community-based non-monetary strategies like health education and promotion, awareness of cessation services, and incentivizing cessation.

Population-level interventions seem to be the logical way forward in tobacco control, whereby shifting population norms would have the desired effect and reduce tobacco use (14). However, even population-level intervention can have undesirable differential effects on certain sections of the society. The three articles discussed here, provide us valuable insights into the impact of such interventions on the general population but these also point to potential pitfalls of such interventions in reducing inequalities, if not designed carefully. As we go forward in our quest to tackle the global tobacco epidemic, we must ensure that our interventions are comprehensive, inclusive, and sensitive to the differences between population sub-groups.

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