Understanding the association between the WHO Framework Convention on Tobacco Control, adoption of tobacco control policies, and reduction in smoking prevalence

Published Online
March 21, 2017
http://dx.doi.org/10.1016/S2468-2667(17)30052-X

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Given the public health significance of tobacco use and the potential of the WHO Framework Convention on Tobacco Control (FCTC), the world's first global health treaty, to diminish its toll, it is important to understand the treaty's impacts and to learn how to accelerate adoption of effective policy interventions. As such, the Article by Shannon Gravely and colleagues[1] represents a welcome addition to the research literature on tobacco control. The authors' analysis assesses policy from a so-called 30 000-foot perspective, giving the most general level view: it examines the association between the change from 2007 to 2014 in countries' implementation of five key FCTC tobacco demand-reduction measures and the change from 2005 to 2015 in smoking prevalence in those countries. The authors find that countries' adoption of these measures "at the highest level"[1] is associated with a statistically significant and quantitatively meaningful decrease in smoking. The implication is straightforward: were countries to adopt more of these measures, they would experience a more rapid decline in smoking.

The 30 000-foot perspective lends an easy clarity to the value of broad evidence-based tobacco control policies. It affirms the validity of the FCTC's demand-reduction measures and it gives tobacco control activists an empirical argument with which to prod their governments into living up to their treaty obligations. As the authors observe, all too few countries are meeting their obligations to adopt such measures.

The disadvantage of the high-altitude view is that, by equating all of the measures, it fails to distinguish their relative contributions. A voluminous research literature[2] makes it abundantly clear, for example, that high taxes constitute "the fastest acting and most effective of all the key measures," as the authors put it. Yet this study's principal independent variable implicitly grants the much less effective adoption of a new graphic warning label equal policy footing with implementation of a large tax increase. The authors clearly understand the distinction, but will public health advocates unfamiliar with the research? In many countries, attainment of even one of the measures would represent a public health triumph. The study's approach to assessing tobacco control policy offers no guidance to advocates as to which of the five measures first warrants their scarce time and other resources.

The authors recognise this issue, declaring it a function of the available data, and they acknowledge it as a limitation, albeit perhaps not sufficiently forcefully. Indeed, Gravely and colleagues exacerbate the lack of distinction among the measures by asserting a proportional association between the number of policies implemented—regardless of which ones—and the extent of the reduction in smoking prevalence. But which measures are most worthy of a long and arduous fight? Not only does the study not answer that question, its implicit assumption of linearity reinforces the notion that all measures are created equal.

The high-altitude view also obscures the effect of less than highest level implementation of the FCTC demand-reduction measures. The authors focus on the effect of highest level policy implementation because that is the level documented to most reduce tobacco use. But for many tobacco control measures, less than highest level implementation can have a substantial effect on smoking. Gravely and colleagues specifically mention a dose-response effect for smoke-free laws and graphic warning labels, and the literature clearly documents a dose-response effect for taxation.[2] To their credit, the authors recognise the need for an analysis that considers varying levels of implementation of the major policies. But the question remains: might a country's tobacco control advocates read this study as saying that they should push exclusively for the highest level tax goal even if it proves to be politically non-viable, while a lesser tax might be politically feasible?

Questions like this one are particularly important for countries at an earlier stage in the tobacco epidemic,[3] countries that lack tobacco control expertise,

experience, and resources. In three regions of Africa, the authors report, countries have adopted few of the FCTC policy measures and experienced increases in smoking prevalence from 2005 to 2015. In sharp contrast, countries in several developed regions of the world have achieved substantial policy implementation and observed substantial decreases in smoking prevalence. Of course, there is a chicken-and-egg problem regarding the latter countries: how much of their policy adoption represents a political response to the already-decreasing status of smoking, rather than a cause of it? It probably represents both.

No study can do it all. The present undertaking is remarkably ambitious, examining, as it does, five distinct policy areas in well over 100 countries over a period spanning a decade. The authors deserve ample credit for reinforcing, with solid empirical evidence, the core message in the FCTC: tobacco control policy matters. The authors cite evidence that the FCTC has accelerated implementation of tobacco advertising, promotion and sponsorship bans, smoke-free laws, and pack warning labels. Let us hope that this study increases adoption of all of the core evidence-based demand-reduction policy interventions, especially including raising taxes, the highly effective intervention that has lagged in terms of adoption.

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I declare no competing interests.

1 Gravely S, Giovino GA, Craig L, et al. Implementation of key demand-reduction measures of the WHO Framework Convention on Tobacco Control and change in smoking prevalence in 126 countries: an association study. *Lancet Public Health* 2017; published online March 21. http://dx.doi.org/10.1016/S2468-2667(17)30045-2.
2 US National Cancer Institute, WHO. The Economics of Tobacco and Tobacco Control. https://cancercontrol.cancer.gov/brp/tcrb/monographs/21/ (accessed March 15, 2017).
3 Lopez AD, Collishaw N, Piha T. A descriptive model of the cigarette epidemic in developed countries. *Tob Control* 1994; **3w** 242–47.