

Young low and middle-income country (LMIC) smokers—implications for global tobacco control

Emily Stone¹, Matthew Peters^{2,3}

¹Department of Thoracic Medicine, Kinghorn Cancer Centre, St Vincent's Hospital, University of NSW, Sydney, Australia; ²Department of Respiratory Medicine, Concord Hospital, Sydney, Australia; ³Faculty of Medicine and Health Sciences, Macquarie University, Sydney, Australia

Correspondence to: Dr. Emily Stone. Department of Thoracic Medicine, St Vincent's Hospital, 390 Victoria Street, Darlinghurst NSW 2010, Sydney, Australia. Email: emily.stone@svha.org.au.

Provenance: This is an invited Editorial commissioned by Guest Section Editor Dr. Jianrong Zhang, MD (M.P.H. Candidate, George Warren Brown School of Social Work, Washington University in St. Louis, St. Louis, USA).

Comment on: Xi B, Liang Y, Liu Y, *et al.* Tobacco use and second-hand smoke exposure in young adolescents aged 12–15 years: data from 68 low-income and middle-income countries. *Lancet Glob Health* 2016;4:e795–805.

Submitted Sep 30, 2017. Accepted for publication Oct 20, 2017.

doi: 10.21037/tlcr.2017.10.11

View this article at: <http://dx.doi.org/10.21037/tlcr.2017.10.11>

The trajectory of adolescent tobacco use is the best predictor for the global lung cancer community to anticipate future smoking-related disease. Tobacco use viewed as risky behaviour tells us about future implications for the local adolescent population as it enters adulthood. Adolescent tobacco use as an indicator of local tobacco control tells us about the effects of local control measures, the impact for example, of the Framework Convention on Tobacco Control (FCTC) (1) and about potential vulnerabilities (such as to tobacco industry marketing) of the population in question. Worldwide, the level of adolescent tobacco use ranges from around 2% to over 30% depending on region and on the form of tobacco (cigarette or other), in data presented from the Global Youth Tobacco Survey on the Tobacco Atlas (2). Overall about a fifth of young teenagers (13–15 years) around the world are smokers (3). High-income countries (HICs) may have lower levels of adolescent tobacco use. In Australia for example, 2016 data from the National Drug Strategy Household Survey (4) show that smoking in teenagers aged 14–19 is at an all-time low of 3.0% down from 7.0% in 2013. Other countries with low rates include the United States (8% of high-school students) (5) and the UK (3% of 11–15-year-olds) (6). The Australian experience particularly reflects the value of policy innovation, plain tobacco packaging and sharp tobacco tax increases, on a background of comprehensive tobacco control policies over decades. This emphasises the

importance of MPOWER measures (7) and adhering to the principles of the FCTC (1).

Low and middle-income countries (LMICs) can have contrastingly high rates of adolescent smoking, particularly among boys where rates in some countries can reach as high as 46% and reflect high rates of all-age smoking (8). Many LMICs suffer from fairly lax tobacco control measures, smoking bans if they exist are not enforced and adolescents have access to cheap cigarettes, sometimes sold singly, thereby thwarting control attempts including graphic health warnings and effective taxation (9). There are many factors that indicate the importance of adolescent smoking rates in tobacco control across entire populations. Tobacco use is usually initiated and established in adolescence (5). Adult smoking rates generally appear to reflect adolescent smoking rates (8). The WHO lists the prevalence of tobacco use by adolescents as a marker of behavioural risk in its indicators of prevention and control of non-communicable disease (10).

The study by Xi *et al.* (11) brings together some important information on adolescent tobacco use and second-hand smoke (SHS) exposure in LMICs. Data from two school-based surveys of 12–15-year-olds provide information on over 300,000 adolescents in 68 countries in six WHO regions. The authors found that tobacco use overall ranged from 6.3% in the European region to 17.6% in the Western Pacific region. Cigarette smoking ranged from 5.3–13.9% (Europe-Western Pacific) and other tobacco use (pipe, water pipe, smokeless

tobacco) from 2.6–12.2% (Europe–Western Pacific). Use of any tobacco was twice as prevalent in boys as in girls and current cigarette use (on at least one of the previous 30 days) reached its highest rate of 32.2% in Samoa and measured over 10% in most countries surveyed. Tobacco use was more prevalent in older adolescents, 14–15-year-olds compared with 12–13-year-olds and a large proportion of those surveyed had tried their first cigarette before the age of 11. SHS was defined as exposure on 1 of the previous 7 days: overall 55.9% of respondents reported SHS, rates were over 50% in 70% of the 68 countries, ranged from 16.4% (Tajikistan) to 85.4% (Indonesia) and showed similar rates for boys and girls. Among factors that influenced adolescent tobacco use are SHS exposure and parental tobacco use, in particular maternal tobacco use. A measure of a country's economic development (purchasing power parity or "PPP") was not associated with smoking prevalence. The survey data come from two sources: for 67 countries from the Global School-based Student Health Survey (GSHS) [2006–2013] (12) and for China from the China Global Tobacco Youth Survey (GYTS) [2013], as the most recent GSHS data for China date from 2003. Just over half of the adolescents in this study (n=173,144) came from 67 countries and the rest (n=155,117) from China. The GSHS is described by the authors and can be explored more fully through the WHO website (12); the China GTYS is harder to find but the Centers for Disease Control and Prevention house data from the Global Tobacco Surveillance System (GTSS) that include the GTYS (13). The findings in themselves may not be surprising: high rates in boys, young age of onset and the influence of parental behavior. The implications however are huge: future high rates of smoking in men, the likelihood of long-term smoking with early uptake and the possibility that targeting parental (especially maternal) tobacco use could have a marked effect on future smoking behaviours of children. This study analyses an enormous amount of data from a large number of countries and provides valuable insights into LMICs, where most of the world's cigarettes are currently smoked. Acknowledged limitations include the self-reporting nature of the surveys and the possibility of both overestimating smoking rates (current smoking refers to smoking on just 1 of the previous 30 days) and underestimating them (through self-reporting). Although 58 of the countries surveyed have ratified the FCTC, the authors noted that ratification might act as a poor proxy for thorough implementation of tobacco control measures. Lastly, the wide range of findings between countries means that this study cannot be predictive of adolescent rates of tobacco use in countries that were not surveyed.

In their analysis of LMIC data and the identification of

concerning tobacco use rates among adolescents, particularly in the Western Pacific, Xi *et al.* (11) highlight some of the key principles of tobacco control for adolescent populations. Many smokers start at a very young age (<11 years), high adolescent smoking rates are associated with high adult smoking rates and poor enforcement of standard tobacco control measures means that smoking rates in young people remain high. Models to address adolescent smoking rates include recommended policy including MPOWER measures (7), Article 16 of the FCTC (1) and the noncommunicable disease (NCD) indicators (10) such as age-related smoking bans. There are also newer measures such as proposals for tobacco-free generations (14,15). What are the barriers to early intervention in LMICs? Implementation of FCTC/MPOWER measures, even with ratification, can be patchy. Using the sale of cigarettes as an example, there is abundant evidence that cigarettes sold singly are affordable to children (16) and that proximity of tobacco vendors close to school grounds may influence tobacco use (17). Cultural factors may play a part: in some countries it remains appropriate to give and receive tobacco as part of business transactions (18); other forms of tobacco, such as the water pipe, enjoy social acceptability that is difficult to tackle (19). Adolescents are vulnerable to targeted marketing strategies by the tobacco industry. Evidence for this comes from the development of flavoured cigarettes with appealing names and packaging aimed at children and in particular at young women. Plain-packaging laws, which have to overcome aggressive opposition from the tobacco industry in wealthy countries such as Australia and the United Kingdom, have yet to find their place in tobacco control measures in many, less well-resourced countries.

Ultimately, the lessons from adolescent tobacco control can translate across to the global tobacco epidemic, identifying points at which populations become vulnerable to tobacco addiction (very young) and drawing attention to control strategies that have particular power in this population including enforced age-related bans and effective taxation. Adolescents are vulnerable to lax tobacco control measures, prone to experimentation, impressionable when very young and influenced by parental behaviour. This paper highlights areas where targeted tobacco control may have heightened impact such as driving down maternal smoking, ensuring that pricing measures are effective (no single cigarette sales) and reducing opportunities for experimentation. In accordance with both commonsense and Article 16 of the FCTC (1), cigarette sales to minors should be banned and the bans enforced. Marketing strategies that target children [an indicator of how a country is performing against non-communicable disease (10)] should

receive similar attention. It is worth noting that the question of e-cigarettes is not mentioned by Xi *et al.* (11) and e-cigarettes do not figure in the GSHS survey questions (12). Given the recent meta-analysis confirming a three-fold increase in progression to smoking amongst young people who use e-cigarettes (20), future surveys should be expanded to include them in questioning. High rates of adolescent smoking in LMICs—through early experimentation and addiction, the impact of parental smoking and relative independence from local economic indicators—lead to likely maintenance of high smoking rates in adulthood. Optimal implementation of the FCTC, as intended in the FCTC 2030 project, represents an opportunity for robust tobacco control measures to stop the tobacco epidemic in the developing world, almost, even before it starts.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. WHO. WHO Framework Convention on Tobacco Control. Available online: http://www.who.int/fctc/text_download/en/
2. Smoking Among Youth. The Tobacco Atlas. Available online: <http://www.tobaccoatlas.org/topic/smoking-among-youth/>
3. WPRO. Smoking Statistics. Available online: http://www.wpro.who.int/mediacentre/factsheets/fs_20020528/en/
4. National Drug Strategy Household Survey 2016—key findings. The Australian Institute of Health and Welfare 2017. Available online: <https://www.aihw.gov.au/getmedia/89c0f030-65a1-4863-9846-969d995fb138/aihw-ndshs-2016-key-findings-tables-RSEs-MOEs.xlsx.aspx>
5. Youth and Tobacco Use. 2017. Available online: http://www.cdc.gov/tobacco/data_statistics/fact_sheets/youth_data/tobacco_use/
6. Childhood smoking statistics. Cancer Research UK 2015. Available online: <http://www.cancerresearchuk.org/health-professional/cancer-statistics/risk/childhood-smoking>
7. WHO. MPOWER. Available online: <http://www.who.int/tobacco/mpower/en/>
8. GBD 2015 Tobacco Collaborators. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990–2015: a systematic analysis from the Global Burden of Disease Study 2015. *Lancet* 2017;389:1885–906.
9. Lal P, Kumar R, Ray S, et al. The Single Cigarette Economy in India—a Back of the Envelope Survey to Estimate its Magnitude. *Asian Pac J Cancer Prev APJCP* 2015;16:5579–82.
10. WHO NCD Indicators. Available online: http://www.who.int/nmh/global_monitoring_framework/2013-11-06-who-dc-c268-whp-gap-ncds-techdoc-def3.pdf?ua=1
11. Xi B, Liang Y, Liu Y, et al. Tobacco use and second-hand smoke exposure in young adolescents aged 12–15 years: data from 68 low-income and middle-income countries. *Lancet Glob Health* 2016;4:e795–805.
12. WHO. Global school-based student health survey (GSHS). Available online: <http://www.who.int/chp/gshs/en/>
13. Global Tobacco Surveillance System Data. Available online: <https://www.cdc.gov/tobacco/global/gtss/gtssdata/index.html>
14. Berrick AJ. The tobacco-free generation proposal. *Tob Control* 2013;22 Suppl 1:i22–6.
15. Smoke Free Young People. Available online: http://www.dhhs.tas.gov.au/publichealth/tobacco_control/tobacco_action/smoke_free_young_people
16. Rani M, Thamarangsi T, Agarwal N. Youth tobacco use in South-East Asia: Implications for tobacco epidemic and options for its control in the region. *Indian J Public Health* 2017;61:S12–7.
17. Mistry R, Pednekar M, Pimple S, et al. Banning tobacco sales and advertisements near educational institutions may reduce students' tobacco use risk: evidence from Mumbai, India. *Tob Control* 2015;24:e100–7.
18. Wang J, Li C, Jia C, et al. Smoking, smoking cessation and tobacco control in rural China: a qualitative study in Shandong Province. *BMC Public Health* 2014;14:916.
19. Bou Fakhreddine HM, Kanj AN, Kanj NA. The growing epidemic of water pipe smoking: Health effects and future needs. *Respir Med* 2014;108:1241–53.
20. Soneji S, Barrington-Trimis JL, Wills TA, et al. Association Between Initial Use of e-Cigarettes and Subsequent Cigarette Smoking Among Adolescents and Young Adults: A Systematic Review and Meta-analysis. *JAMA Pediatr* 2017;171:788–97.

Cite this article as: Stone E, Peters M. Young low and middle-income country (LMIC) smokers—implications for global tobacco control. *Transl Lung Cancer Res* 2017;6(Suppl 1):S44–S46. doi: 10.21037/tlcr.2017.10.11