

## Commentary

# Protecting vulnerable groups from tobacco-related harm during and following the COVID-19 pandemic

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### Abstract

Marginalized populations are being disproportionately affected by the current pandemic. Direct effects include higher infection rates with greater morbidity and mortality; indirect effects stem from the societal response to limit the spread of the virus. These same groups also have smoking rates that are significantly higher than the general population. In this commentary, we discuss how the pandemic has been acting to further increase the harm from tobacco endured by these groups by applying the syndemic framework. Using this approach, we elaborate on the factors that promote clustering of harms from tobacco with harms from COVID-19. These include the worsening of psychological distress, a potential increase in smoking behaviour, greater exposure to second-hand smoke and less access to smoking cessation services. Then, we offer mitigation strategies to protect disadvantaged groups from tobacco-related harm during and following the COVID-19 pandemic. These strategies include affordable smoking cessation services, a proactive approach for smoking treatment using information technology, opportunistic screening and treatment of tobacco dependence among individuals presenting for COVID-19 vaccination, policy interventions for universal coverage of cessation pharmacotherapy, comprehensive smoke-free policies and regulation of tobacco retail density. Now more than ever, coordinated action between clinicians, health care systems, public health organizations and health policy makers is needed to protect vulnerable groups from the harm of tobacco.

**Keywords:** COVID-19, pandemic, vulnerable groups, tobacco, smoking, health disparities, tobacco control, socioeconomic status, policy

### Why has tobacco use gained attention during the COVID-19 pandemic?

Smokers have higher rates of common respiratory infections such as pneumonia compared with nonsmokers, and the link between smoking and infection is well established.<sup>1</sup> Cigarette smoking is responsible for a multitude of mechanisms that predispose to respiratory infections, including

structural lung changes (e.g. airway constriction) and malfunction of both cell-mediated and humoral immune responses.<sup>2</sup> It is not surprising, therefore, that SARS-CoV-2 causes greater morbidity among smokers. Early reports from China found that 26% of COVID-19 patients with a complicated disease course (e.g. need for ventilator, intensive care admission, death) were smokers, compared with only 12% in the group with a lesser disease severity.<sup>3</sup>

### Highlights

- Vulnerable groups with socioeconomic disadvantage have disproportionately high rates of tobacco use.
- The syndemic framework is a bio-social approach for exploring risk for harm from tobacco in vulnerable groups that is augmented by changes brought about by the pandemic.
- Worsening of economic status and stress levels compounded by limited access to health care and tobacco treatment act to increase tobacco use and second-hand smoke exposure.
- Coordinated action is needed to protect vulnerable groups by lowering barriers for tobacco treatment, enforcing smoke-free policies and integrating tobacco treatment into community, workplace and health care organizations that serve socioeconomically disadvantaged groups.

Since that time, more evidence has accumulated. A recent meta-analysis found that smoking is a risk factor for severe COVID-19 illness (pooled OR = 2.17; 95% CI: 1.37-3.46),<sup>4</sup> and emerging data suggest a dose-response association between pack years and unfavourable COVID-19 outcomes.<sup>5</sup> Moreover, there is consensus that

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tobacco-related conditions (e.g. chronic obstructive pulmonary disease and coronary artery disease, which are common among both current and former smokers) are linked with excess COVID deaths.<sup>6</sup>

The link between smoking and COVID-19 complications has not gone unnoticed by the public and has propelled many to quit. Surveys from the UK have found that more smokers tried to quit during the pandemic compared with the year before (40% vs. 30%).<sup>7</sup> Moreover, they were more successful in their quit attempts (21% vs. 14%), and a larger number of smokers reached out to remote counselling services such as quitlines (11% vs. 3%) for additional behavioural support.<sup>7</sup> Conversely, the pandemic has created numerous stressors including health worries, financial uncertainty and social isolation, which have translated into elevated psychological distress, a known correlate of smoking behaviour.<sup>8</sup> Indeed, these two opposing trends are captured in recent surveys of smokers. For instance, a study from the Netherlands that interviewed smokers found that 14% had decreased their smoking behaviour during the pandemic, while 19% had increased it. Change in smoking behaviour in either direction was closely tied to high levels of stress.<sup>9</sup>

Cross-sectional data from the Canadian Perspectives Survey Series (CPSS) show similar opposing trends, in which 3% of respondents increased their smoking behaviour during the pandemic while 4% decreased it.<sup>10</sup> Consistent with the aforementioned Dutch study, pandemic-related financial stressors were predictors of both an increase and a decrease in smoking behaviour in Canada. This study also sheds light on socioeconomic disparities and change in tobacco use. Those with a high school education or less were nearly three times more likely to increase their smoking compared with those with university degrees.<sup>10</sup> To date, changes in smoking behaviour in response to pandemic-related stress have been noted in nonrepresentative survey data;<sup>11</sup> however, larger, longitudinal, population-based studies are needed to fully explore the effect of the pandemic on smoking prevalence and assess for the presence of socioeconomic disparities.

The potential of the pandemic to increase smoking intensity among socially disadvantaged smokers is of concern and

merits immediate actions, given that, even prior to the pandemic, these groups saw a higher burden of tobacco-related health conditions. The pandemic's effects have further contributed to a widening of health disparities.

In this commentary, we first present evidence of smoking disparities between affluent and disadvantaged groups. Second, using the syndemic framework, we explain how the pandemic and its societal effects act particularly to worsen tobacco-related harm in groups with higher smoking rates. Third, we suggest mitigation strategies, to be anchored within Canada's tobacco strategy,<sup>12</sup> to protect the health of disadvantaged groups from tobacco-related harm during and after the pandemic.

### **Pre-pandemic smoking prevalence is higher among socioeconomically disadvantaged groups**

Tobacco use remains the leading cause of preventable death in Canada. Each year, approximately 40 000 Canadians die from tobacco-related illnesses.<sup>13</sup> Canada's adoption of public health policies to limit tobacco use, such as bans on smoking in public places, mass media antismoking campaigns, restrictions on cigarette marketing, publicly funded quitlines and cigarette price increases have successfully reduced smoking rates to a historic low of 15%.<sup>14</sup>

Affluent population groups, relative to socioeconomically disadvantaged groups, have greater uptake of public health interventions.<sup>15</sup> Thus, while smoking rates have gone down in the general population, smoking disparities have become accentuated over time. For instance, those who work in manual jobs are two times more likely to smoke compared to individuals with professional jobs.<sup>15</sup> Similarly, those who did not complete a high school education were three times more likely to smoke compared with university graduates.<sup>15</sup> Also, a near two-fold greater smoking rate has been found among Indigenous Canadians,<sup>16</sup> and a study in the United States found a three- to four-fold greater rate for people with mental illness and addiction disorders.<sup>17</sup>

Smoking disparities may be explained by a myriad of biopsychosocial factors including greater exposure to tobacco in the social environment and permissive attitudes towards smoking, lower social

support for quitting, higher levels of psychological distress and greater levels of tobacco dependence. This is further compounded by systemic factors that include the limited enforcement of smoke-free policies in workplaces of manual labourers, the lack of universal coverage for smoking cessation pharmacotherapy, the high density of tobacco outlets in neighbourhoods of low socioeconomic status (SES) and a decrease in funding for tobacco control public health actions as the rate of smoking has declined over the years.<sup>18</sup>

As a result, relative to affluent groups, disadvantaged populations have a higher tobacco initiation rate, a lower rate of quit attempts and lesser success on a given attempt.<sup>19</sup> Disproportionate tobacco use among disadvantaged groups is a main driver of the health inequity these groups face. The tobacco-related health burden is responsible for 40% of the difference in life expectancy seen across education levels in Canada.<sup>20</sup> This is worrisome, given that the pandemic is likely to increase tobacco use disproportionately in vulnerable groups.

### **COVID-19 undermines tobacco control efforts and exacerbates tobacco-related harm among socioeconomically disadvantaged groups**

COVID-19 is causing unprecedented changes in all aspects of society. Widespread "lockdowns" and closures of businesses, educational institutions, community organizations, places of worship and many "nonessential" medical services, together with strict rules for social distancing, have been implemented to limit the spread of the virus.

While these measures are necessary to protect the public from the virus, they disproportionately affect vulnerable groups such as people of low SES, racialized minorities and those with mental health and addiction conditions.<sup>21</sup> For example, 38% of Canadians employed in lower-wage positions experienced job loss in March and April of 2020, compared with only 13% in other positions.<sup>22</sup> Unemployment is linked with poor health and mental health, especially among those who lack a social support network.<sup>23</sup> Reduced access to health care services, most of which moved to a telemedicine format, has also disproportionately affected groups

with socioeconomic disadvantage and highlighted the current societal “digital divide.”<sup>24</sup> Wage losses, unemployment and reduced access to health care have contributed to pandemic-related stress and poor mental health, above and beyond that seen in the general population. For example, suicidal thoughts were reported in higher levels in Indigenous individuals (16%) and individuals with disabilities (15%) and low income (14%) compared with the general public (6%).<sup>25</sup> Taken together, these data demonstrate that vulnerable groups are more likely to experience harm as a result of the pandemic.

The commonalities between the risk of harm from the societal effects of the pandemic and the risk of harm from tobacco can be better understood using the syndemic framework, a broad-based biosocial framework for understanding social and environmental factors that promote clustering of disease conditions and their interaction with each other.<sup>26</sup> In this case, pre-pandemic inequalities in smoking and the resulting tobacco-related health burden are concentrated among disadvantaged populations. The pandemic’s disproportionate effects on these groups have been interacting synergistically<sup>27</sup> to further increase harm from tobacco. There are a number of factors that account for the synergy between tobacco-related harm and the pandemic.

First, the far-reaching effects of the pandemic on economic, social and health care systems have been more pronounced among disadvantaged populations groups who lack the financial means and social capital to endure the hardships. This has caused an increase in psychological distress and, for some, a concomitant increase in smoking as means of coping. There is also a concern that those who had quit smoking before the pandemic might start smoking again due to the added stressors in their lives, as stress is a well-documented risk factor for smoking relapse.<sup>28</sup>

Second, disparities in second-hand smoke (SHS) exposure were noted prior to the pandemic, showing a dose-response association with socioeconomic status. For example, a study from Quebec found that SHS exposure in the home was nearly 5-fold more common among youth in the lowest versus the highest income quintiles.<sup>29</sup> Since public health orders to stay at home have likely increased the number of

smokers who use tobacco indoors, it is probable that more individuals with low socioeconomic status have been and will continue to be exposed to SHS. Indoor smoking is especially concerning in multi-unit housing, mostly populated by low-income families, as smoke is carried in shared ventilation systems and therefore affects multiple dwellers.<sup>30</sup> In turn, greater SHS exposure is linked with adverse health outcomes and an increase in health care utilization.<sup>31</sup>

Third, health care systems play a critical role in screening for tobacco use and assisting smokers to quit. Data from Ontario suggest that a large, government-funded smoking cessation program that is integrated into primary care settings and offers pharmacotherapy at no cost sees a greater uptake among patients with socioeconomic disadvantage, with over 50% of participants in the Ontario program belonging to the two lower income quintiles.<sup>32</sup> The pandemic has put an unprecedented burden on health care systems that has resulted in delays in chronic disease management and cancer screening. This is likely to shift attention away from helping smokers to quit. This is of concern, given that unaided “cold turkey” quit attempts, which are more common among persons with lower compared to higher income levels, have lower odds of sustained success.<sup>14</sup>

Fourth, the pandemic diverted the attention and resources of public health organizations, including staff and funding, to protect the public from the direct harms of COVID-19 infections. Consequently, fewer resources are now available for tobacco control activities such as enforcement, education and cessation support. Hence, action is urgently needed to protect people with socioeconomic disadvantage from the harms of tobacco, given that tobacco disparities are compounded by the societal effects of the pandemic.

### **Protecting the health of socioeconomically disadvantaged groups from tobacco-related harm during and after the COVID-19 pandemic**

Reducing the harm from tobacco to disadvantaged populations during and after the pandemic can be achieved with coordinated, multilevel actions aligned with Canada’s Tobacco Strategy<sup>12</sup> (Table 1).

First, there is a need to eliminate access barriers for tobacco treatment to allow

smokers to receive the recommended treatment for tobacco cessation, which consists of both pharmacotherapy and behavioural counselling. Public insurance programs that cover these medications should be extended to the working poor or those on unemployment insurance. Keeping in line with societal measures to limit COVID-19 spread, tobacco treatment can be delivered remotely by the use of telephone counselling (i.e. quitlines) and by mailing out pharmacotherapy. The former practice is already well established in most jurisdictions, and the latter has seen local success that needs to be scaled up.<sup>33</sup>

Second, to ensure disadvantaged smokers are not underrepresented in general public health efforts, they should be complemented by community-level actions. For example, treatment for tobacco should be routinely offered in community settings that serve vulnerable populations such as employment agencies, social assistance programs, housing and hotelling services for COVID-positive people experiencing homelessness, and food banks. This will necessitate collaboration and coordination between different levels of government, smoking cessation services and community organizations.

Third, most large health care organizations house information technology systems that can identify smokers among their patients. This allows for a proactive approach in which smokers are invited to receive tobacco treatment and has proved effective in increasing uptake of treatment among smokers with socioeconomic disadvantage.<sup>34</sup> Similarly, integrated tobacco treatment within health care organizations that treat populations affected by smoking disparities, such as psychiatric hospitals and addiction treatment programs, are also likely to increase uptake.<sup>35</sup> Additionally, tobacco treatment can also be proactively offered via remote delivery following screening for tobacco use among those who test positive for COVID-19.

Fourth, coordinated government action, through a package of policy interventions, is needed to prioritize tobacco control activities at this time, particularly those that have a positive equity impact and the potential to reduce harm among vulnerable groups.<sup>36</sup> For example, the enforcement of comprehensive smoke-free policies in workplaces of manual labourers and multi-unit housing would reduce disparities in SHS exposure. Also, the cost of

**TABLE 1**  
**Actions aligned with Canada's Tobacco Strategy to protect vulnerable groups from tobacco-related harm**

| Pillar     | Action  |
|------------|---|
| Cessation  | Increase access to no-cost cessation programs in health care settings, especially those that serve patients with high smoking prevalences (e.g. psychiatric and addiction services) |
|            | Offer remote cessation programs (phone and internet) and mail-out pharmacotherapy   |
|            | Use information technology within health systems to proactively invite smokers into cessation programs  |
|            | Raise prices of tobacco cigarettes  |
|            | Perform opportunistic screening and treatment of tobacco use in COVID testing and vaccination centres   |
|            | Offer workplace and local community support for cessation   |
| Protection | Enforce comprehensive smoke-free policies, especially in workplaces of manual labourers   |
|            | Ensure smoke-free policies in all government-funded multi-unit housing  |
| Industry   | Limit tobacco retail density in neighbourhoods with low socioeconomic status  |
|            | Ban tobacco product discounts   |

tobacco cigarettes is more prohibitive for smokers in lower socioeconomic groups; hence, increases in pack prices together with stricter enforcement on black market tobacco may motivate many to quit.<sup>37</sup> Regulation of tobacco outlet density is another powerful tool to address smoking disparities,<sup>38</sup> and recent studies suggest that it is effective in narrowing the tobacco retail gap found in low- versus high-income neighbourhoods.<sup>39</sup>

Fifth, consistent with the syndemic framework, actions that mitigate systemic factors that contribute to health disparities among vulnerable groups, such as limited education or employment opportunities, housing insecurity, precarious access to health care and discrimination, are likely to have a positive impact on tobacco use and tobacco-related outcomes as well as general health outcomes.<sup>40</sup>

## Conclusion

Even before the current pandemic, populations with socioeconomic disadvantage were experiencing disparities in tobacco use and tobacco-related health conditions that contribute greatly to health inequalities. The syndemic framework is a conceptual approach to understanding how pre-pandemic tobacco-related health risks have been interacting with the societal impact of the pandemic and together make the risk of harm from tobacco more pronounced among disadvantaged groups. It also sheds light on potential measures for mitigating a sizeable proportion of this risk, such as reducing existing barriers to receiving tobacco-cessation treatment by remote counselling and mailing out of cessation medication, proactive outreach to

smokers enrolled within health care systems, comprehensive smoke-free policies in workplaces of manual labourers and multi-unit housing and integration of tobacco treatment into community agencies that serve those with socioeconomic disadvantage. To ensure that tobacco and health disparities will narrow over time, these mitigation measures should be complemented by strategies to reduce systemic factors that drive social inequality.

## Conflicts of interest

The authors declare that they have no relationships, activities or interests that are related to the content of this manuscript. The authors received no specific funding for this work.

## Authors' contributions and statement

OM and PS conceived the idea for this commentary. OM, LZ, RS, LB and PS participated in the analysis and interpretation. OM drafted the manuscript. OM, LZ, RS, LB and PS critically revised the manuscript for important intellectual content. OM, LZ, RS, LB and PS approved the final version of the manuscript.

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