Second-hand smoke surveillance and COVID-19: a missed opportunity

INTRODUCTION

SARS-CoV-2 infection (COVID-19) causes severe respiratory illness and multiorgan inflammatory disease.[1] Smoking, cardiovascular disease (CVD), hypertension and chronic lung diseases are risk factors for COVID-19 severity.[2–4] Second-hand tobacco smoke (SHS) exposure is a known causal risk factor for CVD and chronic lung disease,[5] and may also be a risk factor for COVID-19 severity, either through its role in these underlying conditions, or through its inflammatory effect on upregulation of ACE-2 receptors, mediating COVID-19 cell entry.[4] However, a lack of SHS surveillance makes it difficult to quantify any potential relationship or to make evidence-informed recommendations about the effects of SHS exposure on COVID-19 incidence or severity. To learn more about whether SHS exposure was being assessed in COVID-19 studies, we contacted researchers who had published COVID-19-related work.

METHODS

We contacted corresponding authors of peer-reviewed scientific articles published between February and April of 2020 identified by PubMed systematic searches using 'COVID OR Coronavirus AND Risk Factors' and similar terms. Abstracts were reviewed and papers included if they had data from patients with COVID-19 and risk factors. We emailed these authors, citing World Health Organization (WHO) and Centers for Disease Control (CDC) evidence for SHS exposure as a risk factor for worse COVID-19 outcomes, and asked authors whether they had data that would allow them to examine the hypothesis that exposure to SHS might be a risk factor for more severe disease or worse outcomes from COVID-19, both for children and also for adults with underlying conditions.

RESULTS

Our searches identified 445 items, of which 328 papers (312 authors) met inclusion criteria and were emailed. Of these, 299 were deliverable and 66 authors responded (22%). Authors at government agencies (n=17) were two times as likely (41%; $p<0.05$) to respond to emails. Most (92%) authors reported that they had not collected data on SHS exposure. Only three authors identified any SHS exposures, and none had systematic SHS data. Many respondents acknowledged the potential significance of these omissions:

'Thanks for the interest…unfortunately I don't have…any data on SHS and COVID-19'.

'Thank you for reaching out. I cannot agree with you more…(we now have) included smoking as well as vaping as possible risk factors'.

'Your email makes me realise that there is still a long way to go before we reach the goal of minimising second-hand smoking'.

US CDC respondents referred our queries to the CDC Office of Smoking or Health, whose staff were familiar with the issue (and have validated measures available); however, these were not used in CDC's COVID-19 surveillance reporting form,[6] or by WHO or other national or regional public health agencies.

CONCLUSION

None of the researchers who responded to our queries had data to assess SHS exposure as a risk factor for COVID-19 severity or outcomes. While public health and medical guidelines encourage clinicians to assess SHS exposure,[7 8] the early COVID-19 surveillance and registry efforts were established very quickly, reflecting the urgency of the pandemic's impact on healthcare systems worldwide. Nonetheless, in response to our queries, several authors acknowledged the missed opportunity to obtain data that might inform future public health interventions for COVID-19.

Some early reports have found substantial differences in smoker versus non-smoker COVID-19 mortality.[9] However, the most recent living rapid evidence review found former smokers at increased risk of hospitalisation, disease severity and mortality compared with never smokers.[10 11] For current smokers, hospitalisation and mortality associations were inconclusive, but the association with disease severity was likely significant.[11] Reporting and measurement of smoking status was highly variable across these studies: 30% (of more than 400 studies) reported current, former and never smoking status, only 8 studies reported use of alternative nicotine products, and none reported SHS exposure.[11]

Some public health agencies leading emergency responses and surveillance and researchers addressing COVID-19 risk factors may find systematic questions about smoking or SHS beyond the scope of rapid response surveillance. Multiple measures for any one risk factor are unlikely to be prioritised in pandemic responses; however, tobacco control experts have proposed a simple, single item ('Are you exposed to smoke from cigarettes or other tobacco products?') for SHS exposure surveillance.[12]

Improved coordination between tobacco control leaders and public health leaders leading emergency responses and surveillance is needed to improve screening protocols and ask appropriate questions about COVID-19 and SHS exposure in future research and surveillance; unless we ask these questions, we will continue to miss opportunities to advance our understanding of the impact of smoke or vaping exposure on COVID-19, or other disease outcomes.

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