SUMMARY

Despite substantial evidence on the negative effect of active smoking to Covid-19, the impact of passive smoking in the course of disease remains largely unclear. Our aim was to reflect passive smoking as a risk factor in the current pandemic. Studies are needed to increase our knowledge on passive smoking and Covid-19 implications. The reflections current findings strongly support interventions and policies to curb the tobacco epidemic.


Active smoking has been a global concern and is considered an ancient pandemic with long and chronic progression1,2. Currently, the number of deaths due to smoking is estimated at 8 million, including 157,000 in Brazil3.

Although underestimated, passive smoking, that is, the inhalation of second-hand smoke from tobacco derivatives, is also an important public health concern as it exposes non-smokers to the same carcinogens3. Thus, it is an important risk factor for chronic noncommunicable diseases, especially lung cancer1,4.

According to the World Health Organization (WHO), 900,000 passive smokers die annually2. In Brazil, a survey conducted in the 26 state capitals and the Federal District reported that 6.8% of household members were passive smokers, including 7.0% of women and 6.6% of men. The percentage of passive smokers in the workplace was 6.6% and was higher for men (10.0%) than for women (3.7%)5.

The harmful effect of tobacco was first reported in 19286. Since then, efforts have been made to establish coping strategies. However, the United States Department of Health demonstrated the causal relationship between passive smoking and lung cancer only in the year 1964. In 2005, the WHO Framework Convention on Tobacco Control (FCTC/WHO) provided tools and guidelines to be implemented by more than 192 member countries7.

Even with most countries implementing anti-smoking policies, approximately 80% of people remain vulnerable to harmful effects resulting from passive smoking8. Cigarette burning produces smoke that contains more than 7,000 chemical compounds. Of which 250 are proved to be harmful, and nearly 70 of these compounds and substances cause cancer9. Oral and nasal inhalation of cigarette smoke is believed to profoundly decrease in vivo mucociliary transport, making the person susceptible to respiratory diseases9.

At the beginning of the coronavirus disease (COVID-19) outbreak in late December 2019 in Wuhan, China, the tropism of lung epithelial cells was identified, caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)10,11. Smokers are considered among the vulnerable groups to health complications resulting from COVID-1911.

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Smoking increases the expression of angiotensin-converting enzyme 2 (ACE2), a known SARS-CoV-2 receptor. While some studies have proposed the higher ACE2 expression in smokers as a possible link between smoking and COVID-19, these mechanisms have not yet been fully elucidated\(^{12,13}\). Although this relationship remains controversial, there are large investments in research on this topic. However, studies on passive smoking and COVID-19 remain scarce; thus, this condition may be an important risk factor that has not been considered in the recommendations for pandemic control.

A study by Vázquez and Redolar-Ripoll\(^{11}\) conducted in Spain showed that, although the percentage of men (50.4%) and women (49.6%) infected by SARS-CoV-2 was similar, the mortality rate was significantly higher in men (4.7%) than in women (2.6%). These authors suggested that these discrepancies could be owing to differences in smoking patterns and prevalence between the sexes, as corroborated by statistical data on the prevalence of male smokers (25.6%) and female smokers (18.8%) in Spain.

A recent meta-analysis including data of 11,322 COVID-19 patients published in the International Prospective Register of Systematic Reviews (PROSPERO) has shown an association between smoking history and severe COVID-19 disease (OR 1.51, 95%CI 1.12–2.05, p<0.001) as well as current smoking between smoking history and severe COVID-19 disease (OR 2.17, 95%CI 1.37–3.46, p<0.001) as well as current smoking.

Systematic Reviews (PROSPERO) has shown an association of passive smoking 2,16 .

The possible relationship of government finance with the tobacco industry should also be considered, with these data informing potential tobacco control measures in Brazil. It is important to increase the awareness of the dangers of smoking.
cigarettes, as well as the importance of reducing their use, regardless of their harm.\textsuperscript{1,2,3,4}

The current COVID-19 pandemic is the right time to pass on these recommendations, mainly to non-active smokers, as well as to the users of tobacco, who should be greatly concerned about their health. Increased smoking cessation rates could positively impact the community transmission of SARS-CoV-2 and decrease the risks and concerns of passive smokers.

Thus, campaign practices and concepts should be reviewed, with a focus on the results of populations who are currently experiencing social isolation in enclosed environments. An increased understanding of the impact of these factors on the daily lives of smokers, informed by established theoretical tools, will allow the modification of pedagogical strategies.

The current situation reinforces the need to increase awareness about the risks of passive smoking. There is a critical window of opportunity to help individuals quit smoking and increase surveillance in both the active and passive smoking population to prevent, detect, and quickly treat COVID-19.

Reflection on these findings indicates the need for greater instrumentalization from everyone involved in this process to guarantee the quality of the interventions. Reviews of these concepts, how they are presented to the public, and how they are related to the primary objective of health campaigns, namely, health promotion and the effects of the quality of life of population are needed.

This review may contribute to the proposed reflection process and expanded discussions on this topic to strengthen strategies and expand their scope not only quantitatively but also qualitatively. Studies and healthcare practices related to the current pandemic are needed to increase our knowledge on passive smoking and COVID-19 implications.

Finally, the SARS-CoV-2 epidemic should be an impetus for patients and people at risk to maintain good health practices and to quit smoking not only because of the current situation but also permanently.

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**AUTHORS’ CONTRIBUTION**

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