

The relationship between smoking and COVID-19 progression

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Dear editor,

Recently, Patanavanich et al.¹ conducted a systematic review and meta-analysis to explore the association of smoking with coronavirus (COVID-19) progression, based on 18 retrospective studies and one case series report. They found that smoking was a risk factor for COVID-19 progression. After reading this article, we found three questions that should be considered.

First, one study by Kim et al.² included in the meta-analysis collected 28 hospitalized COVID-19 patients, of whom only 27 had a clear smoking status. In addition, it was unclear whether the patient whose smoking status was not stated had progressed to COVID-19 or not. The authors classified this patient as non-smoker. We think this approach is inappropriate and this study by Kim et al.² should be excluded because it cannot calculate a valid odds ratio.³

Second, this meta-analysis combined retrospective studies and a case series report, and there was moderate heterogeneity among the studies. Combining different research types can increase heterogeneity.⁴ We believe the case report should be excluded and only the retrospective studies included in the meta-analysis. For example, Arrich et al.⁵ conducted a meta-analysis that performed only for a subset of comparable studies with negligible heterogeneity and Schieren et al.⁶ did not combine studies with different research types. Besides, the meta-analysis by Kiyofuji et al.⁷ included only retrospective studies and excluded case series reports.

Third, in the limitations section, Patanavanich et al.¹ stated that only three studies (references 8, 13, and 24 in this meta-analysis) separated current and former smokers into different categories. But we found that another two studies (references 9 and 16 in this meta-analysis) also reported current and former smokers. Therefore, not only the meta-analysis comparing COVID-19 progression among current and former smokers, but also a meta-analysis comparing former smokers and never smokers could be performed. Patanavanich et al.¹

combined seven studies (references 12, 14, 18, 20, 23, 25, and 26 in this meta-analysis) that only reported current smokers with the other studies. That is to say, the authors considered non-current smokers as never smokers. This is not appropriate for non-current smokers include both former smokers and never smokers. Although the lung function of smokers could recover after stopping smoking, they would only partially recover.^{8,9} We believe a better approach would be to combine the seven studies which reported current smokers only (references 12, 14, 18, 20, 23, 25, and 26 in this meta-analysis) in a meta-analysis comparing progress among current smokers and non-current smokers, and the rest studies should be included in a meta-analysis comparing COVID-19 progress among people with a history of smoking ever and never smokers.

Taken together, the results of the meta-analysis by Patanavanich et al.¹ should be interpreted with caution. We hope that this comment will contribute to explaining and confirming their findings more accurately.

Conflict of Interest

The authors declared no conflict of interest.

Funding

This study was funded by National Major Science and Technology Projects of China (2018ZX10301407) and National Natural Science Foundation of China (81773495).

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