

Vaping Increases Youths' Risk of COVID-19

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✓ Fact Checked

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STORY AT-A-GLANCE

- › A June 2020 study reported that national smoking rates inversely correlated with COVID-19 mortality. In countries with hot weather, each percentage point increase in smoking rate was associated with a 0.147 per 100,000 population decrease in mortality
- › A systematic review and meta-analysis of 22 studies, however, found smoking modestly increased the risk of more severe symptoms among hospitalized COVID-19 patients, especially among younger nondiabetic patients
- › A September 2020 review found patients with a history of smoking (either current or former) had, on average, a 91% higher odds ratio of suffering more severe COVID-19 illness than patients who had never smoked
- › Teens and young adults who smoked conventional and/or e-cigarettes were 2.6 to nine times more likely to test positive for SARS-CoV-2. Those who vaped were also five times more likely to exhibit COVID-19-related symptoms and receive a COVID-19 diagnosis than nonusers
- › Recent research shows nicotine increases ACE2 expression in bronchial epithelial cells

From Dr. Joseph Mercola

Since COVID-19 first entered the scene, exchange of ideas has basically been outlawed. By sharing my views and those from various experts throughout the pandemic on COVID treatments and the experimental COVID jabs, I became a main target of the White House, the political establishment and the global cabal.

Propaganda and pervasive censorship have been deployed to seize control over every part of your life, including your health, finances and food supply. The major media are key players and have been instrumental in creating and fueling fear.

I am republishing this article in its original form so that you can see how the progression unfolded.

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Will smoking raise your risk of severe COVID-19 and risk of dying from the disease?^{1,2}
Interestingly, much of the research looking at conventional smoking has found mortality rates tend to be lower among smokers than nonsmokers. Results are not entirely homogenous, though, as some studies have come to the converse conclusion.

Vaping e-cigarettes, on the other hand, appears to increase risks to young adults, who are otherwise at very low risk of COVID-19. It's still unclear what might account for the differences between conventional cigarettes and vaping, although several hypothetical mechanisms for why conventional smoking doesn't increase COVID-19 severity and lethality have been proposed.

Conventional Smokers Not at Increased Risk?

June 14, 2020, a study^{3,4} posted on the preprint server medRxiv reported that national smoking rates inversely correlated with COVID-19 mortality. To avoid confounding by temperature (heat tends to lower risk of SARS-CoV-2 infection), the researchers looked at 20 of the hottest and 20 of the coldest nations, and compared mortality rates for COVID-19 among smokers and nonsmokers in those countries. According to the authors:⁵

"A highly significant inverse correlation between current daily smoking prevalence and COVID-19 mortality rate was noted for the group of hot countries, cold countries, and the combined group ...

In hot countries, for each percentage point increase in smoking rate mortality decreased by .147 per 100,000 population. This resulted in mortality rates several-fold elevated in the countries with the lowest smoking rates relative to the highest smoking rates. In the combined group, mortality decreased by .257 per 100,000 population.

These findings add support to the finding of an inverse relationship between current smoking and seriously symptomatic COVID-19. However, we conclude that the difference in mortality between the highest and lowest smoking countries appears too large to be due primarily to the effects of smoking per se.

A potentially beneficial effect of smoking is surprising, but compatible with a number of hypothetical mechanisms which deserve exploration:

- *Studies show smoking alters ACE2 expression which may affect COVID-19 infection or its progression to serious lung pathology.*
- *Nicotine has anti-inflammatory activity and also appears to alter ACE2 expression.*
- *Nitric oxide in cigarette smoke is known to be effective in treating pulmonary hypertension and has shown in vitro antiviral effects including against SARS-CoV-2.*
- *Smoking has complicated effects on the immune system involving both up and down regulation, any of which might alone or in concert antagonize progression of COVID-19.*
- *Smokers are exposed to hot vapors which may stimulate immunity in the respiratory tract by various heat-related mechanisms (e.g. heat shock proteins)."*

Other Studies Also Find Low Risk From Conventional Smoking

An earlier meta-analysis^{6,7} published in May 2020, which reviewed five different studies, also failed to find a link between conventional smoking and COVID-19 severity.

A second systematic review and meta-analysis⁸ of 22 studies, however, found smoking modestly increased the risk of more severe symptoms among hospitalized COVID-19 patients, especially among younger nondiabetic patients. As reported by Healio:⁹

"They found that overall, smoking modestly increased the risk for severe COVID-19 (OR = 1.34 ...). However, the researchers found a difference in the relationship between smoking and disease severity between Chinese studies (... OR = 1.48 ...) and American studies (... OR = 0.65 ...).

'This difference may be explained by the higher age and diabetes ratio of the non-Chinese population, which we showed to be important risk moderators, or could be due to further differences in comorbidities and care,' the researchers said.

Specifically, among studies in which less than 15% of the patients had diabetes, smoking increased the risk for severe disease (OR = 1.66 ...). However, among studies in which 15% or more had diabetes, 'there was a trend for a negative association' (OR = 0.7 ...) according to the researchers.

Karanasos and colleagues also reported that smoking was not significantly associated with increased mortality from COVID-19. After restricting their analysis to studies 'explicitly reporting current smoking,' the researchers said the association between smoking and disease severity was no longer statistically significant."

Smoking Associated With COVID-19 Progression

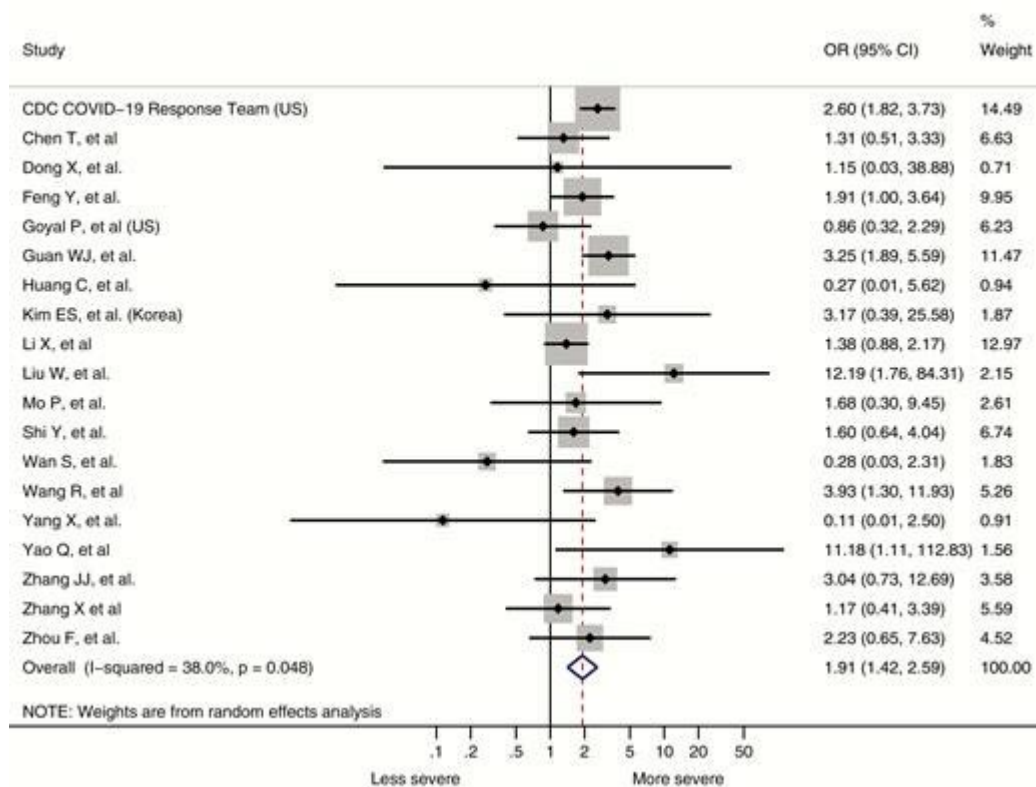
I wouldn't jump to the conclusion that smoking provides any particular benefits, though. A third meta-analysis¹⁰ of 19 studies, published in the September 2020 issue of *Nicotine & Tobacco Research*, throws these inverse findings into question, showing that smoking may have some negative effects after all.

Here, they found patients with a history of smoking (either current or former) had, on average, a 91% higher odds ratio (OR) of suffering more severe COVID-19 illness than patients who had never smoked. According to the authors:¹¹

"A total of 11,590 COVID-19 patients included in our meta-analysis, 2,133 of whom (18.4%) experienced disease progression and 731 (6.3%) with a history of smoking. A total of 218 patients with a history of smoking (29.8%) experienced disease progression, compared with 17.6% of nonsmoking patients.

The meta-analysis showed an association between smoking and COVID-19 progression (OR 1.91 ...). There was moderate heterogeneity among the studies ... and no significant evidence of publication bias."

Smoking and COVID-19 Disease Progression



Vaping Raises Risk of COVID-19 Among Youths

Teens and young adults who either vape exclusively or smoke both conventional cigarettes and e-cigarettes are also at far greater risk of testing positive for SARS-CoV-2 and exhibiting symptoms of the illness, although it's unclear whether it actually increases the risk of COVID-19 severity in this age group as the data was obtained via online surveys, not hospital or medical data.

“ Teens and young adults who smoked conventional and/or e-cigarettes were five to seven times more likely to be diagnosed with COVID-19. ”

Research^{12,13,14,15} by Stanford University researchers published online August 11, 2020, in the Journal of Adolescent Health, found teens and young adults who smoked conventional and/or e-cigarettes were 2.6 to nine times more likely to test positive for SARS-CoV-2. Those who vaped were also five times more likely to exhibit COVID-19-related symptoms and receive a COVID-19 diagnosis than nonusers.

(For clarity, testing positive does not mean that you are actually ill. A vast majority of people testing positive remain asymptomatic.) In a press release, lead author and postdoctoral scholar Shivani Mathur Gaiha, PhD., stated:¹⁶

"Young people may believe their age protects them from contracting the virus or that they will not experience symptoms of COVID-19, but the data show this isn't true among those who vape. This study tells us pretty clearly that youth who are using vapes or are dual-using [e-cigarettes and cigarettes] are at elevated risk, and it's not just a small increase in risk; it's a big one."

In all, a total of 4,351 participants between the ages of 13 and 24 completed the online surveys, which included questions about vaping and conventional smoking habits, and whether they'd experienced COVID-19 symptoms, been tested or diagnosed with SARS-CoV-2 infection. As reported by Stanford:¹⁷

"Young people who had used both cigarettes and e-cigarettes in the previous 30 days were almost five times as likely to experience COVID-19 symptoms, such

as coughing, fever, tiredness and difficulty breathing as those who never smoked or vaped.

This may explain why they were also more likely to receive COVID-19 testing ... Depending on which nicotine products they used and how recently they had used them, young people who vaped or smoked, or both, were 2.6 to nine times more likely to receive COVID-19 tests than nonusers.

Among the participants who were tested for COVID-19, those who had ever used e-cigarettes were five times more likely to be diagnosed with COVID-19 than nonusers. Those who had used both e-cigarettes and conventional cigarettes in the previous 30 days were 6.8 times more likely to be diagnosed with the disease."

Preliminary Theories to Explain Vaping's Effect on COVID-19

Curiously, as indicated by several of the studies cited earlier, the Stanford study¹⁸ again found no connection between COVID-19 diagnosis and the smoking of conventional cigarettes alone.

As for why vaping but not conventional cigarette smoking puts you at greater risk of testing positive or exhibiting symptoms of SARS-CoV-2 infection, Wired cited some theories proposed by coauthor Bonnie Halpern-Felsher, a pediatrics professor at Stanford University:¹⁹

"Halpern-Felsher has a few theories ... Smokers may have more lung damage, making them more susceptible to the virus. Or they might be touching their hand to their mouth more often than other people, or sharing vapes, increasing their likelihood of being exposed in the first place.

Or it could be that the virus is being spread through the aerosols vapers exhale. 'Those are all hypotheses,' she says. 'Someone needs to follow it up.'"

Vaping May Be More Hazardous Than Conventional Smoking

Overall, research²⁰ suggests vaping may in fact be more inflammatory and damaging to your lungs than conventional cigarette smoking. I've discussed such evidence in previous articles, including "Vaping Lung Injury Cases Rise to Nearly 300" and "E-Cig Flavoring Harms Blood Vessels."

The fact that vaping damages your vascular system may offer a hint at why it appears riskier in terms of COVID-19. Vascular changes associated with cardiovascular disease have been shown to appear almost immediately when using certain flavored vape liquids.

That's not to say that smoking cigarettes does not harm your vascular system. It certainly does. But vaping may perhaps bring on those side effects more rapidly. COVID-19, while affecting the lungs, really appears to be more of a **blood and vascular disorder** than a strict respiratory illness, which is why vaping's vascular effects might be a good place to start when trying to tease out the link.

Some of the latest research suggests COVID-19's disease progression can be explained by the SARS-CoV-2 virus' effect on your renin-angiotensin system, a central regulator of cardiovascular functions. The virus was also found to increase production of hyaluronic acid in the lungs.

Hyaluronic acid can absorb more than 1,000 times its own weight in fluid, and when it combines with fluid buildup in the lungs – which can occur from vaping,²¹ alone – it forms a thick hydrogel that inhibits your ability to breathe.

You can learn more about this in "[Bradykinin Hypothesis Explains COVID-19 Complexities](#)." That said, none of this fully explains why combustible cigarettes don't have the same degree of influence on your COVID-19 risk as vaping does.

Nicotine Increases ACE2 Expression in Lungs

The difference between vaping and smoking cigarettes becomes even more curious when you factor in recent research^{22,23,24} showing that nicotine increases ACE2 expression in bronchial epithelial cells. Since ACE2 receptors are the cellular entry point of SARS-CoV-2, all forms of nicotine should theoretically increase your risk of SARS-CoV-2 infection in the lungs.

Potentially, it could be that vaping is worse in this regard because it increases your risk of pneumonia,²⁵ but then again, combustible cigarettes also significantly raise your pneumonia risk.²⁶

One theory presented in a European Respiratory Journal correspondence article²⁷ has to do with the different effects of combustible cigarette smoke and e-cigarette vapors have on the epithelial and smooth muscle cells in the airways. According to the authors:

"We compared cigarette smoke versus e-cigarette and IQOS on airway epithelial and smooth muscle cells. All tested pathological biomarkers were elevated in cells exposed to e-cigarette aerosols and IQOS, which included chemokine CXCL8, extracellular matrix proteins and markers of mitochondrial dysfunction.

We found these products toxic to the cells, evident from decreased cellular viability and integrity. More devastatingly, vaping also interfered with cellular energetics.

Our results further substantiate current research that e- cigarettes and IQOS are indeed detrimental with increases in oxidative stress, inflammation, infections and airway remodelling in the lungs of these device users."

It remains to be seen whether a conclusive answer will be found to these questions. Overall, I believe it's reasonable to assume that all forms of smoking will ultimately harm your lungs and cardiovascular system to some degree, and increase your risk of infections of all kinds, including SARS-CoV-2.

I certainly do not think it would be prudent to assume cigarette smoking confers any kind of protection against the virus. If you're concerned about your health, quitting

smoking/vaping is always a good strategy.

On a positive note, CDC statistics reveal vaping among teenagers has declined significantly over the past year, dropping from 27.5% in 2019 to 19.6% in 2020.²⁸ That's equivalent to a decline of 1 million regular users, from 4.1 million down to 3 million. Use of e-cigarettes has also dropped sharply among middle school students, from 1.24 million in 2019 down to 550,000 in 2020.

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