

High blood pressure linked to 22% greater risk of severe COVID, says new research

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From early on in the pandemic it was apparent that older adults and those with underlying health problems were [more likely](#) to get very sick from a COVID infection compared with younger, healthier people.

High blood pressure, or [hypertension](#), is one of the most common conditions in the [general population](#), particularly in those who are middle

aged and older. It also seemed to be one of the [most common conditions](#) among COVID patients, especially those who were hospitalized or died.

In [a new study](#), we've found that people with [high blood pressure](#) have a 22% higher risk of being hospitalized or dying from the virus compared to people without high blood pressure.

Although from early on in the pandemic there appeared to be a link between high blood pressure and COVID, it wasn't clear whether high blood pressure itself led to a higher risk of being hospitalized or dying from COVID. The link could have been confounded by age and other factors known to influence both high blood pressure and COVID risk, including [socioeconomic status](#), sex, ethnicity and body-mass index (BMI).

We used data from the [UK Biobank](#), a research database containing in-depth genetic and health information from half a million U.K. volunteers. Our study included more than 16,000 of these people who had tested positive for COVID. The data we analyzed spanned from March 2020 until early 2021.

Using statistical models, we analyzed the effect of having high blood pressure on the risk of severe COVID, adjusting for potential confounding factors (including age, BMI, ethnicity, socioeconomic status, smoking status and diabetes status).

One limitation of our study is that the UK Biobank volunteer population is [generally healthier](#) than the U.K. population as a whole and has relatively few participants from ethnic minority groups. This means we need to be cautious about making generalizations.

So, why might having high blood pressure increase the risk from a COVID infection?

An intriguing hypothesis involves the way in which SARS-CoV-2 (the virus that causes COVID-19) enters our cells. It does so via a receptor called [angiotensin converting enzyme-2](#) or ACE2. ACE2 is a key component of what's known as the renin-angiotensin system, which is a major regulator of blood pressure.

It may be that the angiotensin system provides the link between COVID severity and high blood pressure. But at this stage we can only speculate. We will need further research to understand the precise mechanism.

Blood pressure control

When a person has hypertension, if it's not severe it can be controlled by lifestyle interventions in the first instance. But if this doesn't work, [blood pressure medications](#) will generally be considered.

In another part of our analysis, we looked at all participants with hypertension who were taking medications to lower their blood pressure. Sometimes, for a variety of possible reasons, even though someone is being treated with medication, their blood pressure remains above [certain targets](#).

We used blood pressure measurements from participants' GP records to determine whether or not their blood pressure was controlled. For people with poorly controlled blood pressure, we found the risk of severe COVID was almost double than among those who had a diagnosis of hypertension but whose blood pressure was under control.

We also showed that the type of blood pressure medication people were taking did not appear to modify the risk of severe COVID. This is worth noting because during the pandemic there has been a lot of uncertainty about which blood pressure medications should be prescribed.

In particular, there was concern that a type of medication called ACE inhibitors may alter the expression of ACE2 receptors, which could in theory make people taking this medication more susceptible to severe COVID.

But we didn't find any association between blood pressure medication type and the risk of severe COVID. What matters is whether or not blood pressure is being successfully controlled.

A public health problem

Hypertension is the [leading risk factor](#) for death from any cause in the U.K. and worldwide. It also disproportionately affects low income groups and people from [ethnic minority backgrounds](#) in western countries. And within these groups, rates of [blood pressure control](#) tend to be poorer.

This may help to explain why ethnic minority and low-income groups have been [disproportionately affected](#) by COVID in the U.K.

Thanks largely to effective vaccines and treatments, we're seeing fewer people hospitalized and dying from COVID than earlier in the pandemic. Nonetheless, our research pinpoints high blood pressure as a significant risk factor for severe COVID, and shows that effective [blood pressure control](#) is important to reduce this risk.

Unfortunately, the rates of blood pressure control [in the U.K.](#) and [more widely](#) have worsened in the wake of the pandemic, as have the number of people being screened and identified as having high blood pressure in the first instance. This is now a major public health problem and needs to be addressed urgently.

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