Improving heart health may reduce the severity of COVID-19 disease

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High blood pressure, smoking, obesity, heart disease and diabetes are associated with worse outcomes in patients with COVID-19, according to a study published today in *European Heart Journal—Quality of Care*

and Clinical Outcomes, a journal of the European Society of Cardiology (ESC).1

"Many of the cardiovascular risk factors associated with more severe consequences from COVID-19 are potentially modifiable," said study author Dr. Stephanie Harrison of the University of Liverpool, U.K. "Clinicians and policy makers should consider that strategies which improve cardiovascular health may also improve outcomes for people following COVID-19."

Emerging evidence has suggested that COVID-19 patients with heart disease may be more likely to need hospitalization or ventilation or die from COVID-19 compared to those without heart disease. Studies have also examined whether risk factors for cardiovascular disease such as high blood pressure and smoking may be linked with poor outcomes from COVID-19.

Many reviews have been conducted to consolidate the research linking cardiovascular disease and COVID-19. The aim of this study, commissioned by Public Health England, was to summarize the evidence in these reviews—i.e., a review of reviews—to address two questions: (1) What is the association between cardiovascular risk factors or cardiovascular disease and outcomes for patients with COVID-19? (2) What is the impact of COVID-19 on cardiovascular health?

The authors identified the highest-quality reviews—a total of 32 reviews including studies of up to ~45,000 patients with COVID-19. For each risk factor and heart problem, the researchers selected the best quality, most recent, and largest analysis.

The factors associated with a higher likelihood of worse outcomes from COVID-19 were high blood pressure, current or past smoking, obesity, diabetes, previous stroke or pre-existing cardiovascular disease, liver

disease and kidney disease. To take some examples, obesity, diabetes, high blood pressure and heart disease were associated with more than doubled odds of dying from COVID-19. Heart disease was linked with nearly four-fold odds of severe COVID-19, while the odds were more than doubled for hypertension and diabetes, and 80% higher in smokers compared to non-smokers.

Dr. Harrison said: "One possible explanation may be that cardiovascular disease, or its risk factors, may cause changes to pathways which impact the body's ability to effectively respond to the virus."

She noted that the research was based on observational studies, meaning that it suggests relationships but cannot confirm causality. In addition, there was limited or no evidence to determine connections between alcohol consumption, cholesterol levels, irregular heart rhythms, diet, physical activity or dementia and COVID-19 outcomes.

The reviews also found that in patients hospitalized with COVID-19, the following cardiovascular complications occurred: venous thromboembolism (25% of patients), pulmonary embolism (19%), arrhythmias (18%), myocardial injury (10%), angina (10%), deep vein thrombosis (7%), myocardial infarction (4%) and acute heart failure (2%).

Dr. Harrison said, "Early in the pandemic, concerns were raised about the potential for COVID-19 to cause cardiovascular complications or exacerbate existing heart disease because of prior knowledge from influenza epidemics and outbreaks of other respiratory viruses. These findings suggest that these initial concerns were correct. Our study indicates that COVID-19 patients with heart disease or its risk factors are at greater risk of hospitalization, ventilation or death due to COVID-19 and might need more intense treatment and monitoring. Promoting heart health may be another way to improve outcomes for

COVID-19 patients. More research is needed on the long-term impact of COVID-19 on the heart."

More information: Stephanie L Harrison et al, Cardiovascular risk factors, cardiovascular disease, and COVID-19: an umbrella review of systematic reviews, *European Heart Journal - Quality of Care and Clinical Outcomes* (2021). DOI: 10.1093/ehjqcco/qcab029

Provided by European Society of Cardiology

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