

# Modifiable Risk Factors for SARS-CoV-2

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## Abstract

As the COVID-19 pandemic has raged on, considerable research has been performed around the world evaluating the environmental, genetic, lifestyle, and nutritional factors that significantly impact the COVID-19 pandemic. Many studies have now shown that key risk factors for SARS-CoV-2 infection, severity, and even death are modifiable. Patients, whether partially

vaccinated, fully vaccinated, or not vaccinated, are expecting their clinicians to provide them with evidence-based guidance and to help them prioritize the factors most important for them. In this editorial we review the current state of the research on modifiable risk factors for SARS-CoV-2 infection, disease severity, and death.

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80 years and older to those aged 50 to 59 years. Black and South Asian descent confers higher risk, even after adjusting for other factors, when compared to White ethnicity (HR, 1.48; 95% CI, 1.29-1.69) and (HR, 1.45; 95% CI, 1.32-1.58), respectively.

## Introduction

Resistance to COVID-19, the disease caused by SARS-CoV-2, is of utmost public health importance and of obvious interest to the public on an individual level. Research continues to emerge on which factors may influence the course of an individual's disease process. We have examined the state of the existing research to ascertain which modifiable lifestyle and diet risk factors an individual may address, as they relate to the susceptibility, severity, hospitalization, and possible demise from COVID-19. Public health measures as recommended by the CDC—distancing, mask wearing, and vaccination—are the context for this article. Here we focus on additional measures each person can take.

## Unmodifiable Risk Factors of Gender, Age, Ethnicity<sup>1</sup>

Being male confers a higher rate of COVID-19-related death (hazard ratio [HR], 1.59; 95% CI, 1.53-1.65). Age confers a greater risk with a strong gradient. There is a 20-fold increase for mortality comparing persons

## Modifiable Risk Factors

### Blood Sugar Control

Diabetes is a well-documented risk factor for severe COVID-19, however even in nondiabetic persons elevated pre-infection blood glucose is a risk factor. This study evaluated risk prediction from fasting blood sugar for patients with and without diabetes. In a population-based cohort study<sup>2</sup> of 37 121 patients who tested positive for SARS-CoV-2, of which 707 suffered severe COVID-19 requiring hospitalization of greater than 10 days, intensive care unit (ICU) admission, or death, a J-shaped association was seen for diabetics. For diabetic patients, both high and low glucose levels are risk factors for severe COVID-19.

When controlling for risk factors such as age, male gender, and body mass index (BMI), the study found an association between pre-infection fasting blood glucose (FBG) and the risk of severe COVID-19 among patients with and without a diagnosis of diabetes. In patients without diabetes, a FBG in the prediabetic range, from 100 to 125 mg/dL, was associated with a greater risk for severe COVID-19. For diabetic patients there was a J-shaped association between the pre-infection fasting