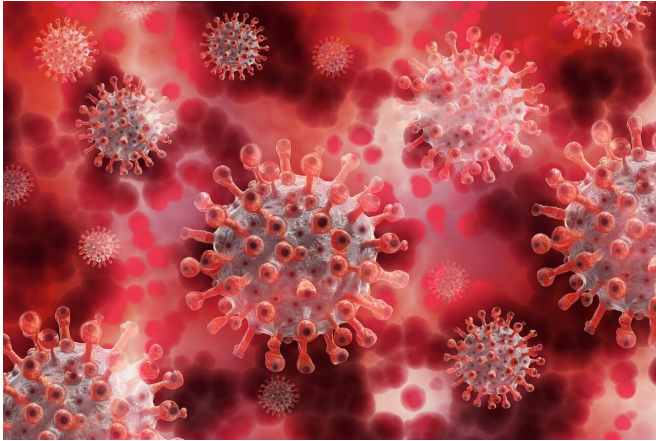


Severe COVID-19 may be linked to long-haul symptoms

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People who experience very severe COVID-19 illness have a higher prevalence of persistent symptoms, according to a new University of Michigan study.

The findings highlight the urgent need to characterize and treat long-haulers—people who continue to experience lingering symptoms months after their initial diagnosis. Referred to as post-acute sequelae of SARS-CoV-2 infection, or PASC, symptoms include extreme fatigue, shortness of breath and persistent loss of taste or smell.

"While we're in the midst of trying to stop the spread of the pandemic, we need to develop formal, coordinated surveillance of long-term symptoms to better understand this syndrome and provide guidance for clinical management," said lead author Jana Hirschtick, a research investigator in the Center for Social Epidemiology and Population Health at the U-M School of Public Health.

Hirschtick and colleagues found that 53% of

COVID-19 survivors had persistent symptoms 30 days post-COVID onset, while 35% were symptomatic 60 days post-onset.

For their analysis, the researchers used the [Michigan COVID-19 Recovery Surveillance Study](#), a population-based study of adults 18 and older with a PCR-confirmed SARS-CoV-2 test in the Michigan Disease Surveillance System. All noninstitutionalized adults with a valid phone number and zip code or county in MDSS who were alive at the time the survey sample was drawn were eligible for selection.

The U-M research team used a random sample of 2,000 adults with COVID-19 onset on or before April 15, 2020, from 13 geographic areas, six counties (Macomb, Oakland, St. Clair, Monroe, Washtenaw, Wayne) and one city (Detroit) in Michigan. Of the sample, 629 completed the survey between June-December 2020.

The researchers estimated prevalence of persistent symptoms 30 and 60 days after COVID-19 onset, and included sociodemographic and clinical factors as well as self-reported [symptom](#) severity and hospitalization status.

Their final sample with data available for the study (593) was predominantly female (56%), aged 45 and older (68%), and non-Hispanic white (46%) or Black (35%). Of the respondents:

- 53% reported symptoms at 30 days and 35% reported symptoms at 60 days.
- Respondents reporting very severe (vs. mild) symptoms had 2.25 times higher prevalence of symptoms at 30 days and 1.71 times higher prevalence of symptoms at 60 days.
- Hospitalized (vs. nonhospitalized) respondents had about 40% higher prevalence of symptoms at 30 and 60 days.
- Although persistent symptoms were more

prevalent among older respondents and those with severe disease, 21% of 18-to-34-year-olds and 25% of respondents reporting mild illness still had symptoms 60 days after their COVID-19 onset.

- Older age, [lower income](#), self-reported severe or very severe (vs. mild) symptoms and hospitalization statistically significantly predicted 30-day COVID-19, while having a diagnosed psychological disorder, very severe symptoms and hospitalization statistically significantly predicted 60-day COVID-19.

"Our data suggest a significant proportion of people with COVID-19 will continue to experience symptoms, even among people with relatively mild initial illness," said Nancy Fleischer, associate professor of epidemiology and principal investigator of the Michigan COVID-19 Recovery Surveillance Study.

Due to a lack of a clear definition of the illness and of population-based studies, prevalence estimates vary greatly, the researchers say. Their study sought to provide PASC prevalence estimates using a population-based sample of diagnosed COVID-19 cases in Michigan, and assess demographic and clinical correlates of PASC.

After adjusting the models, researchers also found that:

- There were no statistically significant differences in 30-day or 60-day COVID-19 by race/ethnicity.
- Annual household income was a strong and significant predictor of 30-day COVID-19. Even after adjusting for demographic and clinical factors, respondents with an income less than \$75,000 had about 40% higher prevalence of 30-day COVID-19 than respondents with an income at or above \$75,000.
- Income was not significantly associated with 60-day COVID-19 in fully adjusted models.
- Respondents with a psychological condition had 42% higher prevalence of 60-day COVID-19.
- Self-reported acute illness severity was

strongly associated with both 30-day and 60-day COVID-19.

"These results add to the growing body of evidence that a sizable proportion of symptomatic COVID-19 cases of varying severity experience PASC," Fleischer said. "People are continuing to suffer from symptoms well after their initial illness, and the medical and public health communities need to help address this ongoing crisis."

Among the study limitations, the sample includes individuals with COVID-19 onset in Michigan early in the pandemic, when access to testing was limited, which may limit generalizability of their findings.

The Michigan COVID-19 Recovery Surveillance Study now has data on respondents with COVID-19 onset through September 2020, and will be examining PASC among this larger group of respondents. Additionally, researchers will be examining characteristics and predictors of different subsets of PASC symptoms, which may represent distinct syndromes.

Provided by University of Michigan

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