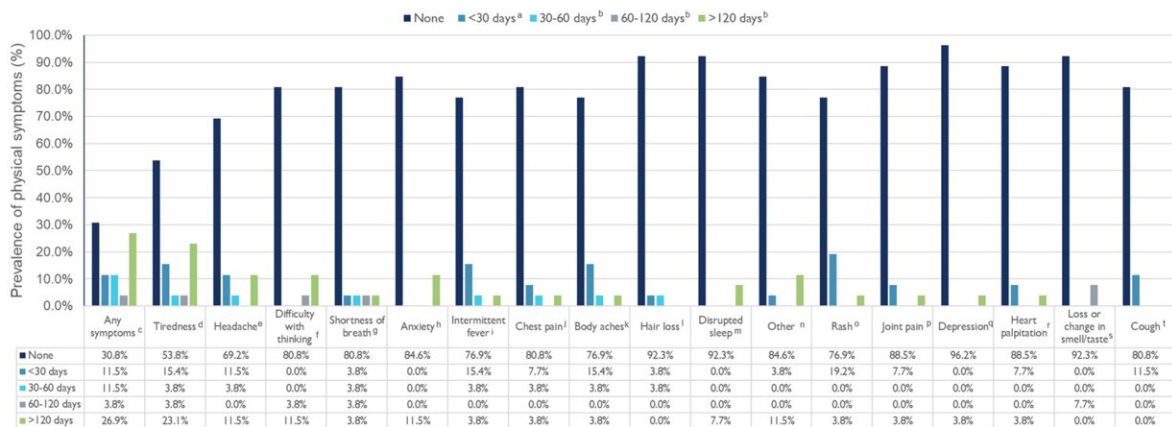
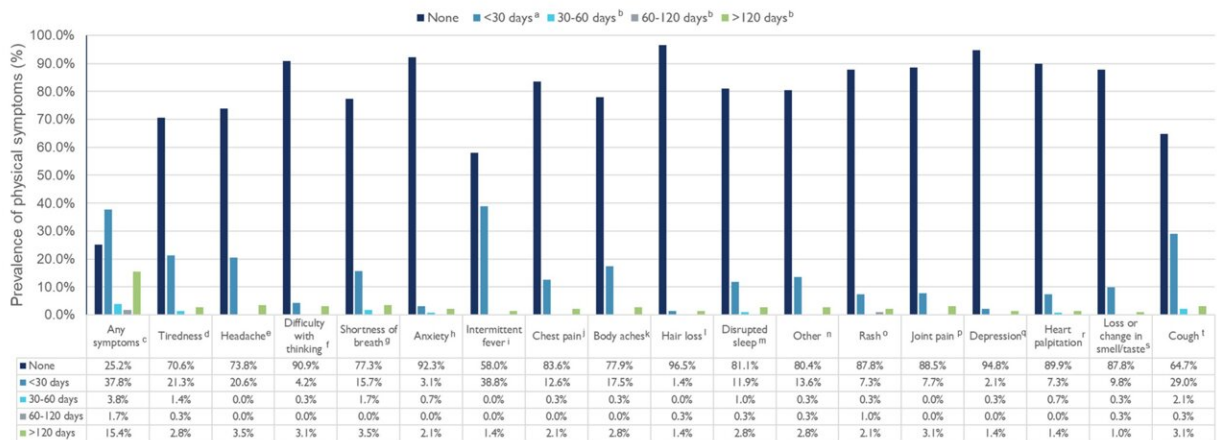


# Ethnically diverse children from low-resource backgrounds report long-term COVID-19 complications

October 18 2022



(a)



Prevalence and duration of physical symptoms among MIS-C (a) and non-MIS-C children (b). <sup>a</sup> Acute symptoms; <sup>b</sup> Chronic long symptoms; <sup>c</sup> MIS-C:  $N_{\text{missing}} =$

4; non-MIS-C:  $N_{\text{missing}} = 46$ ; <sup>d</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 10$ ; <sup>e</sup> MIS-C:  $N_{\text{missing}} = 1$ ; non-MIS-C:  $N_{\text{missing}} = 6$ ; <sup>f</sup> MIS-C:  $N_{\text{missing}} = 1$ ; non-MIS-C:  $N_{\text{missing}} = 4$ ; <sup>g</sup> MIS-C:  $N_{\text{missing}} = 1$ ; non-MIS-C:  $N_{\text{missing}} = 5$ ; <sup>h</sup> MIS-C:  $N_{\text{missing}} = 1$ ; non-MIS-C:  $N_{\text{missing}} = 5$ ; <sup>i</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 5$ ; <sup>j</sup> MIS-C:  $N_{\text{missing}} = 1$ ; non-MIS-C:  $N_{\text{missing}} = 4$ ; <sup>k</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 6$ ; <sup>l</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 1$ ; <sup>m</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 8$ ; <sup>n</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 7$ ; <sup>o</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 4$ ; <sup>p</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 2$ ; <sup>q</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 4$ ; <sup>r</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 2$ ; <sup>s</sup> MIS-C:  $N_{\text{missing}} = 0$ ; non-MIS-C:  $N_{\text{missing}} = 2$ ; <sup>t</sup> MIS-C:  $N_{\text{missing}} = 2$ ; non-MIS-C:  $N_{\text{missing}} = 2$ . Credit: *International Journal of Environmental Research and Public Health* (2022). DOI: 10.3390/ijerph192013382

A substantial proportion of ethnically diverse children from low-resource backgrounds with severe COVID-19 illness are reporting long-term complications from the virus, according to research from UTHealth Houston.

The study, published Monday in the *International Journal of Environmental Research and Public Health*, found that [pediatric patients](#) with [private health insurance](#) were 66% less likely to report long COVID symptoms versus those with government insurance.

Most pediatric COVID-19 cases are asymptomatic; however, a small number of children are diagnosed with multisystem inflammatory syndrome in children (MIS-C)—a rare but severe condition that is associated with SARS-CoV-2 infection. Persistent symptoms of COVID-19 illness in children diagnosed with and without MIS-C is largely unknown.

"Over 27% of patients diagnosed with MIS-C and 15% of patients not diagnosed with MIS-C reported symptoms lasting more than four

months," said Sarah Messiah, Ph.D., MPH, first author of the study and professor of epidemiology at UTHealth Houston School of Public Health Dallas Campus. "These findings suggest that COVID illness is impacting a significant proportion of children long-term and that we need to start thinking about this not only as an acute, but a chronic pediatric condition."

Researchers, many of whom were School of Public Health graduate students, conducted survey interviews with over 300 families who had a child diagnosed with COVID-19 illness. Acute long COVID symptoms last less than 30 days, while chronic long COVID symptoms can last more than 120 days. Patients and caregivers then completed a follow-up survey from March 2021 to January 2022 to assess the presence of long COVID.

Key findings included:

- Children who were not diagnosed with MIS-C (54.49% Hispanic, 19.23% non-Hispanic Black, 79.49% on government insurance) were younger than children who were diagnosed with MIS-C (mean age 6.43 years versus 9.08 years).
- Approximately 11.5% of children with MIS-C and 37.8% without MIS-C reported acute long COVID, while 26.9% and 15.3% reported chronic long COVID, respectively.
- Female children were almost twice as likely to report long COVID symptoms versus male children.

"Our research also highlighted the disparities of age, sex, and race/ethnicity in terms of risk for long COVID symptoms," said Luyu Xie, PharmD, Ph.D., postdoctoral research fellow and lead data analyst of the study at the school's Dallas campus. "Specifically, we found older age, being female, and identifying as an ethnic minority were all more likely to report long COVID symptoms. These findings can inform

future tailored interventions."

Meanwhile, an abstract highlighting the effects of long COVID on [physical activity](#) and cardiorespiratory fitness on children and teens is being presented Tuesday as a late breaker at the CHEST Annual Meeting, hosted by the American College of Chest Physicians in Nashville, Tennessee. Xie and Kubra Melike Bozkanat, MD, assistant professor of pediatrics at The University of Texas Southwestern Medical Center (UT Southwestern) and pediatric pulmonologist at Children's Health in Dallas, were co-first authors on the abstract, while Messiah was senior author.

A second analysis of the same group of patients showed that nearly one-third of patients who participated in any athletic or physical activity in or outside of school reported a negative impact on physical or athletic performance, and 66.7% reported it was directly related to COVID-19 illness.

Specific complaints when returning to physical activity post COVID illness included tiredness (36.8%) and shortness of breath (10.5%). The odds of a decline in physical activity performance was over twice that among children with long COVID versus those without long COVID.

"In clinic, we see that a lot of these children are unable to play sports, and that's such a big change in their lives," Bozkanat said. "Our study supports these observations. The children with persistent symptoms need to be monitored long-term, ideally in a multidisciplinary clinic."

Overall, the most prevalent symptoms of long COVID included tiredness (6.7%), shortness of breath (5.8%), cough (5.1%), headache (4.5%), difficulty concentrating (4.5%), disrupted sleep (4.5%), other symptoms (3.8%), anxiety (3.5%), body aches (3.5%), joint pain (3.2%), chest pain (2.9%), intermittent fever (1.9%), and loss of taste or smell (1.6%).

**More information:** Sarah E. Messiah et al, Comparison of Long-Term Complications of COVID-19 Illness among a Diverse Sample of Children by MIS-C Status, *International Journal of Environmental Research and Public Health* (2022). [DOI: 10.3390/ijerph192013382](https://doi.org/10.3390/ijerph192013382)

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