COVID-related depression linked to reduced physical activity

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The United States spends more than $200 billion every year in efforts to treat and manage mental health. The onset of the coronavirus pandemic has only deepened the chasm for those experiencing symptoms of depression or anxiety. This breach has also widened, affecting more people.

New research from Carnegie Mellon University, University of Pittsburgh and University of California, San Diego found that 61% of surveyed university students were at risk of clinical depression, a value twice the rate prior to the pandemic. This rise in depression came alongside dramatic shifts in lifestyle habits.

The study documents dramatic changes in physical activity, sleep and time use at the onset of the COVID-19 pandemic. Disruptions to physical activity emerged as a leading risk factor for depression during the pandemic. Importantly, those who maintained their exercise habits were at significantly lower risk than those who experienced the large declines in physical activity brought on by the pandemic. While physical activity resumed in early summer, mental well-being did not automatically rebound. The results of the study are available online in the February 10 issue of the *Proceedings of the National Academy of Sciences.*

"There is an alarming rise in the rate of anxiety and depression among young adults, especially among college students," said Silvia Saccardo, assistant professor in the Department of Social and Decision Sciences at CMU and senior author on the paper. "The pandemic has exacerbated the mental health crisis in this vulnerable population."

Saccardo and her colleagues, Osea Giuntella, Kelly Hyde and Sally Sadoff, examined data gathered from 682 college students who used a smartphone app and a Fitbit wearable tracker for spring 2019, fall 2019 and spring 2020. Their results show large disruptions in physical activity, sleep and computer/phone screen time and social interaction, alongside large declines in well-being. This data set spans the onset of social isolation during the early months of the pandemic, offering an insight into the factors that exacerbated mental health disorders in this age group.

"We used this unique dataset to study what factors are predictive of changes in depression," said Saccardo. "[In the dataset,] we can see that mental health gets worse as the semester progresses, but it is dramatically worse in 2020 compared to the previous cohort."

The team found that participants who maintained healthy habits prior to the pandemic—scheduled physical active and an active social life—were at a higher risk for depression as the pandemic continued. The researchers point to a decline in physical activity as the leading risk factor for diminished mental health. However, restoration of physical activity was not met with a rebound in mental well-being.

"We randomized a group of individuals to receive incentive to exercise. While our short intervention increased physical activity among this group, it did

not have an impact on mental health. These results open up a lot of opportunities for future research," said Saccardo. "It is an interesting puzzle for future studies to understand why we do not see a symmetric relationship between the resumption of physical activity and mental health."

This research documents how COVID-19 has generated large disruptions in mental well-being among college students, a vulnerable population.

"The results are generalizable to the young adult population, a highly exposed group which has exhibited rising depression rates over the last decades and was dramatically exposed to the disruptions caused by the current epidemic," said Giuntella, assistant professor of economics at Pitt. "We need more work to understand whether similar trends were observed in other age groups."

More information: Osea Giuntella et al, Lifestyle and mental health disruptions during COVID-19, *Proceedings of the National Academy of Sciences* (2021). DOI: 10.1073/pnas.2016632118

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