

Hospitalized shift workers up to 3 times more likely to be COVID-19 positive

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People who work shifts appear to be significantly more likely to end up in hospital with COVID-19 than people who have regular work patterns, suggests research published online in the journal *Thorax*.

Researchers found that shift working could be just as important a risk factor as already known high risk features such as ethnicity and living in poorer areas, so should be considered in future public health measures aiming to reduce COVID-19 infections.

Shift work in this study referred to a work schedule that falls outside regular work hours of 9am and 5pm, including both long-term night shifts and work schedules in which employees change or rotate their shifts.

Globally, shift work is becoming increasingly common with 10% to 40% of workers in most countries doing so. Previous studies have found adverse health effects of shift work, such as respiratory disease, diabetes, cancer, and non-COVID-19 infectious diseases. It is believed this

could be due to [sleep deprivation](#), poor diet and disruption of the body's natural 24-hour (circadian) cycle.

Given that the immune system is regulated by the circadian clock, it is possible that shift work could be causing "circadian misalignment" and increasing a person's susceptibility to COVID-19 infection—a theory that researchers from the Universities of Manchester and Oxford in the UK and the University of the West Indies set out to investigate.

They used data on more than 280,000 participants aged 40 to 69 when enrolled in the UK Biobank study (2006-10) together with data from other resources such as Hospital Episode Statistics and GP records.

They excluded participants who had COVID-19 testing outside of secondary care.

To find out whether shift work was associated with an in-hospital COVID-19 positive test, the researchers compared workers who never worked shifts with participants who worked irregular or permanent shifts.

The data revealed that shift workers tended to be younger, male, had a higher body mass index (BMI), smoked more, had a lower alcohol intake, non-white ethnicity and higher levels of deprivation.

Results showed that a person doing irregular shift work was more than twice as likely to test positive for COVID-19 as someone not doing shift work.

Similarly, permanent shift work appeared to make a person 2.5 times more likely to get COVID-19, even after taking into account of other factors including age, sex, and ethnicity.

The researchers also investigated whether the type of shift work affected the association with COVID-19.

They found that, when compared with workers who engaged in no shift work, day and night shift workers (working irregular and permanent night shifts) had a higher likelihood of having a positive COVID-19 test. Indeed, those doing irregular night shifts were three times more likely to test positive for the virus in hospitals.

And these higher risks were largely unchanged after taking account of factors such as sleep duration, BMI, alcohol and smoking.

COVID-19 risk is higher in essential workers and healthcare workers, say the researchers, which could potentially explain their findings if shift workers were concentrated in these groups.

So, they then looked at the impact of a person's physical proximity to a colleague in the workplace combined with estimated disease exposure; compared participants within each job sector (non-essential, essential and healthcare); and compared shift work and non-shift working colleagues.

In all these cases, shift work was still significantly associated with COVID-19, meaning that shift work was associated with higher odds for having COVID-19 regardless of job sector type.

They suggest that their findings may be due to increased occupancy of workspaces over 24 hours for shift workers, reduced time for cleaning between shifts, and tiredness resulting in less awareness of health and safety measures.

Other explanations could be that [shift work](#) might alter how the immune system responds to infection.

This is an observational study, so can't establish cause. The authors also acknowledge some other limitations, such as the fact that data collected by questionnaire for the UK Biobank and used in the study were recorded a minimum of 10 years before COVID-19, and although some of the data had been updated through hospital episode statistics, it could not be viewed as a contemporaneous record.

Nevertheless, study strengths included the fact that a large number of participants were analysed.

Author Dr. John Blaikley at the University of Manchester said: "This study shows quite a strong association between shift working and being hospitalised for COVID-19, even after controlling for existing COVID-19 [risk factors](#)."

Co-author Dr. Hannah Durrington at the University of Manchester added: "We do believe it should be possible to substantially mitigate these risks through good handwashing, use of face protection, appropriate spacing and vaccination."

More information: Shift work is associated with positive COVID-19 status in hospitalised patients, *Thorax* (2021). [DOI: 10.1136/thoraxjnl-2020-216651](#)

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