

# Consistent lack of sleep related to future depressive symptoms, genetic study finds

October 19 2023

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Consistently sleeping less than five hours a night might raise the risk of developing depressive symptoms, according to a new genetic study led by UCL (University College London) researchers.

Historically, [poor sleep](#) has been seen as a side effect of mental ill [health](#), but this study found that the link between sleep and mental illness is more complex.

The study, published in the journal *Translational Psychiatry*, analyzed data from people with an average age of 65 and found [short sleep](#) was associated with the onset of [depressive symptoms](#).

Lead author Odessa S. Hamilton (UCL Institute of Epidemiology & Health Care) said, "We have this chicken or egg scenario between suboptimal sleep duration and [depression](#), they frequently co-occur, but which comes first is largely unresolved. Using [genetic susceptibility](#) to disease we determined that sleep likely precedes depressive symptoms, rather than the inverse."

For the study, the researchers used genetic and health data from 7,146 people recruited by the English Longitudinal Study of Ageing (ELSA), a nationally representative population study in England.

They found that people with a stronger genetic predisposition to short sleep (less than five hours in a given night) were more likely to develop depressive symptoms over 4–12 years, but that people with a greater genetic predisposition to depression did not have an increased likelihood of short sleep.

Senior author Dr. Olesya Ajnakina (UCL Institute of Epidemiology & Health Care and the Institute of Psychiatry, Psychology & Neuroscience at King's College London) said, "Short and long sleep durations, along with depression, are major contributors to public health burden that are highly heritable. Polygenic scores, indices of an individual's genetic propensity for a trait, are thought to be key in beginning to understand the nature of sleep duration and depressive symptoms."

The researchers assessed the strength of genetic predisposition among the ELSA participants using findings from previous genome-wide association studies that have identified thousands of genetic variants linked to a higher likelihood of developing depression and short or long sleep.

As part of a number of separate analyses to investigate the robustness of their results, the research team also looked at non-genetic associations between depressive symptoms and sleep duration.

They found that people sleeping five hours or less were 2.5 times more likely to develop depressive symptoms, while people with depressive symptoms were a third more likely to suffer from short sleep. They adjusted for a rich selection of factors that could affect the results such as education, wealth, smoking status, physical activity and limiting longstanding illness.

The researchers also found a link between sleeping long and developing depressive symptoms, with participants sleeping longer than nine hours being 1.5 times more likely to develop depressive symptoms than those who sleep an average of seven hours. However, depressive symptoms were not associated with sleeping longer four to 12 years later, which corresponded to the genetic findings.

Professor Andrew Steptoe (Head of Behavioral Science and Health, UCL Institute of Epidemiology & Health Care) said, "Suboptimal sleep and depression increase with age, and with the worldwide phenomenon of population aging there is a growing need to better understand the mechanism connecting depression and a lack of sleep. This study lays important groundwork for future investigations on the intersection of genetics, sleep, and depressive symptoms."

Overall, the participants in the study had an average of seven hours' sleep

a night. More than 10% slept for less than five hours a night at the start of the study period, rising to over 15% at the end of the study period, and the proportion of participants classed as having depressive symptoms increased by approximately 3 percentage points, from 8.75-11.47%.

Both sleep duration and depression are partly inherited from one generation to the next. Earlier twin studies have suggested depression is about 35% heritable, and that genetic differences account for 40% of the variance in sleep duration.

In the study, data on sleep and depressive symptoms were combined from two ELSA surveys conducted two years apart, as [sleep](#) duration and depression are known to fluctuate over time.

**More information:** Polygenic Predisposition, Sleep Duration, and Depression: Evidence from a Prospective Population-Based Cohort, *Translational Psychiatry* (2023). [DOI: 10.1038/s41398-023-02622-z](https://doi.org/10.1038/s41398-023-02622-z)

Provided by University College London

Citation: Consistent lack of sleep related to future depressive symptoms, genetic study finds (2023, October 19) retrieved 28 April 2024 from <https://medicalxpress.com/news/2023-10-lack-future-depressive-symptoms-genetic.html>

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