

Insufficient good quality sleep during teenage years may heighten subsequent MS risk, suggests study

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Insufficient and disturbed sleep during the teenage years may heighten the subsequent risk of multiple sclerosis (MS), suggests a case-control

study published online in the *Journal of Neurology Neurosurgery & Psychiatry*.

Clocking up enough hours of restorative sleep while young may help to ward off the condition, suggest the researchers.

MS is influenced by both genetic and [environmental factors](#), including smoking, teenage weight (BMI), Epstein-Barr virus infection, sun exposure, and vitamin D, note the researchers.

Shift work has also been linked to a heightened risk of the condition, particularly at a young age, but whether [sleep patterns](#)—duration, body clock disruption, and sleep quality—might affect this risk hasn't been fully assessed, they add.

To explore this further, the researchers drew on a population-based case-control study, the Epidemiological Investigation of Multiple Sclerosis (EIMS), comprising 16–70-year-old Swedish residents.

People with MS were recruited from hospital- and privately-run neurology clinics and matched for age, sex, and residential area with two healthy people randomly selected from the national population register between 2005 and 2013 and 2015 and 2018.

The researchers focused particularly on sleep patterns during the ages 15 to 19, and the final analysis included 2,075 people with MS and 3,164 without the condition in this age group when recruited to the study.

Participants were asked about their sleeping patterns at different ages: length of sleep on work or school days, and at weekends or on free days. Short sleep was defined as less than 7 hours/night; adequate sleep as 7-9 hours; and long sleep as 10 or more hours.

Changes in sleep timing between work/school days and weekend/free days were calculated during the [teen years](#) of 15-19 and categorized as less than 1 hour/night, 1-3 hours, and more than 3 hours.

Study participants were also asked to assess sleep quality during different age periods using a 5-point scale, where 5 equaled very good.

The average age at which MS was diagnosed was 34. Sleep length and quality during adolescence were associated with the risk of an MS diagnosis, which increased in tandem with fewer hours and poorer quality of sleep.

Compared with sleeping 7-9 hours/night during the [teenage years](#), [short sleep](#) was associated with a 40% heightened risk of subsequently developing MS, after accounting for a range of potentially influential factors, including BMI at age 20 and smoking.

But long sleep, including at weekends or on free days, wasn't associated with a heightened MS risk. Similarly, subjectively assessed poor sleep quality during this period was associated with a 50% heightened risk of developing the condition.

Changes in sleep timing between work/school days and weekends/free days didn't seem to be influential.

The findings remained similar when those who worked shifts were excluded.

The researchers caution that their findings should be interpreted cautiously on account of potential reverse causation—whereby poor sleep could be a consequence of neurological damage rather than the other way around. But they point out that too little and poor sleep quality is known to affect immune pathways and inflammatory signaling, while

the body clock is also involved in regulating the immune response.

Additionally, insufficient or disturbed sleep is common among teens, a phenomenon that is partly explained by physiological, psychological, and [social changes](#) during this age period, they explain.

"Associations have also been demonstrated between social media use and sleep patterns. Availability of technology and [internet access](#) at any time contributes to insufficient sleep among adolescents and represents an important public health issue," they add.

"Educational interventions addressed to adolescents and their parents regarding the negative health consequences of insufficient sleep are of importance. Insufficient sleep and low sleep quality during adolescence seem to increase the risk of subsequently developing MS. Sufficient restorative [sleep](#), needed for adequate immune functioning, may thus be another preventive factor against MS," the researchers conclude.

More information: Insufficient sleep during adolescence and risk of multiple sclerosis: results from a Swedish case control study, *Journal of Neurology Neurosurgery & Psychiatry* (2023). [DOI: 10.1136/jnnp-2022-330123](#)

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