

- Brain—diseases

Too little sleep a dementia risk?

New study suggests sleeping six hours or less in one's 50s and 60s may increase the likelihood of developing dementia

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Could getting too little sleep increase your chances of developing dementia?

For years, researchers have pondered this and other questions about how sleep relates to cognitive decline. Answers have been elusive because it is hard to know if insufficient sleep is a symptom of the brain changes that underlie dementia – or if it can actually help cause those changes.

Now, a large new study reports some of the most persuasive findings yet to suggest that people who do not get enough sleep in their 50s and 60s may be more likely to develop dementia when they are older.

The research, published on Tuesday last week in the journal *Nature Communications*, has limitations but also several strengths. It followed nearly 8,000 people in Britain for about 25 years, beginning when they were 50 years old.

It found that those who consistently reported sleeping six hours or less on an average weeknight were about 30 per cent more likely than people who regularly got seven hours of sleep (defined as “normal” sleep in the study) to be diagnosed with dementia nearly three decades later.

Dr Kristine Yaffe, a professor of neurology and psychiatry at the University of California, San Francisco, who was not involved in the study, said: “It would be really unlikely that almost three decades earlier, this sleep was a symptom of dementia, so it’s a great study in providing strong evidence that sleep is really a risk factor.”

Pre-dementia brain changes such as accumulations of proteins associated with Alzheimer’s are known to begin 15 to 20 years before people exhibit memory and thinking problems, so sleep patterns within that time-frame could be considered an emerging effect of the disease.

That has posed a “chicken or egg question of which comes first, the sleep problem or the pathology”, said Dr Erik Musiek, a neurologist and co-director of the Centre on Biological Rhythms and Sleep at Washington University in St Louis, who was not involved in the new research.

“I don’t know that this study necessarily seals the deal, but it gets closer because it has a lot of people who were relatively young. There’s a decent chance that they are capturing people in middle age before they have Alzheimer’s disease pathology or plaques and tangles in their brain.”

Drawing on medical records and other data from a prominent study of British civil servants called Whitehall II, which began in the mid-1980s, researchers tracked how many hours 7,959 participants said they slept in reports filed six times between 1985 and 2016. By the end of the study, 521 people had been diagnosed with dementia at an average age of 77.

The team was able to factor out several behaviours and characteristics that might influence people’s sleep patterns or dementia risk, said an author of the study, Dr Severine Sabia, an epidemiologist at French public-health research centre Inserm. Those included smoking, alcohol consumption, how physically active people were, body mass index, fruit and vegetable consumption, education level, marital status and conditions such as high blood pressure, diabetes and cardiovascular disease.

“The study found a modest, but I would say somewhat important, association of short sleep and dementia risk,” said Associate Professor Pamela Lutsey of epidemiology and community health at the University of Minnesota, who was not involved in the research.

“Short sleep is very common and because of that, even if it’s modestly associated with dementia risk, it can be important at a societal level. Short sleep is something we have control over, something you can change.”

Still, the study had limitations that prevent it from proving that inadequate sleep can help cause dementia.

Most of the sleep data was self-reported, a subjective measure that is not always accurate, experts said.

“It’s always difficult to know what to conclude from these kinds of studies,” wrote Dr Robert Howard, a professor of old age psychiatry at University College London. “Insomniacs – who probably don’t need something else to ruminate about in bed shouldn’t worry that they are heading for dementia unless they get off to sleep immediately.”

There are compelling scientific theories about why too little sleep might exacerbate the risk of dementia, especially Alzheimer's.

Studies have found that cerebrospinal fluid levels of amyloid, a protein that clumps into plaques in Alzheimer's, "go up if you sleepdeprive people", Dr Musiek said.

Other studies of amyloid and another Alzheimer's protein, tau, suggest that "sleep is important for clearing proteins from the brain or limiting the production", he added.

One theory is that the more people are awake, the longer their neurons are active and the more amyloid is produced, he said.

Another theory is that during sleep, fluid flowing in the brain helps clear out excess proteins, so inadequate sleep means more protein build-up, he added.

Some scientists also think getting sufficient time in certain sleep phases may be important for clearing proteins.

Prof Lutsey said too little sleep might also function indirectly, fuelling conditions that are known dementia risk factors. "Think of someone who is staying up too late and having snacks, or because they get very little sleep, they have low motivation for physical activity. That could predispose them to obesity and then things like diabetes and hypertension that have been robustly linked to dementia risk."

So, if short sleep is a culprit, how can people get more zzz's?

"In general, sleeping pills and a lot of other things don't give you as deep of a sleep," Dr Yaffe said. And "we really want the deep sleep because that seems to be the time when things get cleared out and it's more restorative."

She said naps are okay to catch up on missed sleep, but getting a good night's sleep should make naps unnecessary. People with sleep disorders should consult sleep specialists, she said.

For others, Prof Lutsey said, having a regular sleep schedule, avoiding caffeine and alcohol before bedtime and removing phones and computers from the bedroom are among the Centres for Disease Control and Prevention's "sleep hygiene" guidelines.

But much about sleep remains puzzling.

The new study "provides a pretty strong piece of evidence that sleep is important in middle age", Dr Musiek said. "But we still have a lot to learn about that and how the relationship actually occurs in people and what to do about it."