Short and long sleep, and sleep disturbances associated with increased risk of dementia and lung cancer

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Difficulties in initiating or maintaining sleep at middle-age are associated with an increased risk of dementia, according to a new study from the University of Eastern Finland. The 20-year follow-up study was conducted among 2,682 men participating the Kuopio Ischaemic Heart Disease Study. The study participants were aged 42–60 years at the baseline examinations in 1984–1989. Shorter or longer sleep than 7–7.5 hours related independently with an increased risk of lung cancer after health behaviour, such as smoking, was taken account of. Additionally, a relationship between higher serum copper levels and short sleep duration was observed.

During sleep, the body's energy is allocated to cellular repair, immune functions, neuronal plasticity of the brain, and memory consolidation. The need of sleep is individual and differs during the lifespan. For adults, the recommended sleep duration is 7 to 9 hours. Insufficient sleep, sleep-disordered breathing, insomnia or disruptions in the sleep-wake rhythm can lead to excessive daytime tiredness. Acute effects of poor sleep include difficulties in cognitive tasks, increased need for energy, increased cellular stress, as well as lower heart rate and body temperature. Long-term sleep disturbances both precede and co-occur with chronic diseases, such as cardiovascular diseases, cancer and dementia. Furthermore, an increased mortality risk is observed in individuals with short or long sleep duration.

The underlying factors regarding the association between sleep duration and an increased risk of lung cancer concern low-grade inflammation and disruptions in melatonin secretion. These factors contribute to the pathogenesis of cancer and acceleration of tumour growth. Low-grade inflammation is associated with sleep duration and zinc and copper levels, which contribute to pro-oxidative processes and thereby may increase the risk of cardiovascular diseases and cancer. An association between sleep disturbances and dementia may result from structural changes in the brain, low-grade inflammation, and disruptions of neurogenesis.

More information: Maria K Luojus et al. Self-reported sleep disturbance and incidence of dementia in ageing men, *Journal of Epidemiology and Community Health* (2017). DOI: 10.1136/jech-2016-207764

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