

Eating more fruits and vegetables may lead to optimal sleep duration

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Good health depends on a healthy diet and sufficient exercise and sleep. There are clear associations among these components; for example, good nutrition provides energy for exercise, and many people report that getting enough exercise is important to their ability to get enough sleep. So how might nutrition affect sleep?

A new study looks at the connection between fruit and [vegetable intake](#) and sleep duration. The research, by a team from Finland's University of Helsinki, National Institute for Health and Welfare, and Turku University of Applied Sciences, is [published](#) in *Frontiers in Nutrition*.

Why sleep is important and how it works

Sleep gives our bodies the chance to rest and recover from wakeful activity. Our hearts, [blood vessels](#), muscles, cells, immune systems, [cognitive abilities](#), and memory-making abilities depend on regular, healthy sleep for optimal functioning, and a [2019 study](#) suggests that sleep is important for repairing DNA damage that occurs during wakefulness.

Restful sleep takes place in 3–5 nightly cycles, each lasting 90–120 minutes, on average. During each cycle, we begin with a stage of non-rapid eye movement (REM) sleep, then move through two increasingly deeper periods of non-REM sleep before backing out of them. Our non-REM sleep becomes lighter and lighter until we reach a REM stage, after which a new cycle begins, or we awaken. Adults should aim to sleep from 7 to 9 hours per night.

However, recent studies show that insomnia and shorter sleep duration is becoming more common among adults. Due to factors such as stress, consumption of fast foods, and sedentary lifestyles, sleep deprivation is emerging as a public health concern, linked to cardiovascular disease, diminished cognitive ability, and an increase in all-cause mortality.

In this new study, the researchers wanted to explore how sleep duration might affect consumption of fruits and vegetables, and vice-versa. They also investigated the role that individual chronotypes (activity timing preferences, such as morning or evening) might play in dietary choices and sleep duration.

Recommended fruit and vegetable intake for adults

The World Health Organization recommends that people consume at least 400 g of fruits and vegetables daily, while the [most recent advice](#) from the Nordic Council of Ministers recommends a higher intake, encouraging between 500 g and 800 g of "vegetables, fruits, and berries, with half of the consumption coming from vegetables."

However, studies show that adults in many countries don't meet the minimum intake. According to the new research, only 14% of Finnish men and 22% of Finnish women consume the recommended daily minimum of 500 g of berries, fruit, and vegetables.

The research team examined details from the National FinHealth 2017 Study. A total of 5,043 adults, ages 18 and above (55.9% female; mean age = 55 [SD 16.0]), submitted detailed responses to a 134-item questionnaire on the composition and frequency of their usual daily food intake within the most recent 12 months, and reported their chronotypes (tendency to sleep at a certain time of day) and typical sleep duration within a 24-hour period.

From these responses, three sleep duration categories emerged: short (less than 7 hours/day; 21%), normal (7–9 hours/day; 76.1%), and long (9+ hours/day; 2.9%). Short sleepers had a mean sleep duration of 6 hours; for normal sleepers the mean duration was 7.7 hours, and for long sleepers the mean duration was 10.1 hours. A majority of the participants (61.7%) categorized themselves as intermediate chronotypes, while 22.4% specified that they were morning types, and 15.9% identified as evening types.

The researchers included chronotypes as a study covariate, noting that many studies have not included them as potential confounders. However, some research shows that they may affect dietary behaviors. The

researchers state, "Studies have shown that evening chronotypes are often associated with unhealthy dietary behaviors, including a propensity for obesity-related eating habits."

Findings: Both quantity and specific fruit and vegetable choices matter

Among the notable results, normal sleepers showed a higher intake than both short and long sleepers of fruits and vegetables across all fruit and vegetable sub-groups. However, intake of different types of fruits and vegetables yielded varying results.

The research explains, "In the vegetable sub-group, significant differences were observed in the consumption of green leafy vegetables, root vegetables and fruit vegetables (e.g., tomatoes, cucumbers), between normal and [short sleepers](#).

"Similarly, for normal vs. long sleepers, significant differences were again noted for green leafy vegetables and fruit vegetables. However, other fresh and canned vegetables such as cabbage, mushroom, onion, peas and beans did not exhibit significant differences.

"In the fruit sub-groups, a significant mean difference was observed in the consumption of berries and other fresh and canned fruits between normal and short sleepers. Conversely, for normal vs. long sleepers, the only significant difference was observed in apple consumption."

A relationship between fruit/vegetable intake and sleep duration categories, but not chronotypes

The researchers also observed that categories of sleep duration could indicate, to a minor extent, expected levels of fruit and vegetable intake.

This aligns with results from a [2023 study](#) in the *International Journal of Behavioral Nutrition and Physical Activity* that found decreased fruit and vegetable intake among adolescents on the day following a night of short sleep duration.

This new study also found that chronotypes play a minimal role in the connection between intake of fruits and vegetables and sleep duration. The 2023 study had found no linkage between fruit and vegetable intake and chronotypes.

The researchers observe that overall, decreased intake of certain fruits and vegetables is linked to long and short sleep duration. They recommend more specific work in this area for improved insight.

"Targeted interventions focusing on [fruit and vegetable] sub-groups with pronounced associations, such as green leafy vegetables and [fruit](#) vegetables can lead to impactful behavior change. Additional research, particularly longitudinal studies, is needed to better understand these associations and their public health implications, especially in regions with similar population structures and dietary patterns to Finland," they conclude.

More information: Anupa Thapa et al, Consumption of fruits and vegetables and its association with sleep duration among Finnish adult population: a nationwide cross-sectional study, *Frontiers in Nutrition* (2024). [DOI: 10.3389/fnut.2024.1319821](https://doi.org/10.3389/fnut.2024.1319821)

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