

Why does lack of sleep affect us differently? Study hints it may be in our genes

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Ever wonder why some people breeze along on four hours of sleep when others can barely function? It may be in our genes, according to new research and an accompanying editorial published in the October 26, 2010, print issue of *Neurology*, the medical journal of the American Academy of Neurology.

The study looked at people who have a gene variant that is closely associated with narcolepsy, a sleep disorder that causes excessive daytime sleepiness. However, having the gene variant, called DQB1 *0602, does not mean that a person will develop narcolepsy; depending on the population, 12 to 38 percent of those with the variant do not have the sleep disorder and are considered healthy sleepers. Also, people without the gene variant can develop narcolepsy, though this is less common.

For the study, 92 healthy adults without the gene variant were compared to 37 healthy adults who had the gene variant but did not have any sleep disorders. All of the participants came to a sleep laboratory. For the first two nights, they spent 10 hours in bed and were fully rested. The next five nights they underwent chronic partial sleep deprivation, also known as sleep restriction, where they were allowed four hours in bed per night. During the remaining time, lights were kept on and participants could read, play games, or watch movies to help them stay awake.

Researchers measured their sleep quality and self-rated sleepiness and tested their memory, attention and ability to resist sleep during the

daytime.

The people with the DQB1*0602 gene variant were sleepier and more fatigued while both fully rested and sleep deprived. Their sleep was more fragmented. For example, those with the gene variant woke up on average almost four times during the fifth night of sleep deprivation, compared to those without the gene variant, who woke up on average twice. Those with the gene variant also had a lower sleep drive, or desire to sleep, during the fully rested nights.

Those with the [gene variant](#) also spent less time in deep sleep than those without the variant, during both the fully rested and sleep deprivation nights. During the second fully rested night, those with the variant had an average of 34 minutes in stage three sleep, compared to 43 minutes for those without the variant. During the fifth night of sleep deprivation, those with the variant spent an average of 29 minutes in stage three sleep, compared to 35 minutes for those without the variant.

The two groups performed the same on the tests of [memory](#) and attention. There was also no difference in their ability to resist sleep during the daytime.

"This gene may be a biomarker for predicting how people will respond to [sleep deprivation](#), which has significant health consequences and affects millions of people around the world. It may be particularly important to those who work on the night shift, travel frequently across multiple time zones, or just lose [sleep](#) due to their multiple work and family obligations. However, more research and replication of our findings are needed," said lead study author Namni Goel, PhD, of the University of Pennsylvania School of Medicine in Philadelphia.

Provided by American Academy of Neurology

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