

# Can a midnight snack help shiftworkers?

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Shiftworkers benefit more from a snack than a midnight meal, according to South Australian researchers.

Researchers from the Sleep and Chronobiology Laboratory at the University of South Australia examined whether meal timing could

improve how shiftworkers performed and felt during the evening.

Lead researcher Charlotte Gupta said they observed 44 healthy, non-shift working adults at the University of South Australia Sleep Lab across seven days.

"We put them on a shiftwork schedule and we had them stay awake overnight and sleep during the day," Gupta said.

"We had them do a lot of performance tests and give us ratings on how they were feeling.

"We had three groups: one that was given a big meal during the night, one that had a smaller snack and one that didn't eat."

While Gupta said all three groups received the adequate number of calories during a 24-hour period, the time participants ate their main meal varied.

The Australian Bureau of Statistics shows 1.4 million Australians list shiftwork as their main job, with 15 percent regularly working a night or evening shift.

"In today's 24/7 economy, working the nightshift is increasingly common, with many industries—healthcare, aviation, transport and mining—requiring employees to work around the clock," Gupta said.

"We know that many nightshift workers eat on-shift to help them stay awake, but until now, no research has shown whether this is good or bad for their health and performance.

"This is the first study to investigate how workers feel and perform after eating different amounts of food.

"The findings will inform the most strategic eating patterns on-shift and can hopefully contribute to more alert and better performing workers."

Gupta said the researchers were particularly interested in the participants' level of hunger, gut reaction and sleepiness after eating at 12.30am.

She said participants who had a snack just after midnight felt more awake than the other two groups, were the most satisfied with the amount of food and had the best mental performance.

"They were reacting faster. We had them do a driving simulator and they were driving safer. So, there were less crashes and they were staying in the speed limit with that small snack, opposed to the big meal," she said.

"Those that didn't have any food performed better and more alert than those that had the big meal but the snack group still felt and performed the best."

Participants given the main meal received 30 percent of their required energy intake in one sitting, while those who got the snack received 10 percent of their energy intake. One group were given no food at 12.30am.

Despite performing better after eating a snack, Gupta said people should not try applying the same eating routine to meals during the day.

"We find there is always that post lunch lull in alertness, which is just part of our circadian rhythm. We just feel sleepier at that time of day," she said.

"Having a really big heavy meal can make us feel sleepier, but the body is also primed to be digesting food and it wants to be digesting food and

digesting it during the day.

"But at night when our body isn't fine to be digesting food that's when a snack is better."

The circadian rhythm is a 24-hour cycle that regulates when people sleep, eating habits and digestion, body temperature and other bodily functions.

Gupta said the next step would be to examine what type of snacks are best for shiftworkers.

"We gave people a muesli bar and an apple, which is a fairly healthy snack, but we know that many shiftworkers are limited in what they can buy, or are getting food from vending machines," she said.

"There's also a craving during the middle of the night, when you're working a hard night shift, for chocolate or something a bit more exciting to eat. So, we want to know what the different types of [snack](#) do in how people perform during the night."

Gupta said the study followed research which showed not eating anything at all of an evening was better than having a large meal.

"Telling people not to eat during the [night](#) can be a hard recommendation and is quite restricting, so we wanted to look at whether a small amount of [food](#) would be better," she said.

**More information:** Charlotte C Gupta et al, Subjective Hunger, Gastric Upset, and Sleepiness in Response to Altered Meal Timing during Simulated Shiftwork, *Nutrients* (2019). DOI: 10.3390/nu11061352

Provided by University of South Australia

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