

New study points to another possible correlation between sleep and overall good health

October 28 2019



Jaime Tartar, Ph.D., Nova Southeastern University. Credit: Nova Southeastern University

As if you didn't already have enough to worry about to keep you up at night, a new study indicates that poor sleep can negatively affect your gut microbiome, which can, in turn, lead to additional health issues. Great.

That's at the heart—or gut—of the study just published in *PLoS ONE* that involved several researchers from Nova Southeastern University (NSU.) They wanted to see just how much of a connection there is between what is going on in our insides and how that may impact the quality of sleep we experience.

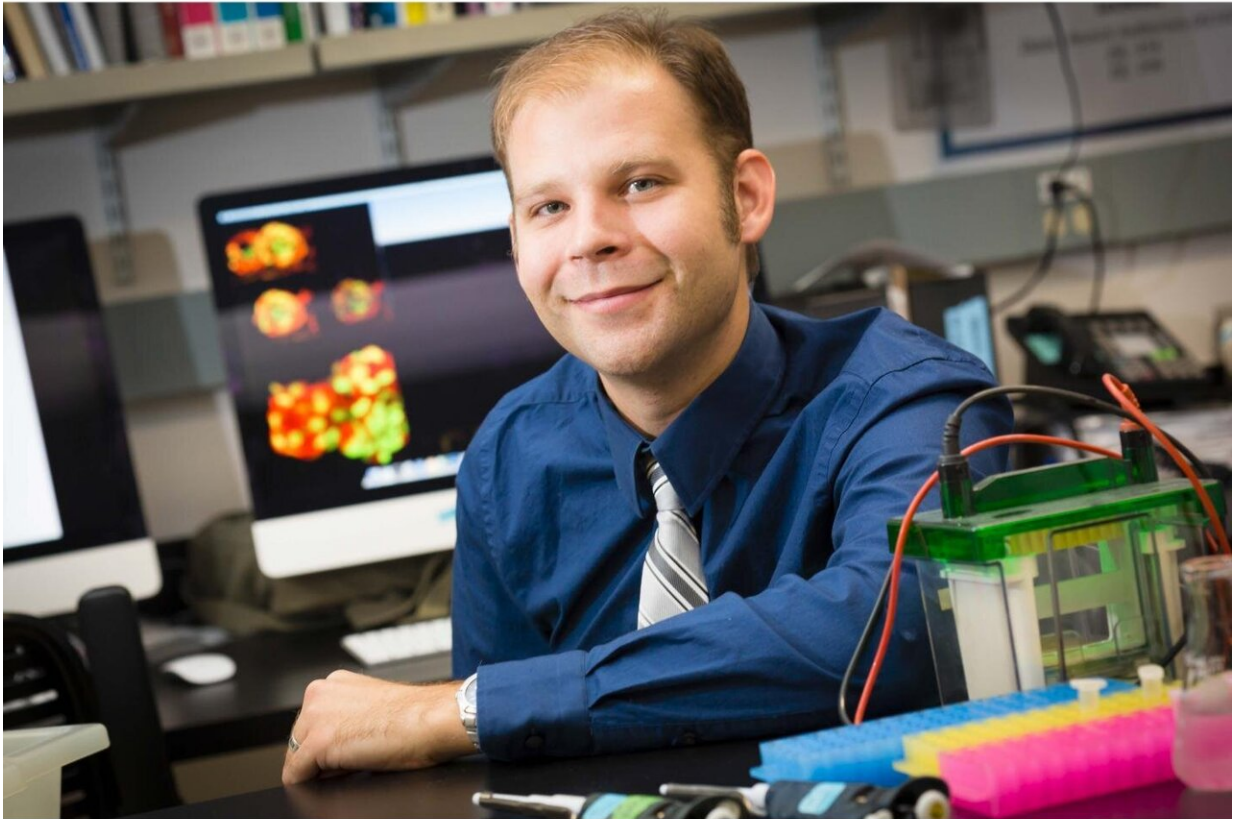
"Given the strong gut-brain bidirectional communication they likely influence each other," said Jaime Tartar, Ph.D., a professor and research director in NSU's College of Psychology who was part of the research team. "Based on previous reports, we think that [poor sleep](#) probably exerts a strong negative effect on gut health/microbiome diversity."

What you may be asking yourself right now is: "what in the world is a gut microbiome?" Simply put—it's all the microorganisms (bacteria, viruses, protozoa and fungi) and their [genetic material](#) found in your gastrointestinal (GI) tract. And yes, we all have these in our GI tract, but not all at the same levels (diversity.) As it turns out, it's this diversity that could be the key.

For this study, subjects wore what Tartar called an "Apple Watch on steroids" to bed, which monitored all sorts of vitals. This way the researchers could determine just how well a night's sleep the subjects got, and then they tested the subjects' gut microbiome. What they found was those who slept well had a more diverse—or "better"—gut microbiome.

Tartar said that gut microbiome diversity, or lack thereof, is associated with other health issues, such as Parkinson's disease and autoimmune

diseases, as well as psychological health (anxiety and depression.) The more diverse someone's gut microbiome is, the likelihood is they will have better overall health.



Robert Smith, Ph.D., Nova Southeastern University. Credit: Nova Southeastern University

"We know that sleep is pretty much the 'Swiss Army Knife of health,'" Tartar said. "Getting a good night's sleep can lead to improved health, and a lack of sleep can have detrimental effects. We've all seen the

reports that show not getting proper sleep can lead to short term (stress, psychosocial issues) and long-term (cardiovascular disease, cancer) health problems. We know that the deepest stages of sleep is when the brain 'takes out the trash' since the brain and gut communicate with each other. Quality sleep impacts so many other facets of human [health](#)."

Tartar's area of research focuses on the mechanisms and consequences of acute and chronic stress in humans and the impact of normal sleep and sleep deprivation on emotion processing and physiological functioning.

So what determines someone's gut microbiome? According to Robert Smith, Ph.D., an associate professor and research scientist at Nova Southeastern University (NSU) Halmos College of Natural Sciences and Oceanography, who is also a member of the research team, there are a couple of factors that come into play.

One is genetics—some people are predisposed at a genetic level to have a more diverse gut microbiome than their friends and neighbors. Another factor is drugs—certain medications, including antibiotics, can have an impact on the diversity of your gut microbiome. He also said that your diet plays a factor as well.

Smith said that their team, which included colleagues from Middle Tennessee State University, examined the association between sleep, the immune system and measures of cognition and emotion. He said understanding how these parts of human physiology work may lead to a better understanding of the "two-way communication" between the person and their gut [microbiome](#), and could lead to novel sleep intervention strategies.

"The preliminary results are promising, but there's still more to learn," Smith said. "But eventually people may be able to take steps to

manipulate their [gut microbiome](#) in order to help them get a good night's sleep."

More information: Robert P. Smith et al. Gut microbiome diversity is associated with sleep physiology in humans, *PLOS ONE* (2019). [DOI: 10.1371/journal.pone.0222394](#)

Provided by Nova Southeastern University

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