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## **Just 2 days of sleep deprivation complicates intestinal conditions!**

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A published study has shown that the balance of the intestinal microbiota changes due to lack of sleep in just 2 days and it may trigger various diseases.

It is recommended that we sleep at least 7 hours in the night time. However, more than one third of Americans seem to be unable to obtain a sleeping time suitable for this recommended time, according to the results of research published in the Centers for Disease Control and Prevention in the US.

Japan is known as a country having a very short sleeping time among developed countries. According to the survey done by the Organization for Economic Co-operation and Development (OECD) in 2009, the average of daily sleeping time of Japanese people was 7 hours and 50 minutes (according to the preliminary calculation with the survey of NHK made in 2010, it was 7 hours and 14 minutes). This result suggests that the average daily sleeping time of Japanese people is one hour shorter than the time for French people who have the longest average sleeping time in this survey, and is the second shortest after Korea. Furthermore, the average sleeping time among people who are in their 40s and 50s was very short between 6 to 7 hours.

Such sleep deprivation elevates the risks of developing diseases including hypertension, stroke, heart disease, obesity, type 2 diabetes, etc.

Previous studies have shown that when the microbial environment in the intestines deteriorates, it affects obesity and type II diabetes. However, it was still unclear how sleep deprivation is related to these diseases via the intestinal bacteria.

According to the study from an Israeli research team published in Cell magazine in 2014, the state of intestinal bacteria in humans and mice changes under the influence of the body clock of the host (humans and mice). They predicted that if the internal clock of host is disturbed, the rhythm of the intestinal bacteria is also disturbed which may cause obesity and metabolic abnormality which in turn develop diseases.

A newly published study has recorded the weight change of 9 male subjects in order to further understand the alternations in intestinal microbiota and metabolism in response to insomnia.

Subjects were divided into 2 groups: a normal group that sleep approximately 8 hours a day and a group that was partially deprived of 4 hours of their sleeping time for 2 days. Based on the comparison between 2 groups under the condition of providing the same contents of meal and eating time, they could verify the fact that the change of sleeping time in a short period affected the intestinal bacteria.

As a result, shortening the sleeping time for 2 days did not affect the diversity of intestinal bacteria, but changed their formation with an increment of Firmicutes and a decrement of Bacteroidetes. This formation was similar to the intestinal balance of obese people, based on previously published research studies.

In addition, the group whose sleeping time was partially deprived, showed a decrease of the susceptibility to insulin, which is the hormone regulating blood glucose level, by 20%. However, there was a note indicating that the change of the susceptibility to insulin was not linked to the alternation of intestinal bacteria. This test was also conducted only with male subjects. Therefore, they are still unknown what kind of results will come up if the same test is conducted with women who are susceptible to hormonal balances.

It has not yet been clarified how sleep reduction affects to the intestinal microbiota in the long term. However, the study finds a risk where the balance of intestinal bacteria may be adversely affected even with just 2 days of insufficient sleep. The accumulation of sleep deprivation may destroy the balances of intestinal microbiota which triggers chronic metabolic abnormalities and possibly raises the risk of obesity and lifestyle diseases.

We should strive for health and well-being not only by caring about what we eat, but also having sufficient sleep and rest to balance the intestinal conditions in order to adjust the rhythm of the body.

**References:**

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