

Home Altitude Tied to Obesity Risk

Americans who live where the air is thinnest are less likely to be obese than those in low-lying areas, according to a new study.

The results don't mean people should move to higher altitudes to lose weight, said study lead author Dr. Jameson Voss. But the work suggests that elevation may be part of obesity puzzle.

Based on data for more than 400,000 people in the U.S., researchers found Americans living closest to sea level were four to five times more likely to be obese, compared to people who live well above sea level in Colorado.

"I was surprised by the magnitude of the effect... I wasn't expecting such a consistent pattern as what was emerging," said Voss, from Uniformed Services University of the Health Sciences in Bethesda, Maryland.

About 36 percent of American adults are obese, according to the U.S. Centers for Disease Control and Prevention (CDC). Rates vary across the country, however, with a higher percentage of obese adults in southern states. Western states, such as Nevada and Colorado, report the fewest obese adults.

The reasons behind the difference in obesity prevalence between states are unclear, according to Voss and his colleagues, who published their findings in the *International Journal of Obesity*.

One possible explanation, they write, is differences in elevation, which can affect appetite hormones, growth and how many calories the body burns.

Cynthia Beall, who researches how the body adapts to high altitudes but was not involved with the new study, said it's common for travelers to high elevations to burn more calories in their first few weeks.

"That person would probably lose some weight during the course of a three week vacation ... It would in fact be an interesting question whether that would sustain," said Beall, a professor of anthropology at Case Western Reserve University in Cleveland.

To examine obesity rates at different altitudes, the researchers combined information from several databases, including a telephone health survey of 422,603 Americans from 2011.

The researchers had information on 236 people who lived at the highest altitude of at least 3,000 meters (about 9,800 feet) above sea level. Those people all lived in Colorado and tended to smoke less, eat healthier and exercise more.

The researchers also had information on 322,681 people who lived in the lowest altitude range—less than 500 m (about 1,600 ft) above sea level.

After taking into account other factors that could influence the results, the researchers found adults living in the lowest altitude range had a Body Mass Index (BMI)—a measurement of weight in relation to height — of 26.6.

That compared to people who lived in the highest altitude range, who had a BMI of 24.2.

A healthy BMI falls between 18.5 and 24.9, and obesity is a score of 30 or more, according to the CDC.

Voss and his colleagues also found a drop in the risk of a person being obese was tied to every 200 m (about 660 ft) increase in elevation.

"It provides some evidence that these associations persist over the long term," Voss said.

Retirement Plays a Role?

But Beall cautioned that the new findings don't prove the higher altitude prevented people from being obese.

For example, she said that other researchers have found that people living in Colorado's higher altitudes move to lower altitudes when they get sick with chronic diseases.

Voss said that he and his colleagues tried to adjust for retirement and population loss, but they write that they were not able to see how long each person actually lived at a certain elevation.

Beall told Reuters Health that it would be interesting to take a closer look at the people living in Colorado, and to see whether their obesity prevalence would change if they move to a lower altitude.

"I know from my own self that when I come back to my own activities and diet, I come back to my own weight too," she said.