

Providing bite count feedback helps lower calorie intake

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A subject is outfitted with a wearable bite count feedback device. Credit: Clemson University

New wearable technology is helping to provide novel weight loss tools. One way is by providing bite count feedback, which allows users to keep track of the number of bites during a meal. Researchers at Clemson University wanted to analyze how providing bite count feedback might influence eaters in different situations and determine its efficacy in the presence of environmental cues linked to overeating. The study found that people who received bite count feedback ate less and reduced their overall intake during a meal. The full results are published in the *Journal of the Academy of Nutrition and Dietetics*.

Investigators recruited young adults to consume a meal in the laboratory. In the first round, some subjects were outfitted with bite count feedback devices and given either a small or large plate. The group that received bite count feedback significantly reduced their intake regardless of plate size, although, those given larger plates still consumed more than those given smaller plates. Larger plate sizes have been positively linked to overconsumption. While providing bite count feedback helped mitigate the known influence of plate size, it was not enough to overcome it completely.

"It was found that the presence of bite count feedback led to a reduction in overall consumption. This finding is consistent with current literature that shows feedback on consumption leads people to consume less," explained Phillip W. Jasper, PhD candidate in Human Factor Psychology, Department of Psychology, Clemson University. "It was found that this type of feedback does not eliminate the effect of environment cues such as plate size. Individuals may eat less when they receive bite count feedback, but feedback alone may not be sufficient in

terms of helping them to take an 'appropriate' or 'normal' number of bites, particularly in the presence of large plates."

In the second round, subjects were given either a low-bite goal (12 bites) or a high-bite goal (22 bites) for their meal. Interestingly, both groups met their goals, but the low-bite group took bigger bites, which resulted in both groups having comparable levels of consumption. This revealed a complex relationship between bite count goals and [energy intake](#). "It is possible that this compensatory behavior is intentional, a reaction to a perceived limitation such that participants believed 12 bites to be too restricting of a goal," noted Mr. Jasper. "In other words, in an effort to reach satiety while not surpassing the given goal, participants felt as though they needed to take larger bites than they typically would."

In order to effectively manage creating a realistic bite goal without making people feel like they need to overcompensate with bigger bites, investigators suggest helping patients establish a baseline level of bites across all meals plus snacks before setting any bite number goals. Following a thorough evaluation of typical behavior, practitioners can then work with patients to set personalized bite goals that are just slightly under their average, thus helping them to reduce intake through fewer bites without feeling like they have to overcompensate. "It is possible to reduce the number of bites and in an appropriate way so that individuals don't even know they're reducing their bites and their caloric intake. Over the timespan of an effective diet, that delta in energy intake really has a strong impact on overall weight gain and weight change," added Mr. Jasper.

Bite count feedback is an excellent weapon against the so-called "mindless margin," or the amount people eat without really thinking about it. By providing live insight into the number of bites, people will be more likely to stop eating when appropriately full and be more aware of what they're eating. "We want people to be mindful of what they're

doing. That's what's really important. We want them to be mindful of their eating, and bite count feedback is a way to keep people mindful of their eating behaviors," explained Mr. Jasper.

New approaches such as providing bite count feedback can help people concerned with overweight and obesity eat less by providing them with external indicators of their energy intake. Knowing the number of bites is much less abstract than knowing the number of calories. "Self-monitoring is one of the cornerstones of successful weight loss," concluded Mr. Jasper. "By giving people bite count feedback, which is a good indicator for energy intake, they know how much they've had to eat or drink, they know their intake so they can better adjust their energy expenditure behaviors."

More information: "Effects of Bite Count Feedback from a Wearable Device and Goal-Setting on Consumption in Young Adults," *Journal of the Academy of Nutrition and Dietetics*, [DOI: 10.1016/j.jand.2016.05.004](https://doi.org/10.1016/j.jand.2016.05.004)

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