Medical Xpress

# Diet tracking: How much is enough to lose weight?

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Keeping track of everything you eat and drink in a day is a tedious task that is tough to keep up with over time. Unfortunately, dutiful tracking is a vital component for successful weight loss, however, a new study in

*Obesity* finds that perfect tracking is not needed to achieve significant weight loss.

Researchers from UConn, the University of Florida, and the University of Pennsylvania tracked 153 weight loss program participants for six months where users self-reported their food intake using a commercial digital weight loss program. The researchers wanted to see what the optimal thresholds were for diet tracking to predict 3%, 5%, and 10% weight loss after six months.

"We partnered with WeightWatchers, who was planning on releasing a new Personal Points program, and they wanted to get empirical data via our clinical trial," says co-author and Department of Allied Health Sciences Professor Sherry Pagoto.

Pagoto explains that the new program takes a personalized approach to assigning points including a list of zero-point foods to eliminate the need for calculating calories for everything,

"Dietary tracking is a cornerstone of all weight loss interventions, and it tends to be the biggest predictor of outcomes. This program lowers the burden of that task by allowing zero-point foods, which do not need to be tracked."

Researchers and developers are seeking ways to make the tracking process less burdensome, because as Pagoto says, for a lot of programs, users may feel like they need to count calories for the rest of their lives: "That's just not sustainable. Do users need to track everything every single day or not necessarily?"

With six months of data, Assistant Professor in the Department of Allied Health Sciences Ran Xu was interested to see if there was a way to predict outcomes based on how much diet tracking participants did. Ran

Xu and Allied Health Sciences Ph.D. student Richard Bannor analyzed the data to see if there were patterns associated with weight loss success from a data science perspective.

Using a method called receiver operating characteristics (ROC) curve analysis they found how many days people need to track their food to reach clinically significant weight loss.

"It turns out, you don't need to track 100% each day to be successful," says Xu. "Specifically in this trial, we find that people only need to track around 30% of the days to lose more than 3% weight and 40% of the days to lose more than 5% weight, or almost 70% of days to lose more than 10% weight. The key point here is that you don't need to track every day to lose a clinically significant amount of weight."

This is promising since Pagoto points out that the goal for a six-month weight loss program is typically 5% to 10%, a range where health benefits have been seen in clinical trials.

"A lot of times people feel like they need to lose 50 pounds to get healthier, but actually we start to see changes in things like blood pressure, lipids, cardiovascular disease risk, and diabetes risk when people lose about 5-to-10% of their weight," says Pagoto. "That can be accomplished if participants lose about one to two pounds a week, which is considered a healthy pace of weight loss."

Xu then looked at trajectories of diet tracking over the six months of the program.

The researchers found three distinct trajectories. One they call high trackers, or super users, who tracked food on most days of the week throughout six months, and on average lost around 10% of their weight.

However, many participants belonged to a second group that started tracking regularly, before their tracking gradually declined over time to, by the four-month mark, only about one day per week. They still lost about 5% of their weight.

A third group, called the low trackers, started tracking only three days a week, and dropped to zero by three months, where they stayed for the rest of the intervention. On average this group lost only 2% of their weight.

"One thing that is interesting about this data is, oftentimes in the literature, researchers just look at whether there is a correlation between tracking and overall weight loss outcomes. Ran took a data science approach to the data and found there is more to the story," Pagoto says. "Now we're seeing different patterns of tracking. This will help us identify when to provide extra assistance and who will need it the most."

The patterns could help inform future programs which could be tailored to help improve user tracking based on which group they fall into. Future studies will dig deeper into these patterns to understand why they arise and hopefully develop interventions to improve outcomes.

"For me, what's exciting about these digital programs is that we have a digital footprint of participant behavior," says Xu. "We can drill down to the nitty-gritty of what people do during these programs. The data can inform precision medicine approaches, where we can take this data science perspective, identify patterns of behavior, and design a targeted approach."

Digitally delivered health programs give researchers multitudes of data they never had before which can yield new insights, but this science requires a multidisciplinary approach.

"Before, it felt like we were flying in the dark or just going by anecdotes or self-reported measures, but it's different now that we have so much user data. We need data science to make sense of all these data. This is where team science is so important because clinical and data scientists think about the problem from very different perspectives, but together, we can produce insights that neither of us could do on our own. This must be the future of this work," says Pagoto.

Xu agrees: "From a data science perspective, machine learning is exciting but if we just have machine learning, we only know what people do, but we don't know why or what to do with this information. That's where we need clinical scientists like Sherry to make sense of these results. That's why team science is so important."

No longer flying in the dark, these multi-disciplinary teams of researchers now have the tools needed to start tailoring programs even further to help people achieve their desired outcomes. For now, users of these apps can be assured that they can still get significant results, even if they miss some entries.

**More information:** Ran Xu et al, How much food tracking during a digital weight-management program is enough to produce clinically significant weight loss?, *Obesity* (2023). DOI: 10.1002/oby.23795

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