

# STAT

## Can high-tech plates and silverware help patients manage disease?

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Attention is turning to the plates, utensils, and other tools that are used to serve food, as a way of managing disease. *Kim Jae-Hwan/AFP/Getty Images*

The lowly plate and humble utensil are getting high-tech upgrades to become tools for people watching their weight or managing diseases like Alzheimer's, Parkinson's, and cancer.

There are dishes that could send you smartphone alerts reminding you to use them when you enter the kitchen. Utensils that stabilize your food even as your hand shakes. Cups and spoons that aim to zap your taste buds to intensify flavor. And plates that purport to turn eating healthy into a game.

The idea that plating affects the way we experience food, long exploited by high-end restaurants, has recently made its way into hospitals and hospices. Now, a growing number of academic researchers and entrepreneurs are designing dishes and cutlery to manage medical conditions or improve overall health.



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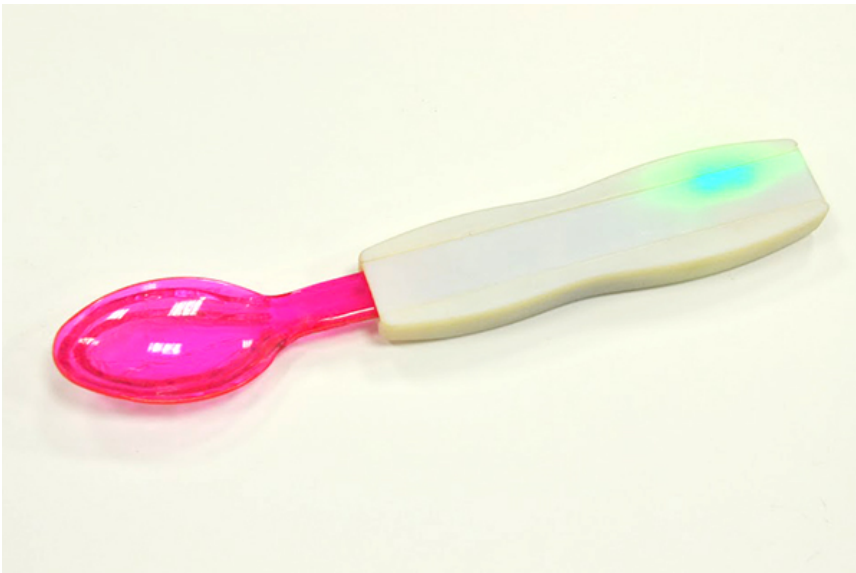
[Food fight erupts as top nutritionists gather to define healthy eating](#) <sup>1</sup>

“We’ve moved away from the round white plate as the only thing that food can be served on,” said Charles Spence, an experimental psychologist at the University of Oxford who studies how taste is influenced by the other senses.

That notion is attracting interest and funding from some high-profile places. The prime example: [Verily](#)<sup>2</sup>, the life sciences unit of Google’s parent company, last year acquired a utensil technology that has also attracted more than \$800,000 in funding from the National Institutes of Health.

But high-tech fixes can come with a comparatively high price tag. Sarah Dulaney, a nurse coordinator at the University of California, San Francisco, who advises people with dementia and their caregivers, said she favors solutions that are simple, economical, and fit into existing habits and routines. “The goal is to preserve dignity and independence, and you want to have the least threshold to cross to maintain that,” she said.

Here, some of the most intriguing approaches to health-centric plateware and silverware, and the at-home solutions that may accomplish a similar goal:



A Taste+ spoon *Nimesha Ranasinghe*

## Restoring diminished taste

Although the sense of taste naturally declines with age, its loss can be particularly acute in patients with Parkinson’s disease or dementia. People undergoing chemotherapy treatments can also have their taste buds damaged or be dogged by a metallic taste, making it difficult to enjoy meals and unpleasant to use metal silverware.



3

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[Sodium-rich diets can cause damage beyond high blood pressure](#)<sup>3</sup>

Researchers at the National University of Singapore, however, are working on a potential solution. They’ve developed prototypes for a spoon and a cup branded as Taste+ that aim to apply electric pulses

to the tongue while you eat or drink, generating sour, bitter, or salty taste sensations. They're working on manufacturing the spoon and hope to study it in people with dementia and on a low-sodium diet in Singaporean hospitals. If that succeeds, they'll manufacture the cup and other utensils, too, according to the project's lead Nimesha Ranasinghe.

The Sant Joan de Déu children's hospital in Barcelona has a grant to experiment with plateware, with the help of Spence, to enhance perceptions of flavor for patients undergoing chemotherapy, among other interventions.

For now, cancer patients looking for a quick fix at home can use plastic or non-metal cutlery to avoid the unpleasant aftertaste of metallic silverware. Beyond silverware choices, dementia patients and their caregivers can use sweeteners and fatty condiments like butter and peanut butter to make food taste better, Dulaney said.



A Yumit plate that can weigh how much food is left. *Yumit*

## Preventing undereating

Undereating can be a health risk for a variety of groups. Elderly patients with conditions that impair their cognition or reduce their appetite tend not to eat enough. And on the other side of the spectrum, otherwise healthy kids who are picky about their food might also not be getting enough of certain food groups.

For children, a high-tech plate still in development called [Yumit](#)<sup>4</sup> aims to gamify the usual slog of finishing dinner. The plate, designed by Argentinian firm Wunderman, can weigh, in real time, how much food is left — and give kids positive feedback in the form of LEDs that change color as they take bites. Parents can get detailed analytics via an app on how much and how quickly the plate was cleared, while kids get rewarded with virtual points that can be used to unlock smartphone games.

In the United Kingdom, the Salisbury District Hospital has tried to encourage their elderly patients to eat more a different way: using the psychology of color. A 2013 study found that patients who were served on blue plates ate nearly a third more food than those served on the standard white ones.



That's an idea that a product called [Eatwell](#)<sup>5</sup> is trying to capitalize on. The dining set created by industrial designer Sha Yao uses bright primary colors in an effort to stoke the appetites of dementia patients. Eatwell has [raised](#)<sup>6</sup> more than \$100,000 on the crowdfunding site Indiegogo, where prices for preorders range from \$55 to \$110.

Of course, you don't have to buy Eatwell's set to take advantage of this principle. Any brightly-colored plate in your cabinet will do. Dulaney points out that giving dementia patients small plates with small servings can also make a meal seem more manageable. And beyond just plateware design, reducing clutter, turning off the television, and creating a social eating environment can go a long way in getting patients to eat more.



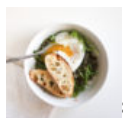
This spoon from Liftware can counteract hand tremors. *Liftware*

## Preventing spills

Hand tremors from Parkinson's disease, diminished spatial reasoning from dementia, and gripping problems from arthritis or stroke can cause patients to topple cups and drop food. That can mean a loss of eating independence and a skipping of meals.

A high-tech spoon called [Liftware](#)<sup>7</sup> (\$295) is an attempt at solving this issue for Parkinson's patients. The device aims to use sensors and motors to detect and counteract hand tremors, preventing food from falling. It's been available to customers for about two years now, first developed by a San Francisco startup called Lift Labs and now owned by Verily.

Eatwell, the colorful dining set for patients with dementia, also seeks to prevent spills by way of hard-angled bowls and spoons, rubber-based cups, and slip-resistant material at the bottom of each product.



<sup>8</sup>

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[Could your diet one day be tailored to your biology?](#)<sup>8</sup>

For patients and caregivers looking for an easy fix at home, Dulaney said that people with arthritis or recovering from a stroke may benefit from simply wrapping foam around their household spoons. For patients with hand tremors, heavy mugs with lids are a good bet. And beyond plateware and silverware design, wearing aprons or eating finger foods can help make the spills that do happen easier to deal with.



The Smartplate calculates how many calories are in your meal. *Fitly*

## Preventing overeating

Overeating is one of the most significant drivers of weight gain, health problems, and America's broader obesity epidemic. That's why fad diets, diet pills, and other efforts to get people to eat less — and healthier — are so highly sought after.

The Philadelphia startup Fitly wants to bring plateware to the table to chip away at these issues.

Scheduled to start shipping to customers next summer, the high-tech [SmartPlate](#)<sup>9</sup> (\$99) is equipped with cameras that photograph your food and sensors that weigh it. That information is used to calculate how many calories are in your meal, and, if too many, a warning can be sent to your wearable device or your smartphone. Same goes if the scale finds you're eating too quickly. And, to encourage users to stick with it, the plate will send a smartphone reminder anytime its owner enters the kitchen.

For a quick fix at home, just serving meals on smaller plates — tricking you into giving yourself smaller portions — can help prevent overeating. Other low-tech methods of weighing food and counting calories can also make a difference at a lot less cost — though with more effort and without push notifications.

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