



INSIGHTS

A prescription for produce improves health, new research finds

By [Katia Savchuk](#)

Stanford Medicine researchers' study of a 'Food as Medicine' model providing fresh produce and health education finds positive results for both food insecurity and chronic disease.

Nutrition

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When Davron Jones' therapist prescribed fruits and vegetables, he was skeptical. The 52-year-old Alameda, California, resident was struggling with depression and alcohol addiction, as well as diabetes and a heart condition. His therapist, who worked at a community health clinic in nearby Oakland, thought improving his nutrition could help.

In July 2023, she referred him to a three-month program called [Recipe4Health](#), which would deliver boxes of fresh produce to his home and include weekly group health education sessions.

Jones had largely been subsisting on fast food. He hardly ever drank water, opting for soda, juice or alcohol. He wasn't exercising, unless you counted bike rides to the liquor store. "My

whole body was breaking down," he said. "I knew it was bad for me. But when you're depressed, you don't really care."

Then, boxes of lettuce, squash, apples and other fresh produce from a local organic farm began arriving at his doorstep once a week. Jones turned most of the vegetables into soups.

Cauliflower was a mysterious novelty to him; a neighbor offered to sauté it for him. "I was like, 'Wow, OK, this is what I've been missing my whole life.'"



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Davron Jones

At group education meetings hosted by Open Source Wellness, a community-based organization, Jones learned how to decipher food labels and eat a balanced diet, along with the importance of drinking water and daily exercise. The group also became a supportive space in which he could set goals and get feedback on personal challenges.

Jones asked his therapist to extend his referral for three months. He started drinking a gallon of water a day, meditating and going on walks. He drastically cut down on junk food and sugar and ate more fresh produce. Eventually, he stopped drinking alcohol. Jones credits the program with enabling his recovery, improving his mental health and reversing his diabetes.

"I was on a pathway to hell, and this really gave me hope," he said. "My life has changed, and it's been so beautiful."

Food as medicine

Recipe4Health is part of a therapeutic approach called "Food as Medicine," which holds that nutritional interventions can play a key role in promoting health and preventing, managing and treating disease. The strategy has been gaining popularity, and in 2023, the U.S. Department of Health and Human Services launched a congressionally funded Food Is Medicine initiative to promote research and programs to fight food insecurity and combat chronic disease.

A recent [study](#) led by [Lisa Goldman Rosas](#), PhD MPH, an epidemiologist and assistant professor at Stanford Medicine, provides evidence that the approach works. In one of the few robust analyses of a large-scale Food as Medicine intervention, Rosas collaborated with partners at Alameda County Health and the University of California, San Francisco to study more than

2,600 patients in the Recipe4Health program at four community-based health centers in Alameda County, California from 2020 to 2022, just before Jones participated (at the time, the program spanned four months).

All patients had been referred by health care providers and struggled with food insecurity, chronic conditions related to nutrition or both. All received weekly produce deliveries, known as the "Food Farmacy," and some also attended a "Behavioral Pharmacy," the group education sessions with Open Source Wellness that Jones completed. Rosas' Stanford collaborators included Lan Xiao, Mike Baiocchi, Wei-ting Chen, Erica Martinez, Josselyn Perez, Eric Melendez, and Marcela Radtke.

Rosas and her team found that people who participated in the Food Farmacy and the Behavioral Pharmacy reported increasing their consumption of fruits and vegetables by about half a serving a day. That jump is "quite encouraging," Rosas said, considering that Recipe4Health supplied just 16 servings every two weeks. She speculates the improvement related to the program requirement of a provider's referral. "Your doctor is saying, 'This is as important as taking your medications,'" she said. "It has a profound message beyond the idea that everybody should be eating more fruits and vegetables."



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Lisa Goldman Rosas

The researchers also found that more than half of participants who received both the Food Farmacy and Behavioral Pharmacy interventions reported having food security after the program, compared to 30% beforehand; those in the Food Farmacy alone didn't experience this. "I don't think 16 servings a week is enough to make you food secure, so I think the program potentially has ripple effects in their lives by helping them access more services," Rosas said.

All participants — those who only received produce and those who also attended the Behavioral Pharmacy — reported significant improvements in anxiety, loneliness, quality of life and the number of days during which they felt physically or mentally unhealthy.

The program led to tangible changes in health outcomes. Based on reviews of electronic health records, Rosas and her team found that all participants saw improvements in non-HDL cholesterol compared to a control group a year after the program. (High levels of non-HDL cholesterol are linked to an increased risk of cardiovascular disease.)

People who were only in the Food Farmacy program also saw a significant drop in HbA1c levels, which are used to monitor diabetes risk, a year later compared to a control group. Researchers didn't observe this outcome in patients who also

joined the Behavioral Pharmacy, which Rosas attributes to the fact that these patients happened to have lower HbA1 levels to begin with.

Overall, Rosas said group health coaching led to better outcomes. "In general, we saw the most improvement among patients who participated in the full model," she said. "Health coaching is the scaffolding that patients need to take that produce delivery and translate it into healthy lifestyle behaviors."

Scaling a low-tech solution

Rosas recently launched a larger-scale evaluation of the Recipe4Health program that includes more detailed assessments of patients' diets and health outcomes, including drawing lab results at home for a subsample of participants to ensure consistency.

She and her team are also studying other Food as Medicine interventions aimed at Latinas, diabetes patients and survivors of colorectal cancer. Her goal is to produce evidence about which kind of programs are best for different patients. She is also exploring ways to implement Food as Medicine programs for California farmworkers who, ironically, struggle to access the fruits and vegetables they harvest.

"Health care in this country hasn't traditionally focused on prevention and low-tech answers to some of these complex health problems," Rosas said. She hopes that rigorous research in different populations can propel policies that fund access to healthy foods.

She and her partners leading the Recipe4Health program have regularly shared their results with California lawmakers, who in 2021 established a temporary waiver that allows Medicaid dollars to be spent on food for patients with nutrition-related chronic disease through 2026. "Making the waiver permanent would go a long way," she said.

Jones became such a proponent of Recipe4Health that he served as a peer leader with Open Source Wellness for six months. Recently, he started his third stint as a participant in the program. "I missed it, because they've become family," he said. "And fresh fruits and vegetables are really expensive!"

He believes similar interventions should be widely available. "Everybody needs to be in this program," he said. "It will change the world."

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