Prescribing Food as Medicine among Individuals Experiencing Diabetes and Food Insecurity in the United States

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Sector(s): Health

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Location: Scranton and Lewistown, Pennsylvania

Sample: 500 individuals

Initiative(s): US Health Care Delivery Initiative

Outcome of interest: Non-communicable diseases

Intervention type: Health care delivery

AEA RCT registration number: AEARCTR-0004098

Partner organization(s): Geisinger

Diabetes is one of the most costly and prevalent diseases in the United States and is closely linked to unhealthy diets and food insecurity. Researchers are evaluating the impact of the Geisinger Health System's Fresh Food Farmacy (FFF), a program which provides fresh food and diabetes education, on health and health care utilization for individuals experiencing both diabetes and food insecurity.

Policy issue

Each year, millions of Americans are affected by diabetes, making it one of the most costly diseases in the United States. According to the American Diabetes Association, 9.4 percent of the US population had diabetes in 2015 and the estimated total cost of diagnosed diabetes (i.e., direct medical costs and reduced productivity) was US$327 billion in 2017. Researchers forecast that the prevalence of diabetes will increase by 54 percent to more than 54.9 million Americans between 2015 and 2030, and the medical and societal costs associated will amount to more than US$622 billion by 2030. Furthermore, adults who fall below 100 percent and 199 percent of the Federal Poverty Line experience the highest rates of diabetes at 12 percent and 12.7 percent, respectively. It is also widely acknowledged that the high prevalence of diabetes in the United States is linked to low-quality diets and food insecurity. Food insecurity is defined as the disruption of food intake or eating patterns due to lack of money and other resources. People experiencing poverty are more likely to experience food insecurity and are often led to purchase cheaper, higher-calorie foods that contribute to weight gain and increase susceptibility to diet-related diseases such as diabetes. Difficulty accessing healthy foods also complicates management of diabetes, a disease requiring a diet-specific regimen. Despite
the acknowledged link between poor diets and diabetes, there is little rigorous evidence on how to effectively increase access to high-quality, nutritious foods among individuals with diabetes and especially for those experiencing poverty. If diets are part of the problem, can they also be part of the solution?

Context of the evaluation

The state of Pennsylvania has a high prevalence of both diabetes and food insecurity. In 2015, more than 1.37 million people, or 12 percent of the adult population, had diabetes, and more than 3.5 million people, or 35.8 percent of the adult population, had prediabetes. Food insecurity also affected more than 1.53 million Pennsylvanians, or 12 percent of the population, in 2017. Geisinger Health System, a payer-provider that is a national leader in the provision of holistic health care, began piloting the Fresh Food Farmacy (FFF) program in Shamokin, PA in July 2016. In April of 2019, the FFF program rolled out in Scranton, PA and Lewistown, PA later in July of 2019. To be eligible to participate in the FFF program, individuals must be diagnosed with type 2 diabetes and have an HbA1c of 8.0 or higher, experience food insecurity (determined by a two-question survey instrument), be 18 or older, live within geographic reach of the program, speak English to accommodate the dieticians and materials, not be institutionalized so they can prepare their own meals, and be healthy enough to participate in the dietary intervention.

Details of the intervention

In this ongoing study, researchers are testing the impact of the FFF program on clinical outcomes and health care utilization for patients experiencing diabetes and food insecurity in Scranton, PA and Lewiston, PA. This study will include approximately 500 adults, roughly 250 from each site (Scranton, PA and Lewiston, PA). Recruitment, including patient consent, is being conducted by phone, and potential participants are randomly assigned to either the treatment or control groups. For individuals in the treatment group, study staff immediately schedule patients' initial program visit. Individuals in the control group are informed that they will be contacted in approximately six months to schedule a program start date.

Once enrolled in the FFF program, patients receive regular prescriptions of fresh food from a Geisinger dietitian. The prescription, picked up at an FFF clinic at no charge, includes enough food for two meals per day over five days per week for the patients and their families. Additionally, participants have access to complementary services, including case management, recipes, medication management, self-management training, and biometric tracking. The program lasts indefinitely with no predetermined end date. Those in the control group have access to regular type 2 diabetes care, which typically includes regular monitoring of blood sugar, diabetes medications, and doctor's appointments.

Researchers are measuring outcomes using participant electronic health records and participant surveys. The primary outcome of interest is HbA1c, an indicator of blood sugar control. Other outcomes of interest include fasting glucose, weight, BMI, blood pressure, cholesterol, LDL cholesterol, and triglycerides which will be collected through routine lab work paid for as part of the research. Additionally, researchers are tracking health care utilization in the form of emergency room and inpatient visits through electronic health records. Participant surveys will ask about food choices, attitudes toward health behaviors, diabetes knowledge, self-assessed health, self-efficacy, and patient satisfaction. Participants will be compensated for completing lab work and surveys with a US$50 gift card.

Results and policy lessons

Study ongoing; results forthcoming.


