

Using Food as Medicine to Address Health Disparities: The Veggie Rx Model**Ada Leung, Pennsylvania State University Berks¹****Nelly Perez, Pennsylvania State University Berks²****Lisa Weaver, ASSETS Lancaster³****Kayla Rutt, Pennsylvania State University College of Medicine⁴****Madeline Bermudez, Pennsylvania State University College of Medicine⁵****Christina Scartozzi, Pennsylvania State Health St. Joseph Medical Center⁶****Susan Veldheer, Pennsylvania State University College of Medicine⁷**

Veggie Rx is a program that aims to empower diabetic patients with nutritional knowledge and reward their habit formation with vegetable vouchers. This qualitative study explores how Veggie Rx participants enact new practices in the context of resource scarcity. The preliminary findings reveal three overlapping and recursive stages of practice enactment: 1) Resource acquisition: Participants acquire new resources (e.g., nutritional knowledge, vegetable vouchers) through the program. This stage is often characterized by positive responses and a sense of empowerment. 2) Evolution of practices: Participants strategically utilize their resources (both existing and new) to meet their own needs and those of their households. Resource scarcity can limit the effectiveness of program interventions at this stage. 3) Diffusion of practices: Participants share their practices with their social contacts, multiplying the effects of the program. The emergent findings suggest that Veggie Rx can be an effective tool for addressing health disparities, but that it is important to consider the role of resource scarcity in practice enactment.

There are dramatic disparities in health outcomes, depending on income and education level, such as life expectancy, child obesity, diabetes and heart disease in adults (Braveman & Egerter, 2013). People with the lowest socio-economic status, often ethnic minorities living in impoverished neighborhoods, tend to be most affected (Marmot, 2004). Extant research of diabetes self-management education (DSME) examines the impacts of the intervention on health outcomes, in terms of changes in patients' biomarkers, such as BMI and HbA1c (Rafie et al., 2021; Robson, Rex, Greenawalt, Peterson, & Orsega-Smith, 2021; Veldheer et al., 2021). Nevertheless, research studies that adopt a "bottom-up" approach provide excellent insights into poverty and health (Lee, Ozanne, & Hill, 1999; Martin & Hill, 2012). In this research, we study Veggie Rx's effectiveness by probing the participants about their experiences with various program elements. Examining the lived experiences from underprivileged

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individuals can give us insights about behavior change and aid health advocates in developing strategies that will improve the well-being of citizens in the community.

This study offers insights about the adoption and diffusion of practices that stem from Veggie Rx. Extant research of diabetes self-management education (DSME) examines the impacts of the intervention on health outcomes, in terms of changes in patients' biomarkers. In this research, we further the investigation of program effectiveness by probing the participants about their experiences with different program elements, including nutritional class content, decision-making of produce purchase, voucher redemption at the vendors, meal preparation, and meal sharing. We discovered how participants enacted new practices, such as juxtaposition, bricolage, and knowledge diffusion. The participants juxtapose when they try to make sense out of the newly learnt knowledge and apply it to make changes in their existing routines. The participants also engage in bricolage, when they improvise, do mental calculations, and use their resources strategically. Lastly, knowledge diffuses in the participants' networks as meals and knowledge were shared among the participants' social contacts, multiplying the effects of the programs.

The Veggie Rx program uses a collective impact approach to develop and maintain a network of partners to implement activities that promote positive changes in patients and their communities over time. This approach facilitates the effective utilization of resources to sustain programs that benefit underrepresented groups.

To maximize the effectiveness of the diabetes self-management education classes, the content should be delivered in a culturally appropriate way, such as by having bilingual community health workers present at classes and providing pamphlets and flyers in participants' native languages. Additionally, educators should allow time for participants to ask questions about how to apply the nutritional concepts to their own diets, such as portion sizes of plantain/tortilla in a meal or air fryer recipes. These content elements make the knowledge relevant to the patients and increase their self-efficacy in adopting new practices.

This study revealed several areas for future research. First, subjective comprehension of nutritional knowledge can be very different from objective comprehension. Most participants felt empowered to make good food choices after graduating from the program, but a pilot test that attempted to objectively measure nutritional knowledge (Weiss et al., 2005) found that they did not demonstrate sufficient understanding of nutritional labels. These results suggest that there is a need to develop a culturally appropriate measure to objectively measure nutritional knowledge comprehension.

Second, the study found that it is important to examine program outcomes at a more distant time than one year after graduation. Certain macroeconomic conditions (e.g., pandemic, recession, inflation) and personal factors (e.g., hospitalization, loss of insurance, death of family members) may affect the health outcomes of program participants over time. Additionally, as people age, they may experience different symptoms and complications of diabetes, depending on their type, duration, and management of the disease. By revisiting the participants at various times, researchers may be able to discover pivotal occasions that prompt for other interventions, such as Veggie Rx refresher courses, diabetes support groups, or bariatric surgery.

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