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Descriptive Report

Experiences with a Student-Run, In-Clinic Food Donation Program for Uninsured Patients in Nashville

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Abstract

Food insecurity (FI) is a dynamic and growing problem disproportionately impacting the health of minority and otherwise disadvantaged communities in the United States. Large healthcare systems address FI through screenings, community partnerships, and patient education programs. However, less has been reported on the role of small, student-run free clinics in responding to FI. Free clinics, including student-run free clinics, provide the opportunity to screen for and respond to FI with intimacy and continuity that large healthcare systems often fail to establish in these populations. Here, we aim to describe one clinic's experience with an in-clinic, free food pantry for uninsured patients in Nashville, Tennessee. We outline the pantry's evolution, improvement processes implemented, and data collected from July 2018 to June 2021. Data reveal that the burden of FI in our patient population is estimated as high as 80%, exceeding that of regional and national averages. While clinical associations have yet to be assessed, evidence supports the feasibility and utility of an in-clinic food pantry program for reducing the barriers to accessing healthy food in low-resource communities at high risk for FI.

Introduction

Food insecurity (FI), defined as the inability to access healthy food, is an ongoing national concern that disproportionately affects disadvantaged populations, including racial and ethnic minorities, immigrants, and the uninsured.[1,2] The 2020 United States Census reported as high as 23% of households experience FI.[3] According to the Vanderbilt Child Health Poll conducted by the Vanderbilt Center for Child Health Policy, in Tennessee specifically, an estimated two out of five kids and their families suffer from FI, a statistic much higher than the national average.[4] Because FI is linked to increased risks of cardiovascular disease, obesity, diabetes, and all-cause mortality, timely screening and response is vital to patient care.[1,5]

In the United States population, variables such as low income, single-female headed households, higher housing costs, and lower education levels, have been positively linked to higher rates of FI.[6] These variables further compound population-specific disparities in food needs driven by socioeconomic, sociopolitical, and structural barriers – factors exacerbated by the coronavirus disease 2019 (COVID-19) pandemic. A cross-sectional study on household FI during the COVID-19 pandemic found that Black households were more likely to report that they could not afford to buy more food; Asian and Hispanic households were more likely to be afraid to leave home to buy food; and racial/ethnic minorities were significantly less confident that they would have enough over the next month compared to their white counterparts.[7]

Large healthcare systems have developed a myriad of responses to address FI. Student-run clinics with limited resources more often rely on community partnerships to address FI. Two school-based clinics describe programs whereby positively screened patients can be prescribed visits to partner food pantries to alleviate this need.[8,9] Alternatively, in-clinic food pantry programs that respond to food needs in real time may better serve patients without adequate transportation than resource referrals. Here, we aim to describe our experience with the Shade Tree Food Pantry Program (STFPP) by summarizing our primary interventions and emphasizing the role of community partnerships in lowering systemic barriers to health equity for all persons.

Program Development

Vanderbilt's Shade Tree Clinic (STC) is a student-run, comprehensive primary care clinic serving approximately 300 uninsured middle Tennessee residents. STC patients have access to primary and specialty care as well as one-to-one patient educators, social work resources, dietetic interns, and more. Implemented in 2018, STFPP sought to assess food needs within our patient population and provide healthy food options to STC patients (Figure 1). Participants in this effort included: clinic leadership, the community outreach team (consisting of one director and six coordinators) and the social work team (consisting of one director and ten volunteers).

Through pre-existing channels of communication, community outreach established partnerships with two local non-profits with robust feeding programs: The Nashville Food Project (TNFP) and Second Harvest Food Bank (SHFB). This collaboration led to a system of weekly donations of both fresh produce and non-perishable food items to the clinic. Concurrently, the social work team coordinated screening and distribution efforts.

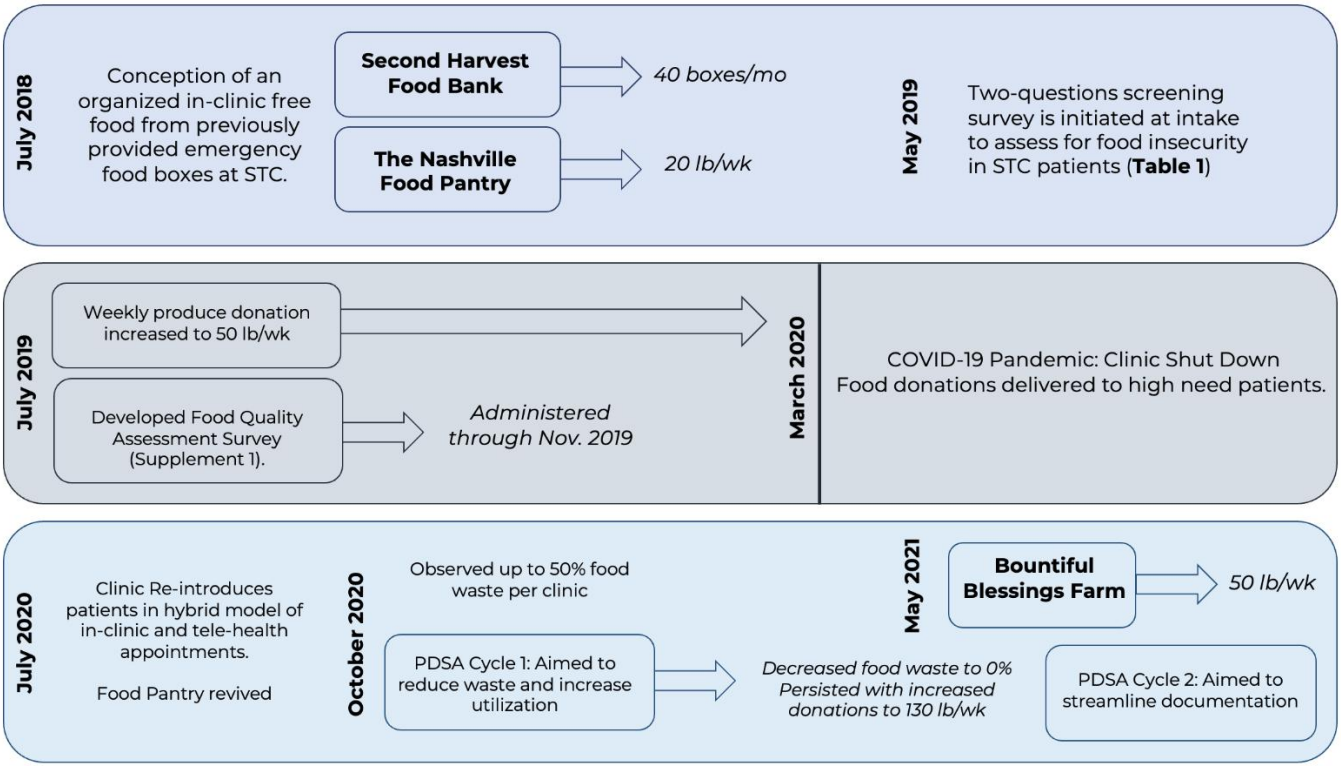
Our Experiences

Initially, 20 pounds of produce were requested for each clinic day from TNFP. The type of produce donated varies weekly but commonly includes lettuce, tomatoes, onions, potatoes, cabbage, and fruits. Once per month, SHFB donates 40 boxes of non-perishable food items, including canned soup, canned beans, dry pasta noodles, jars of peanut butter, bottled water, and dried fruits and nuts.

Between May 2019 and July 2019, 132 patients were seen at STC. During this time, two questions were added to clinic intake forms: “Would you like to receive a food bag or box today?” and “Have you ever worried food would run out before you could purchase more?” The latter question was adapted from the United States Department of Agriculture Household Food Security Survey, a validated questionnaire used to identify FI.[10] Of the 106 patients who completed the screening questions, 68 (64.2%) responded to the former question with “yes,” and 38 (35.8%) indicated “no.” Of patients who responded to the latter question, 16 (12.1%) marked “yes” and 116 (87.9%) designated “no.” Hemoglobin A1Cs were also collected from the electronic health record to determine whether health status could be associated with food insecurity, but there was no significant difference (Table 1). After demonstrating that more patients would appreciate food supplementation than just those who described a need based on the latter question, we removed the two questions from the intake form, offered all patients a bag or box of food, and increased fresh produce donations to 50 pounds per clinic day.

STFPP leaders then created the Food Quality Assessment Survey (Online Appendix) to determine operational expansion of the program. Patients who accepted a food donation between July 2019 and November 2019 were provided the optional survey with each bag or box of food. The survey included questions on demographics, the Hunger Vital Sign screener, and free-response questions on experiences with the program.[11] During this time, food donations were given out by clinical students, patient educators, and the social work team. The number of discrete donations was not consistently tracked due to variations in clinic flow. There was no incentive to completing the forms. Similarly, we sought to maintain anonymity so that patient would not feel pressured to complete the forms and could do so candidly. Thus, forms did not contain any identifying information.

Figure 1. Timeline of the shade tree food pantry program, July 2018 – June 2021



STC: Shade Tree Clinic; COVID-19: coronavirus disease 2019; PDSA: plan, do, study, act

Table 1. Intake form questionnaire results

Question	N (%)	(Min, Max) HbA1c	Average HbA1c
Would you like a food bag/box today?			
No	38 (36%)	(4.9, 13.3)	6.7
Yes	68 (64%)	(4.8, 15.9)	6.7
Total	106		
Have you ever worried food would run out before you could purchase more?			
No	116 (88%)	(4.8, 14.0)	6.8
Yes	16 (12%)	(5.2, 15.9)	7.6
Total	132	-	-

Data represented here was collected from May 2019 and July 2019. During this time, 132 patients were screened for food insecurity on intake to the clinic. All patients were offered a food box (nonperishables) or food bag (fresh produce), as well. Min: minimum; max: maximum; HbA1C: hemoglobin A1c

A total of 52 patients participated in the Food Quality Assessment Survey (Table 2). Most patients lived in households of one (10, 19.2%) or three (10, 19.2%). Nine (17.3%) patients lived in households of seven or more. Of those surveyed, 28 (53.8%) identified as Hispanic or Latino, 11 (21.1%) identified as Black, and three (5.8%) identified as Caucasian. Eighteen (34.6%) identified as Other (some patients designated more than one race/ethnicity.). When asked, "in the past 12 months, [did you] often, sometimes, or never worry if food would run out [in your household]," six (11.5%) reported 'often,' 28 (53.8%) reported 'sometimes,' and 18 (34.6%) reported

'never.' Patients often (7, 13.5%), sometimes (29, 55.8%), or never (16, 30.8%) felt that in the past 12 months, to one or both questions. Overall, 42 (80.7%) patients indicated "often" or "sometimes" were pleased with their food donation they received, and four (7.7%) were not. Patients reported cooking soups, salads, and pasta dishes with products donated. Suggestions from patients in the free-text portion led to the inclusion of recipes unique to each week's donations translated in both English and Spanish with each food bag.

Table 2. Food quality assessment survey results

Survey Item	N (%)
Household Size	
1	10 (19.2%)
2	8 (15.4%)
3	10 (19.2%)
4	7 (13.5%)
5	4 (7.7%)
6	4 (7.7%)
7 or more	9 (17.3%)
Race/Ethnicity	
Hispanic/Latino	28 (53.8%)
Black	11 (21.1%)
Caucasian	3 (5.8%)
Other	18 (34.6%)
In the past year, I worried whether my food would run out before I got money to buy more.	
Often	6 (11.5%)
Sometimes	28 (53.8%)
Never	18 (34.6%)
In the past year, the food I bought just did not last, and I did not have money to get more.	
Often	7 (13.5%)
Sometimes	29 (55.8%)
Never	16 (30.8%)
Are you happy with the bag/box you received?	
Yes	41 (78.8%)
No	4 (7.7%)
N/A	7 (13.5%)

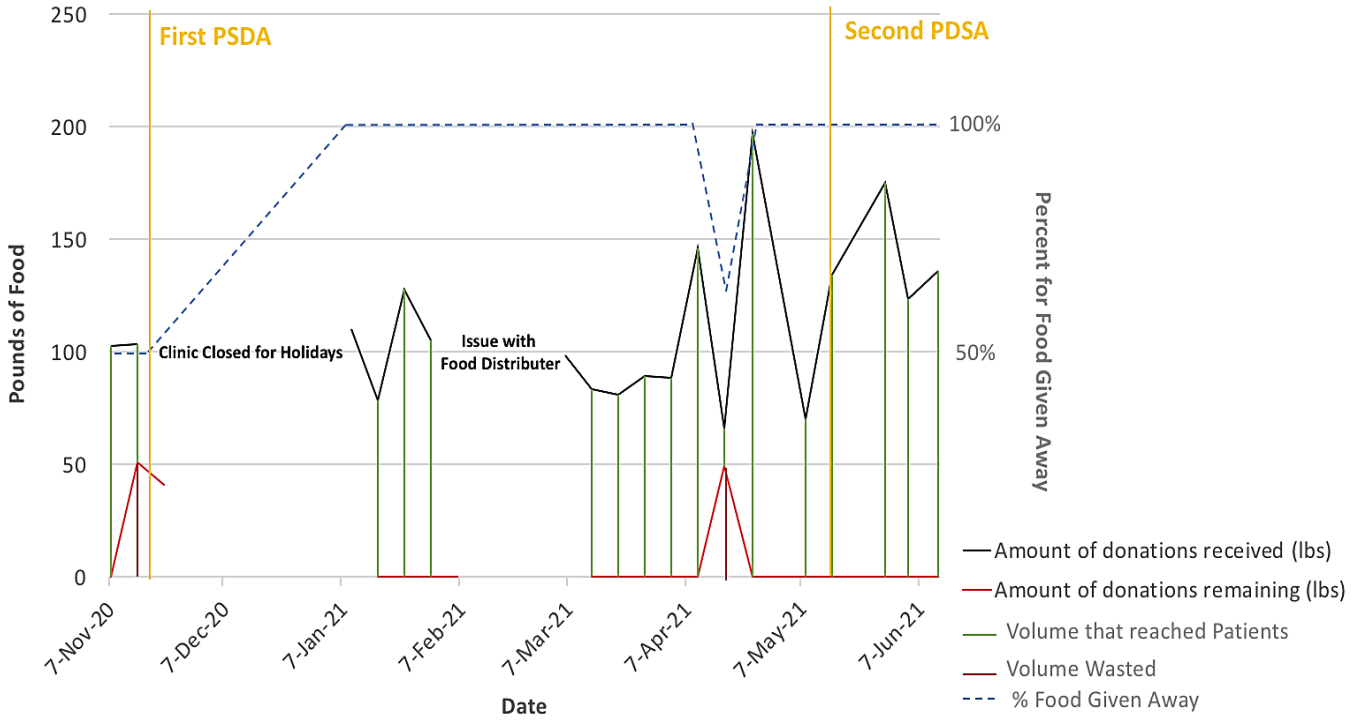
Results represent data collected from July 2019 and November 2019. Surveys were provided with produce bags and were requested to be returned in the same clinical encounter. Patients did not have to complete surveys to receive food donations.

In March 2020, the COVID-19 pandemic forced the clinic to cease clinical activities. Upon the clinic's return in August 2020, the STFPP offered approximately 100 pounds of fresh produce donations to patients per week. However, staff noted that about 50% of donations remained after each clinic despite a theoretical increase in need secondary to social pressures of the pandemic. A "Go and See at the Gemba" test, which is a principle frequently applied in quality improvement that relies on detailed observation of a clinical or procedural workflow, revealed changes in workflow that accommodated COVID-19 restrictions but unintentionally created barriers to distributing food resources. Rather than being provided a food bag or box in clinic, patients were freely allowed to pick and choose produce from crates kept outside by the parking area. We hypothesize that a combination of cultural barriers (i.e., not wanting to take too much of the shared resources), procedural disturbance (i.e., not having the food integrated into the clinic space), and physical barriers (i.e., requiring patients to use their own bags to carry food) contributed to the new-found waste.

From November 2020 to June 2021, a quality improvement initiative was developed to reduce waste and increase the impact of the STFPP. Our first Plan, Do, Study, Act (PDSA) cycle divided donations into 10 to 12 discrete units at each clinic using paper bags donated either to the Vanderbilt Medical Library or directly to the clinic. This intervention resulted in a complete reduction of waste (Figure 2). On days without bag donations, STFPP volunteers purchased large paper bags to use. Of note, an uptick in waste was noted at one clinic day in mid-April because the regular food delivery person was unavailable, and the delivery was subsequently delayed. Both examples, here, demonstrate the need for reliable back-ups for each role in the process.

With the elimination of waste, the social work and community outreach teams continued to increase the pounds of food provided at each appointment to augment the pantry's impact. Throughout this study period, Saturday donations increased from an average of 105.3 pounds to an average of 145.0 pounds, a 37.7% increase. In May 2021, the addition of a new community partner, Bountiful Blessings Farm, increased weekly

Figure 2. Formal PDSA cycles implemented from November 2020 to June 2021



PDSA 1 reduced waste of STFPP by restructuring the distribution methods to include discrete for patients. PDSA 2 unsuccessfully sought to streamline documentation of food screenings (results not depicted here).
PDSA: Plan, do, study, act; STFPP: Shade Tree Food Pantry Program

produce donations by another 50 to 60 pounds, with a total of close to 200 pounds weekly. Waste monitoring confirmed 100% dispersal of donations to patients following this augmentation. As fresh food donations have risen to meet the needs of patients, the clinic has rolled back the number of emergency food boxes requested from Second Harvest Food Back to about 50 boxes every six months.

PDSA Cycle 2 spanned three weeks in June 2021. The second intervention reinitiated the Hunger Vital Sign to estimate post-pandemic FI with inconclusive results. Clinical volunteers were asked to document the two-question screener directly into the electronic health record using a preformed block of text that is inserted using keyboard shortcuts and/or in a master spreadsheet that tracks clinic flow. During this time, 66 patients were seen in-person or via telehealth with documented notes from clinical volunteers. Only nine of those patients had documented evidence of screening in their charts. Notably, about half of the nine patients answered "yes" to one or both screening questions. During the same period, 14 patients, including two of the positively screened patients, saw social work and were provided with food resources.

Reflections and Future Directions

Our preliminary FI assessment suggested that interest in food pantry resources included patients outside of those positively screened for FI. However, utilization of the Food Quality Assessment Survey revealed that initial assessments may have underrepresented the true needs of our population, with 80.7% of respondents qualifying as food insecure based on the Hunger Vital Sign.[11] These results suggest the STC population has substantially greater food needs than national and local estimates.[2-4] This finding supports the idea that the most vulnerable patients are more likely to seek healthcare at student-run free clinics and justifies the integration of food-related resources into clinical structures.

Two primary challenges in implementing an

in-clinic food donations program were addressed: reducing food waste and targeting our donations to those most at-risk for FI. By changing the method of packaging and distribution, we demonstrated that food waste can be reduced from approximately 50% to zero. This process is sustainable and can be easily incorporated into any clinical workflow. Incorporating a Hunger Vital Sign keyboard shortcut into the electronic health record to better identify patient needs was difficult. In some encounters, the screener was efficiently administered with minimal disruption to clinical workflow. However, given the low rate of documentation, future directions for our quality improvement initiative include marrying this verified screening strategy with the well-established social work training program to consistently capture social needs during a clinical encounter.

Limitations

The use of a single question from the Household Food Security Survey has limitations with respect to power to identify FI and its various components (amount of food vs healthy food options). However, it facilitated a fast, preliminary screening during the initial rollout of the STFPP. In addition, annual changes in leadership and volunteer staff have resulted in brief training and adaptation periods that disrupt the continuity of the program. Nonetheless, with these transitions, new people bring innovative opportunities for improvement.

Conclusion

FI is a significant social determinant of health that fluctuates with socioeconomic shifts, most recently demonstrated by the COVID-19 pandemic. Student-run clinics can address FI in disadvantaged, vulnerable patient populations.

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Disclosures

The authors have no conflict of interest to disclose.

References

1. Gundersen C. Food insecurity is an ongoing national concern. Advances in Nutrition. 2013;4(1):36-41. LINK
2. Fitzpatrick KM, Willis DE. Homeless and hungry: food insecurity in the land of plenty. Food Sec. 2021;13(1):3-12. LINK
3. Food Insecurity in the Census Household Pulse Survey Data Tables: Institute for Policy Research - Northwestern University [Internet]. Evanston (IL): Northwestern University Institute of Policy Research; 2020 Jun 1 [cited 2021 July 4]. Available from: https://www.ipr.northwestern.edu/news/2020/schanzenbach-household-pulse-survey-analysis.html. LINK
4. Zickafoose, J, Henkhaus L, Spalding T, et al. The Vanderbilt Child Health Poll – The Impact of COVID-19 on Children and Families in Tennessee [Internet]. Nashville (TN): Vanderbilt Center for Health Policy. 2021 Feb [cited 2021 December 16]. Available from: https://www.vumc.org/childhealthpolicy/sites/default/files/InteractiveReport_TNCOVIDpoll_Feb2021_FINAL_0.pdf. LINK
5. Sun Y, Liu B, Rong S, et al. Food insecurity is associated with cardiovascular and all-cause mortality among adults in the United States. J Am Heart Assoc. 2020 Oct 6;9(19):e014629. LINK
6. Holben DH, American Dietetics Association (ADA). Position of the American Dietetic Association: food insecurity and hunger in the United States. J of the Am Diet Assoc. 2006 Mar;106(3):446-58. LINK
7. Morales DX, Morales SA, Beltran TF. Racial/ethnic disparities in household food insecurity during the COVID-19 pandemic: a nationally representative study. J Racial Ethn Health Disparities. 2021 Oct 1;8(5):1300-14. LINK
8. De Marchis EH, Torres JM, Benesch T, et al. Interventions addressing food insecurity in health care settings: a systematic review. Ann Fam Med. 2019 Sep;17(5):436-447. LINK
9. Aiyer, J. N., Raber, M., Bello, et al. A pilot food prescription program promotes produce intake and decreases food insecurity. Transl Behav Med. 2019 Oct 1;9(5), 922–30. LINK
10. USDA Economic Research Service. Food Security in the US [Internet]. Washington (DC): U.S. Department of Agriculture, Economic Research Service; 2020 Sep [cited 2021 Jul 17]. Available from: https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools.aspx#household. LINK
11. Hager, E. R., Quigg, A. M., Black, M. et al. Development and validity of a 2-item screen to identify families at risk for food insecurity. Pediatrics. 2010 Jul;126(1):e26-32. LINK