Published in final edited form as:

J Community Health. 2015 December ; 40(6): 1193–1200. doi:10.1007/s10900-015-0048-7.

Use of hospital-based food pantries among low-income urban cancer patients

Francesca Gany, MD, MS [Chief],

Immigrant Health & Cancer Disparities Service, Department of Psychiatry & Behavioral Sciences, Attending Physician, Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, NY, Professor of Healthcare Policy & Research, Department of Healthcare Policy & Research, Professor of Medicine, Department of Medicine, Weill Cornell Medical College, New York, NY

Trevor Lee [Research Assistant],

Immigrant Health and Cancer Disparities Service, Department of Psychiatry & Behavioral Sciences. Memorial Sloan Kettering Cancer Center, New York, NY

Rebecca Loeb, MS [Biostatistician],

Department of Psychiatry & Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, New York, NY

Julia Ramirez, MA [Community Outreach Manager],

Immigrant Health & Cancer Disparities Service, Department of Psychiatry & Behavioral Sciences, Memorial Sloan-Kettering Cancer Center, New York, NY

Alyssa Moran, MPH, RD [Research Assistant],

New York City Department of Health and Mental Hygiene, New York, NY

Michael Crist, MS [Research Assistant],

New York University School of Medicine. New York, NY

Thelma McNish [Community Outreach Specialist], and

Immigrant Health & Cancer Disparities Service; Department of Psychiatry & Behavioral Sciences. Memorial Sloan-Kettering Cancer Center, New York, NY

Jennifer C.F. Leng, MD, MPH [Assistant Attending Physician]

Immigrant Health & Cancer Disparities Service, Department of Psychiatry & Behavioral Sciences, Department of Medicine, Memorial Sloan-Kettering Cancer Center New York, NY, Assistant Professor of Healthcare Policy & Research, Department of Healthcare Policy & Research, Weill Cornell Medical College New York, NY, 485 Lexington Avenue, 2nd Floor, New York, NY 10017, P: 646-888-8057, F: 929-321-1520, lengj@mskcc.org

Correspondence to: Jennifer C.F. Leng.

Compliance with ethical standards:

The study was granted exempt status by MSKCC's Institutional Review Board.

Conflict of Interest

None of the authors have any conflicts of interest. The authors have full control of the primary data and will agree to allow the journal to review their data if requested.

Abstract

Purpose—To examine uptake of a novel emergency food system at five cancer clinics in New York City, hospital-based food pantries, and predictors of use, among low-income urban cancer patients.

Methods—This is a nested cohort study of 351 patients who first visited the food pantries between October 3, 2011 and January 1, 2013. The main outcome was continued uptake of this food pantry intervention. Generalized estimating equation (GEE) statistical analysis was conducted to model predictors of pantry visit frequency.

Results—The median number of return visits in the 4 month period after a patient's initial visit was 2 and the mean was 3.25 (SD=3.07). The GEE model showed that younger patients used the pantry less, immigrant patients used the pantry more (than US-born), and prostate cancer and Stage IV cancer patients used the pantry more.

Conclusions—Future long-term larger scale studies are needed to further assess the utilization, as well as the impact of food assistance programs such as the this one, on nutritional outcomes, cancer outcomes, comorbidities, and quality of life. Cancer patients most at risk should be taken into particular consideration.

Keywords

food assistance programs; food pantries; cancer patients; low-income

Background

Eighty five and a half percent of American households were food secure in 2012. All of their household members had access at all times to enough food for an active, healthy life (1). The remaining 14.5% were food insecure (1). Almost 6% of U. S. households (7 million households) had very low food security, with reduced food intake and disrupted eating patterns, typically during 7 months of the year (1).

Food insecurity rates vary considerably by demographic characteristics (2; 3; 4; 5). Immigrant households are at increased food insecurity risk, rates range from 36% up to 53% across various studies, (6; 7; 8; 9), as are Black, non-Hispanic households, which are 25% food insecure, and 10% have very low food security, and Hispanic households, with 23% food insecure, and 6% with very low food security (1).

Food insecurity is a growing problem for the medically ill, who may have to choose between medical treatment and food (6; 7; 9; 10; 11; 12; 13). Food insecurity is associated with poor adherence to recommended medical treatment, delayed medical care, and inability to afford prescribed medication(s) (3; 6; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22). Food-insecure patients have significantly higher levels of nutritional risk, financial strain, depression, and low quality of life (15; 17; 18; 19; 20; 23). Inadequate nutrition is associated with fatigue, stress, immunosuppression, infection, and disrupted cognition and mental performance (14; 16; 19; 21; 22).

Cancer patients represent a group particularly vulnerable to food insecurity because of both the nature of the disease and the intensive treatment protocols that are commonly required. Even before starting anticancer treatment, patients can experience profound metabolic and physiological alterations with increased needs for macro- and micronutrients (24; 25; 26; 27; 28; 29). Side effects of anticancer therapies can lead to inadequate nutrient intake and subsequent malnutrition (30; 31). The prevalence of malnutrition among cancer patients has been estimated to range between 15% and 80% (25). Malnutrition can lead to fewer available treatment modalities, e.g. tumor resection, which can at times be potentially curative (29). It can also increase the incidence of postoperative complications, such as delayed wound healing, morbidity, and mortality (31). Reductions in food intake directly impacts patient survival and quality of life (24; 25; 26; 27; 28; 29; 32).

In a prior study, a cohort of underserved patients of low socioeconomic status had rates of food insecurity nearly five times those of the state average (33). Further, a study of available New York City food resources found that the emergency food system is currently unable to accommodate patient needs, especially given the demands of cancer treatment, which leave little time to seek food support (34). Pantries' restricted service hours, documentation requirements (i.e. government issued photo ID), and quantity and choices of food provided were a deterrent to utilization (34). In response to the high rates of food insecurity, the limitations of existing emergency food resources, the increased nutritional needs of cancer patients, and the time and energy required to adhere to cancer treatment protocols, the Immigrant Health and Cancer Disparities (IHCD) Service established medically tailored, hospital-based food pantries at five New York City cancer clinics. This innovative emergency food system is implemented at cancer patients' clinical care sites, bringing services directly to patients and obviating the need for patients to expend additional resources traveling to other locations to obtain food support. This study examines patterns of uptake of this novel emergency food system, and predictors of use of this resource, among low-income urban cancer patients.

Methods

The Immigrant Health and Cancer Disparities (IHCD) Service's Cancer Portal Project enrolls patients at ten hospital-based cancer clinics in New York City with large numbers of immigrant and low-income patients. Portal uses bilingual service access facilitators to assist patients in accessing and utilizing health, social, and financial services. During their clinic visits, service access facilitators approach all patients in the waiting or chemotherapy rooms of cancer clinics to ask them if they would like to enroll in Portal. IHCD established its food pantry program at five of these Portal clinic sites, facilitated through a partnership with the Food Bank for New York City. Food items are generously donated by the Food Bank's network of emergency food support agencies, with supplementation by the IHCD Service. IHCD staff travel to partnering agencies, pick up food, and distribute it to the hospital-based food pantries. Hospital pantry hours vary by site to accommodate patients' clinic schedules. Food pantry participants are eligible to receive a weekly bag of healthy, nutritious, non-perishable foods. While specific contents vary weekly, each bag contains an array of shelf-stable healthful grocery staples including: milk, juice, grains (rice, pasta, cereal or crackers),

meat protein (tuna, salmon, chicken, mackerel or beef), vegetable protein (dried or canned beans and peanut butter), vegetables (sweet corn, cut green beans, carrots or peas) and fruit.

Portal participants are administered an Intake Questionnaire that includes items related to sociodemographics, cancer history, need for food/health/social/financial services, activity level, and quality of life (FACT-G) (35). Patients are assessed for food insecurity through administration of the 18-item, 12-month time-referenced U.S. Household Food Security Survey Module (USDA) (36). Patients who have scores of low or very low food security on the Food Security Survey Module (and are hence food insecure), or who state they need food support during the Portal Intake process, are offered enrollment in the pantry program. This study is a nested cohort of 351 consecutive Portal patients who qualified for the food pantry program and who first visited the food pantries between October 3, 2011 and January 1, 2013. The main outcome assessed was continued uptake of this hospital-based tailored food pantry intervention, measured as the number of additional visits patients made to the pantry after their first visit, over the fourth month period following their first visit.

Descriptive analyses were performed among pantry participants to examine variables related to sociodemographic characteristics, cancer and treatment history, activity level, quality of life, and food security. USDA Food Security Survey Module results were used to calculate raw USDA food insecurity scores for each patient. Based on raw scores, and according to USDA scoring guidelines, patients were further categorized as having high food security, marginal food security, low food security, or very low food security (4=high food security, 3=marginal food security, 2=low food security, 1=very low food security) (36).

Generalized estimating equation (GEE) statistical analysis (37) was conducted to model predictors of pantry visit frequency at the participant level, adjusting for similarities among participants visiting the same pantry site. The main outcome assessed was defined as the number of subsequent pantry visits made after the first introductory visit to the food pantry, within the four months (when the majority of visits were made, and generally corresponding to treatment length) immediately following the first visit. Predictors in the model are listed in Table 2, and consisted of variables that did not have large amounts of missing data that were expected to be associated with frequency of pantry visits. Categorical predictors included: age, years in the United States, gender, marital status, education, household income, cancer type, cancer stage, and cancer treatment modality. USDA food insecurity scores, quality of life (FACT-G) scores, and patients' activity level were not included in the model due to large amounts of missing data. Missing data is explained by patients who had insufficient time to complete the survey yet expressed a need for food, and our commitment to respond to this need.

The outcome was modeled using a GEE model with Poisson distribution, identity link function, and compound symmetric correlation matrix. GEE models account for correlation due to clustering in the data, which in this study consists of correlation between participants who use the same pantry, of five possible pantries. The Poisson distribution was used because our outcome is a count of visits within a four month time period. Both unadjusted and adjusted models were estimated. We only present the adjusted model here, which

controls for confounding among the variables. Analyses were done using SAS 9.2 and SPSS 21.0.0.1 software.

This study was granted exempt status by the Memorial-Sloan Kettering Cancer Center Institutional Review Board.

Results

The Portal food pantry sites included 5 hospital-based cancer clinics serving low-income patients in New York City. Three hundred and fifty-one patients visited one of the pantry sites at least once between October 3, 2011 and January 1, 2013 and completed study questionnaires.

Mean age of pantry users was 57. One hundred and four (31%) patients were male, and 237 (70%) were female. Eighty-two (25%) patients visiting the pantry were born in the U.S., 101 (30%) were born in Latin America, 137 (40%) were born in the Caribbean, and 20 (6%) were born in other regions including Africa, Middle East, Europe, Asia, and South Asia. Two hundred and forty-three (72%) patients in this sample answered that English was their preferred language in the health care setting, 82 (24%) answered Spanish, and 15 (4%) answered other languages. One hundred and twenty (37%) patients were partnered or married. Over half of the patients had at least a high-school education, with 128 (38%) having attended school through grade 12 or its equivalent, and 67 (20%) reporting college-level or greater education. Most patients, 49%, had Medicaid, 22% had Medicaid for Emergency Services, 10% had Medicaid and Medicare, 4% Medicare, 7% private insurance, and 12% were uninsured. Most patients lived in small households. 163 (49%) reported only one or two individuals in their household, 107 (32%) reported a household size of three or four, and 63 (19%) reported a household size greater than four. Most patients who knew their household income reported household incomes between \$1 and \$1838 per month. Sixty-five (19%) patients reported a household income between \$1 and \$767, and 87 (26%) patients reported a monthly household income between \$768 and \$1838. One hundred twenty (36%) patients did not provide household income information. Among the 201 patients who completed the USDA Food Security Survey Module (scores were missing for some of those who stated they needed food support during the Portal Intake process and were thus included in the study, but did not complete the entire Module due to time constraints), 78 (39%) patients were classified as having “very low” food security, 90 (45%) patients were classified as having “low” food security, 16 (8%) had “marginal” food security, and 17 (9%) had “high” food security. The mean FACT-G score was 70.85 (SD 16.25). (Table 1)

Patients had a variety of cancer diagnoses including prostate, lung, blood, gynecological, gastrointestinal, and head and neck, with breast being the most common (42%). Cancer stage ranged from Stage 1 to 4, with Stages 3 and 4 being the most common (13% in each of these stages, compared to 10% in each of Stages I and II). The majority of patients reported that they did not know their cancer stage (N=166, 50%) and 14 (4%) patients reported stages that did not easily fall within the 4 distinct stage categories (multiple stages, precancer, stage 0). Most patients were currently receiving chemotherapy (N=115, 37%) or radiation

(N=107, 34%). Forty-seven (15%) patients were receiving both treatments and 43 (14%) were receiving neither treatment. One hundred and twenty-seven patients (48%) reported their level of activity as mildly limited, 59 (22%) as “very limited, and 79 (30%) as normal. (Table 1)

The number of visits in the 4 month period after a patient’s initial visit ranged from 0 (did not attend the pantry again after the initial visit) to 13 (for a total of 14 visits - nearly weekly visits). The median number of return visits was two and the mean was 3.25 (SD=3.07).

A GEE Poisson model was used to determine the unique contribution of each predictor variable on the outcome, number of pantry visits in 4 months, controlling for any correlation within site. Controlling for the other covariates in the model, we found differences in the number of pantry visits in four months between categories of the following independent variables: age, years in the US, cancer type, and cancer stage (Table 2). All estimates that follow were obtained from the adjusted model, which provides estimates of each variable’s independent contribution to the outcome. On average, we found that patients under 50 years of age used the pantry fewer times compared to patients who were 50–64 years old ($b=0.32$, $SE=0.10$, $p=0.002$) and patients who were 65 years old or older ($b=0.27$, $SE=0.11$, $p=0.011$). Immigrant patients were found to use the pantry more times than US-born patients, regardless of how long they had been in the US. ($b=0.51$, $SE=0.19$, $p=0.009$ for new immigrants; $b=0.52$, $SE=0.17$, $p=0.002$ for established immigrants). Immigrants averaged about half a visit more compared to the US-born patients. On average, patients with prostate cancer visited the pantry more often compared to patients with breast cancer ($b=0.30$, $SE=0.12$, $p=0.009$). In contrast, patients with blood cancer and patients who did not know their cancer type used the pantry less often than patients with breast cancer ($b=-0.30$, $SE=0.11$, $p=0.005$ and $b=-0.24$, $SE=0.11$, $p=0.031$, respectively). Patients with Stage IV cancer used the pantry more on average compared to patients with Stage I cancer ($b=0.41$, $SE=0.19$, $p=0.028$).

Number of visits to the pantry was not associated with gender, marital status, education, household income, cancer treatment, or health insurance.

Conclusion

In this study assessing the utilization of hospital-based food pantries at five New York City cancer clinics among low-income minority cancer patients, we identified a preponderance of patients with “very low” or “low” food security (73%). Age, years in the US, cancer type, and cancer stage predicted the frequency of pantry use. Being an immigrant and having a later stage cancer predicted a greater number of pantry visits. Older patients and those with prostate cancer were also more likely to visit the pantries more frequently.

This study has limitations. Our data did not include length of time remaining in treatment, which could impact the number of potential pantry visits available to the patients. Our sample included a larger proportion of patients born in the Caribbean and Latin America compared to other immigrant sending countries, and a fairly large proportion of English-speakers. Future studies should include greater numbers of patients from varied regions of

origin. Studies should also focus on examining the needs of particularly vulnerable groups, such as undocumented immigrants who do not qualify for food assistance programs such as the Supplemental Nutrition Assistance Program (SNAP). Recent decreases in SNAP funding will make families in receipt of SNAP even more vulnerable (38; 39). Regardless of these limitations, this study gives an important look at the utilization of an innovative food assistance program. We found a high prevalence of food insecurity among food pantry users, with older patients, immigrants, patients with prostate cancer, and later stage cancer patients being more likely to use the pantry more frequently.

Future long-term larger scale studies are needed to further assess the utilization, as well as the impact of food assistance programs such as the one described in this study, on nutritional outcomes, cancer outcomes, comorbidities, and quality of life. Cancer patients most at risk, including immigrants and those with later stage cancers, should be taken into particular consideration in the development and implementation of interventions to address food insecurity.

Acknowledgements

This study was conducted with funding from the New York Community Trust, the CCNY-MSKCC Partnership for Cancer Research, Training, and Community Outreach (U54CA137788), the New York State Health Foundation, and the Laurie Tisch Illumination Fund.

References

1. Coleman-Jensen, A.; Nord, M.; Singh, A. Household Food Security in the United States in 2012. ERR-155. 2013. Retrieved from Economic Research Service website: www.ers.usda.gov/publications/err-economic-research-report/err155.aspx
2. Coleman-Jensen, A.; Nord, M.; Andrews, M.; Carlson, S. Household Food Security in the United States in 2011. ERR-141. 2011. Retrieved from Economic Research Service website: <http://www.ers.usda.gov/media/884525/err141.pdf>
3. Dumbauld S, Baumrind N. Food insecurity, health status and health risk behaviors: California, 2000. *Annals of Epidemiology*. 2002; 12(7):505.
4. Kneafsey M, Dowler E, Lambie-Mumford H, Inman A, Collier R. Consumers and food security: Uncertain or empowered? *Journal of Rural Studies*. 2013; 29:101–112.
5. Renzaho AMN, Mellor D. Food security measurement in cultural pluralism: Missing the point or conceptual misunderstanding? *Nutrition*. 2010; 26(1):1–9. [PubMed: 19804955]
6. Borjas, G. *Immigration and the Food Stamp Program*. Cambridge, MA: Harvard University Press; 1999.
7. Kasper J, Gupta SK, Tran P, Cook JT, Meyers AF. Hunger in legal immigrants in California, Texas, and Illinois. *American Journal of Public Health*. 2000; 90(10):1629–1633. [PubMed: 11030002]
8. Kersey M, Geppert J, Cutts DB. Hunger in young children of Mexican immigrant families. *Public Health Nutrition*. 2007; 10:390–395. [PubMed: 17362535]
9. Quandt SA, Shoaf JI, Tapia J, Hernandez-Pelletier M, Clark HM, Arcury TA. Experiences of Latino immigrant families in North Carolina help explain elevated levels of food insecurity and hunger. *Journal of Nutrition*. 2006; 136:2638–2644. [PubMed: 16988139]
10. Kaiser LL, Melgar-Quinonez HR, Lamp CL, Johns MC, Sutherlin JM, Harwood JO. Food security and nutritional outcomes of preschool-age Mexican-American children. *Journal of the American Dietetic Association*. 2002; 102:924–929. [PubMed: 12146552]
11. Kalil A, Chen JH. Mothers' citizenship status and household food insecurity among low-income children of immigrants. *New Directions for Child and Adolescent Development*. 2008; 2008(121): 43–62. [PubMed: 18792952]

12. Quandt S, Arcury T, Early J, Tapia J, Davis J. Household food security among migrant and seasonal Latino farmworkers in North Carolina. *Public Health Reports*. 2004; 119:568–576. [PubMed: 15504448]
13. Sullivan AF, Clark S, Pallin DJ, Camargo CAJ. Food security, health, and medication expenditures of emergency department patients. *Journal of Emergency Medicine*. 2010; 38(4):524–528. [PubMed: 19272731]
14. Bengt R, Sinnett S, Johnson T, Johnson MA, Brown A, Lee JS. Food insecurity is associated with cost-related medication non-adherence in community-dwelling, low-income older adults in Georgia. *Journal of Nutrition for the Elderly*. 2010; 29(2):170–191. [PubMed: 20473811]
15. Brown JL, Pollitt E. Malnutrition, poverty and intellectual development. *Scientific American*. 1996; 274(2):38–43. [PubMed: 8560214]
16. Chilton M, Black MM, Berkowitz C, et al. Food insecurity and risk of poor health among US-born children of immigrants. *American Journal of Public Health*. 2009; 99(3):556–562. [PubMed: 19106417]
17. Hamelin AM, Habicht JP, Beaudry M. Food insecurity: consequences for the household and broader social implications. *Journal of Nutrition*. 1999; 129(2S Suppl):525S–528S. [PubMed: 10064323]
18. Holben DH. Position of the American Dietetic Association: food insecurity in the United States. *Journal of the American Dietetic Association*. 2010; 110(9):1368–1377. [PubMed: 20821887]
19. Hromi-Fiedler A, Bermudez-Millan A, Segura-Perez S, Perez-Escamilla R. Household food insecurity is associated with depressive symptoms among low-income pregnant Latinas. *Maternal and Child Nutrition*. 2011; 7(4):421–430. [PubMed: 20735732]
20. Huddleston-Casas C, Charnigo R, Simmons LA. Food insecurity and maternal depression in rural, low-income families: a longitudinal investigation. *Public Health Nutrition*. 2009; 12(8):1133–1140. [PubMed: 18789167]
21. Reid MB, P A-G. Malnutrition and the critically ill elderly patient. *Critical Care Nursing Clinics of North America*. 2004; 16(4):531–536. [PubMed: 15571941]
22. Simmons LA, Modesitt SC, Brody AC, Leggin AB. Food insecurity among cancer patients in Kentucky: a pilot study. *Journal of Oncology Practice*. 2006; 2(6):274–279. [PubMed: 20859354]
23. Strohle A, Zanker K, Hahn A. Nutrition in oncology: the case of micronutrients (review). *Oncology Reports*. 2010; 24(4):815–828. [PubMed: 20811659]
24. American Dietetic Association. [Retrieved May 13, 2015] Oncology evidence-based nutrition practice guideline. 2007. from <http://www.guideline.gov/content.aspx?id=48765>
25. Fearon KC, Voss AC, Hustead DS. Cancer Cachexia Study Group Definition of cancer cachexia: effect of weight loss, reduced food intake, and systemic inflammation on functional status and prognosis. *American Journal of Clinical Nutrition*. 2006; 83(6):1345–1350. [PubMed: 16762946]
26. Laviano A, Meguid MM, Inui A, Muscaritoli M, Rossi-Fanelli F. Therapy insight: Cancer anorexia-cachexia syndrome--when all you can eat is yourself. *Nature Clinical Practice Oncology*. 2005; 2(3):158–165.
27. Marin Caro MM, Laviano A, Pichard C. Nutritional intervention and quality of life in adult oncology patients. *Clinical Nutrition*. 2007; 26(3):289–301. [PubMed: 17368656]
28. Ravasco P, Monteiro-Grillo I, Vidal PM, Camilo ME. Cancer: disease and nutrition are key determinants of patients' quality of life. *Supportive Care in Cancer*. 2004; 12(4):246–252. [PubMed: 14997369]
29. Santarpia L, Contaldo F, Pasanisi F. Nutritional screening and early treatment of malnutrition in cancer patients. *Journal of Cachexia, Sarcopenia and Muscle*. 2011; 2(1):27–35.
30. Capra S, Ferguson M, Ried K. Cancer: impact of nutrition intervention outcome-nutrition issues for patients. *Nutrition*. 2001; 17:769–772. [PubMed: 11527676]
31. Haehling S, Anker SD. Cachexia as a major underestimated and unmet medical need: facts and numbers. *Journal of Cachexia, Sarcopenia and Muscle*. 2010; 1:159–167.
32. Kern KA, Norton JA. Cancer cachexia. *Journal of Parenteral and Enteral Nutrition (JPEN)*. 1988; 12(3):286–298.

33. Gany F, Lee T, Ramirez J, et al. Do our patients have enough to eat?: Food insecurity among urban low-income cancer patients. *Journal of Health Care for the Poor and Underserved*. 2014; 25(3): 1153–1168. [PubMed: 25130231]
34. Gany F, Bari S, Crist M, Moran A, Rastogi N, Leng J. Food Insecurity: Limitations of Emergency Food Resources for our Patients. *Journal of Urban Health*. 2013; 552–558(90):93.
35. Cella DF, Tulsky DS, Gray G, et al. The Functional Assessment of Cancer Therapy Scale: Development and Validation of the General Measure. *Journal of Clinical Oncology*. 1993; 11(3): 570–579. [PubMed: 8445433]
36. United States Department of Agriculture. US household food security survey module: three stage design, with screeners. 2008. from <http://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/survey-tools.aspx>
37. Liang KY, Zeger SL. Longitudinal data analysis using generalized linear models. *Biometrika*. 1986; 73:13–22.
38. Dean S, Rosenbaum D. SNAP Benefits Will Be Cut for Nearly All Participants In November 2013. 2013 from <http://www.cbpp.org/cms/?fa=view&id=3899>.
39. Radford J. Food banks to see more traffic as SNAP funding decreases. 2013 from <http://www.wcyb.com/news/food-banks-to-see-more-traffic-as-snap-funding-decreases/22778124>.

Table 1

Characteristics of the sample (N=351)

	N	Percent (of available cases ¹)
Age		
Less than 50	94	28.9
50–64 years old	138	42.5
65 or older	93	28.6
Gender		
Male	104	30.5
Female	237	69.5
Years in the US		
<6 years	65	19.5
6 or more years	186	55.7
US born	82	24.6
Region of birth		
United States	82	24.1
Latin America	101	29.7
Caribbean	137	40.3
Other (Africa, Middle East, Europe, Asia, South Asia)	20	5.9
Married/partnered		
Yes	120	35.9
No	214	64.1
Highest level of education		
None–5 th grade	34	10.1
6 th – 8 th grade	57	16.9
9–11 th grade	52	15.4
12 th grade or HS graduate	128	37.9
Some college or higher	67	19.8
Health Insurance		
Emergency Medicaid	73	21.8
Other insurance (Private, Medicaid Medicare, etc.)	221	66.0
Uninsured	41	12.2
Household Size		
1	67	20.1
2	96	28.8
3	59	17.7
4	48	14.4
5	38	11.4
6 or more	25	7.5
Household income		
\$0	38	11.3

	N	Percent (of available cases ¹)
\$1–767	65	19.4
\$768–1838	87	26.0
>\$1838	25	7.5
Don't know / Other / Refused	120	35.8
Food Security categories		
Very low	78	38.8
Low	90	44.8
Marginal	16	8.0
High	17	8.5
FACT-G score (mean, SD)	70.85	16.25
Cancer type		
Breast	143	41.9
Gastrointestinal	54	15.8
Gynecological	22	6.5
Prostate	37	10.9
Lung	23	6.7
Blood	23	6.7
Head and neck	11	3.2
Other	25	7.3
Don't know	3	0.9
Cancer stage		
I	34	10.2
II	33	9.9
III	43	12.9
IV	43	12.9
Other	14	4.2
Don't know	166	49.9
Current Treatment		
Chemotherapy	115	36.9
Radiation	107	34.3
Both	47	15.1
Neither	43	13.8
Activity level		
Completely normal	79	29.8
Mildly limited	127	47.9
Very limited	59	22.3
Number of pantry return visits		
0	76	21.7
1	58	16.5
2	50	14.2
3	29	8.3

	N	Percent (of available cases ^I)
4	27	7.7
5	25	7.1
6	32	9.1
7	21	6.0
8 or more	33	9.4

^I Frequency of missing data on participant characteristics: age (26), years in the US (18), gender (10), marital status (17), region of birth (11), highest level of education (13), health insurance (16), household income (16), food security (150), FACT-G (64), cancer type (10), cancer stage (18), current treatment (39), activity level (86).

Table 2

GEE Poisson model predicting number of pantry visits in 4 months, accounting for correlation between patients attending the same food pantry (Total N=351, N included in model=278)^a

Predictor [§]	Adjusted b (s.e.)	p-value	
Model intercept	0.02 (0.24)	.	
Age			
Less than 50 (<i>referent</i>)	(referent)		
50–64 years old	0.32 (0.10)	0.002	*
65 or older	0.27 (0.11)	0.011	*
Gender			
Male (<i>referent</i>)	(referent)	.	
Female	0.21 (0.12)	0.080	
Years in the US			
<6 years	0.51 (0.19)	0.009	*
6 or more years	0.52 (0.17)	0.002	*
US born (<i>referent</i>)	(referent)	.	
Married/partnered			
Yes (<i>referent</i>)	(referent)	.	
No	0.11 (0.09)	0.183	
Highest level of education			
None–5 th grade	–0.05 (0.29)	0.856	
6 th – 8 th grade	–0.15 (0.26)	0.577	
9–11 th grade	0.02 (0.18)	0.919	
12 th grade or HS graduate	–0.10 (0.10)	0.307	
Some college or higher (<i>referent</i>)	(referent)	.	
Household income			
\$0	–0.28 (0.18)	0.128	
\$1–767	0.24 (0.14)	0.084	
\$768–1838 (<i>referent</i>)	(referent)	.	
>\$1838	0.07 (0.19)	0.717	
Don't know / Other / Refused	–0.03 (0.21)	0.887	
Cancer type			
Breast (<i>referent</i>)	(referent)	.	
Gastrointestinal	–0.13 (0.20)	0.499	
Gynecological	–0.08 (0.09)	0.355	
Prostate	0.30 (0.12)	0.009	*
Lung	0.11 (0.21)	0.610	
Blood	–0.30 (0.11)	0.005	*
Head and neck	0.14 (0.17)	0.420	
Other	–0.33 (0.28)	0.237	
Don't know	–0.24 (0.11)	0.031	*

Predictor [§]	Adjusted b (s.e.)	p-value
Cancer stage		
I (<i>referent</i>)	(referent)	.
II	0.56 (0.30)	0.054
III	0.26 (0.23)	0.250
IV	0.41 (0.19)	0.028 *
Don't know	0.22 (0.11)	0.054
Other	0.27 (0.26)	0.286
Current treatment		
Chemotherapy	0.10 (0.13)	0.426
Radiation	−0.03 (0.07)	0.722
Both	0.03 (0.13)	0.814
Neither (<i>referent</i>)	(referent)	.
Health Insurance		
Emergency Medicaid	0.21 (0.12)	0.078
Other insurance	0.12 (0.11)	0.265
Uninsured (<i>referent</i>)	(referent)	.

^a All analyses among available cases.

[§] Predictor data collected at intake or first pantry visit.

* Significant at $\alpha < 0.05$.