

Food security resource use among University of California students

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Introduction

Food insecurity is characterized as a limited or uncertain ability to get enough food due to lack of financial resources, resulting in reduced food intake and disrupted eating patterns. Though quantity of food is not always impacted, dietary quality is almost always compromised, resulting in periodic malnourishment with potential long-term effects. Among children and adults, food insecurity has been consistently associated with adverse cognitive, physical, and mental health outcomes.

Recent studies have shown that college students have experienced food insecurity at disproportionately higher rates (between 20-59%) than the national average (14%). Given that approximately 20.2 million students were enrolled in American colleges and universities in 2015, these statistics are cause for concern.

Institutions across the country have started to respond to issues of food access and affordability through a variety of programming efforts including the creation of on-campus food pantries, free cooking classes, and instituting outreach programs to connect students with external resources such as the Supplemental Nutrition Assistance. However, to our knowledge, there is no research that has explored the efficacy of these food assistance outreach efforts.

Aims

Explore the receipt and use of food security outreach efforts and assess whether it is associated with higher fruit and vegetable intake as an indicator of dietary quality.

Materials and methods

Data were collected using two cross-sectional online surveys that were administered during spring 2015. A total of 66,970 randomly selected graduate and undergraduate students from all ten UC campuses were invited to participate in the study through either the National College Health Assessment II (administered to 4 campuses) survey or an independent campus survey (administered to 6) via e-mail. Each survey contained items regarding students' demographic information, eating and exercise behaviors, food procurement strategies and barriers to access, working status, as well as campus resource use and childhood food insecurity.

We conducted descriptive analyses to assess the relationship between each of the potential covariates with the exposure (campus resource use) as well as the outcome (fruit and vegetable intake). Fruit and vegetable intake were approximated as 0, 1.5, 3.5 and 5.5 servings of both per day. A multivariate ordinal logistic regression was used to test the relationship between the exposure and the outcome. Covariates were identified a priori based on previously identified relationships found in the literature. Housing, marital status, parental status, receipt of financial aid, gender, childhood food insecurity, university level (graduate vs. undergraduate), UC campus, age group, hours spent working for pay, and race were tested as covariates using likelihood-ratios; all but UC campus significantly improved the fit of and were included in the final model.

Results

Table 1. Select demographic characteristics of a UC student population

	n (%)
Undergraduate (n=8838)	5844 (66.1)
Age (n= 8804)	
18-24	6323 (71.8)
25-34	2124 (24.1)
35+	357 (15.0)
Race (n=8929)	
Hispanic	1881 (21.1)
Non-Hispanic White	3021 (33.8)
Non-Hispanic Black	209 (2.3)
Asian	2744 (30.7)
Biracial/Other	1074 (12.0)
Female (n=8812)	5937 (67.4)
Marital Status (n=8845)	
Single	7472 (84.5)
Married/living with partner	1151 (13.0)
Divorced/separated/other	222 (2.5)
Parent of a child (n=8807)	465 (5.3)
Financial aid recipient (n=8813)	5719 (64.9)
Hours worked per week (n=8825)	
0	4189 (47.5)
1-9	1083 (12.3)
10-19	1637 (18.6)
20-29	868 (9.8)
30+	1048 (11.9)
Residence (n=8871)	
Campus residence hall	2057 (23.2)
Other university housing	998 (11.3)
Parent/Guardian's home	479 (5.4)
Off-campus housing	5157 (58.1)
Food insecure as a child (n=8774)	1958 (22.3)

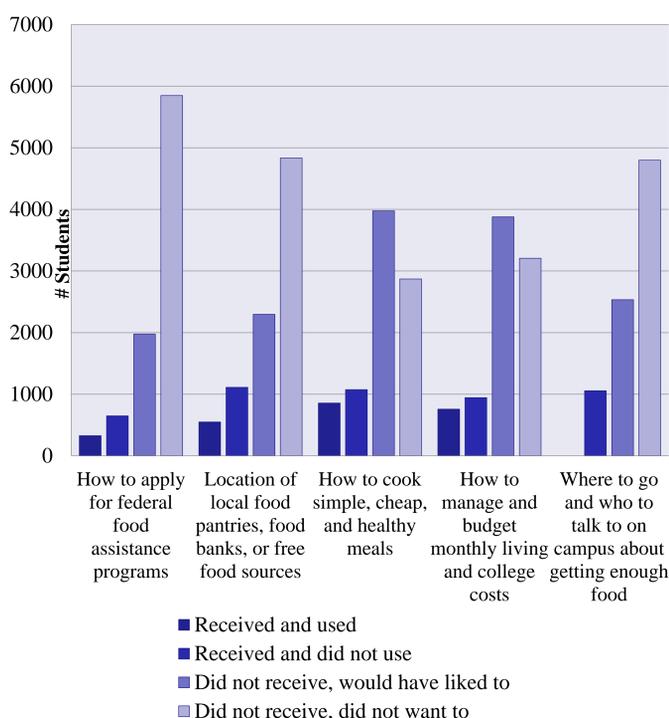


Figure 1. Campus resource use among UC students

Table 2. Odds ratios (with 95% confidence intervals between campus resource use and each level of fruit and vegetable intake

	Received and did not use	Did not receive, would have liked to	Didn't use, didn't want to
How to apply for federal food assistance programs	1.1 (.8, 1.4)	0.9 (0.7, 1.2)	1.1 (.8, 1.4)
Location of local food pantries, food banks, or free food sources	1.2 (1.0, 1.6)	1.2 (1.0, 1.5)	1.3* (1.0, 1.6)
How to cook simple, cheap, and healthy meals	.8 (0.7, 1.1)	.7** (0.6, .8)	.9 (.7, 1.1)
How to manage and budget monthly living and college costs	.8 (0.6, 1.1)	.9 (.7, 1.1)	.9 (.7, 1.2)
Where to go and who to talk to on campus about getting enough food	1.4* (1.0, 1.9)	1.1 (.9, 1.5)	1.2 (.9, 1.6)

Received and used was the comparison group. *p<0.05; **p<0.01

Conclusion

Students who did not receive information on how to cook cheap and healthy meals had lower odds of eating more servings of fruits and vegetables compared to those who did receive and use the information. This finding suggests that providing students with information about healthy meals on a budget could help to improve fruit and vegetable intake in this population. Future studies are needed to validate this finding.

Works Cited

- Coleman-Jensen A, Rabbitt MP, Gregory C, Singh A. Household Food Security in the United States in 2014. ERR-194: U.S. Department of Agriculture, Economic Research Service; September, 2015.
- Leung CW, Epel ES, Ritchie LD, Crawford PB, Laraia BA. Food insecurity is inversely associated with diet quality of lower-income adults. *J Acad Nutr Diet.* 2014; 114(12):1943-1953.
- Kirkpatrick SI, Tarasuk V. Food insecurity is associated with nutrient inadequacies among Canadian adults and adolescents. *Journal of Nutrition.* 2008;138(3):604-612.
- Seligman HK, Laraia BA, Kushel MB. Food Insecurity Is Associated with Chronic Disease among Low-Income NHANES Participants. *Journal of Nutrition.* 2010; 140(2): 304-310.
- Vozoris NT, Tarasuk VS. Household food insufficiency is associated with poorer health. *J Nutr.* 2003;133:120-6.
- Martin MS, Maddocks E, Chen Y, Gilman SE, et al. Food insecurity and mental illness: disproportionate impacts in the context of perceived hunger stress and social isolation. *Public Health.* 2016; pii: S0033
- Murphy, Wehler, Pagano, Little, Kleinman and Jellinek (1998) Relationship Between Hunger and Psychosocial Functioning in Low-Income American Children. *Journal of American Academy of Child and Adolescent Psychiatry.* 37 (2), 163-170.
- Slack and Yoo (2005) Food hardship and child behavior problems among low-income children. *Social Service Review.* 75, 511-536.
- Jyoti, D. F., Frongillo, E. A., & Jones, S. J. (2005). Food insecurity affects school children's academic performance, weight gain, and social skills. *The Journal of Nutrition.* 135(12), 2831-2839.
- Bahrampour T. More college students battle hunger education and living costs rise. *The Washington Post.* April 9, 2014, 2014.
- Chaparro MP, Zaghoul SS, Holck P, Dobbs J. Food insecurity prevalence among college students at the University of Hawaii'i at Manoa. *Public health nutrition.* Nov 2009;12(11):2097-2103.
- Hughes R, Serebryanikova I, Donaldson K, Leveritt M. Student food insecurity: The skeleton in the university closet. *Nutrition & Dietetics.* Mar 2011;68(1):27-32.
- Maroto M. *Food insecurity among community college students: Prevalence and relationship to GPA, energy, and concentration.* Morgan State University; 2013.
- Patton-Lopez MM, Lopez-Cevallos DF, Cancel-Tirado DI, Vazquez L. Prevalence and Correlates of Food Insecurity Among Students Attending a Midsize Rural University in Oregon. *J. Nutr. Educ. Behav.* May-Jun 2014;46(3):209-214.
- Schallhorn K. Rising cost of college prompt schools to open food pantries for hungry students. 2014; www.campusreform.org/?ID=5533. Accessed April 10, 2016.
- Eltman F. Food pantries on the rise at college campuses as tuitions increase. *Huffington Post.* Mar 3, 2013, 2014.

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