



Low-Income Californians with Access to Produce in Their Home, School, Work, and Community Environments Eat More Fruits and Vegetables

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Summary

The *Network for a Healthy California* is a large-scale nutrition education, social marketing, and obesity prevention program of the California Department of Public Health, providing nutrition education to CalFresh participants and other low-income Californians. With fruit and vegetable intake being a clear indicator of eating healthy foods, having adequate access to quality and affordable fruits and vegetables is a key component of increasing consumption in low-income communities. This brief presents differences in fruit and vegetable intake among low-income children, teens, and adults from households receiving CalFresh based on their access to fruits and vegetables where they live, work, learn, and play. Effective strategies to improve access to fresh, healthy foods in these areas may improve the health of low-income Californians.

Background

Obesity is a serious public health issue affecting not only adults, but also children and adolescents.^{1,2} There is growing evidence that fruit and vegetable consumption can aid in weight maintenance and even weight reduction.³ Having adequate access to quality and affordable fruits and vegetables is a key component of increasing consumption in low-income communities. Access is defined in this study as having sufficient resources to obtain appropriate foods for a nutritious diet, while food availability refers to having sufficient quantities of food available on a consistent basis.⁴ This research brief frequently refers to food availability, which is an indicator of access.

It has been established that there is a link between the food environment, both at home and away-from-home, and obesity.⁵⁻⁷ It is also recognized that residents of low-income communities have less access to healthy foods and an abundance of unhealthy foods compared to their higher income counterparts.⁸⁻¹⁰ Disparities also exist in accessibility to fruits and vegetables at worksites with higher education relating to better access.¹¹ In the home environment, the availability of less healthful food choices has been identified as an important barrier to choosing fruits and vegetables, while the strongest predictor of fruit and vegetable intake in teens is the availability of these foods at

home.^{12,13} In the neighborhood environment, the presence of fast food and convenience stores close to home negatively effects fruit and vegetable intake of children,¹⁴ while having a large grocery store in the neighborhood was shown to be associated with consuming just over two-thirds of a serving more fruits and vegetables daily for adults,¹⁵ and persons who have had the experience of community gardening are more than twice as likely than non-gardeners to report eating fruits and vegetables at least five times a day.¹⁶ Improving the availability of affordable, healthier foods in the neighborhood as well as at worksites may improve consumption of healthier foods.¹⁷ Besides addressing healthier food availability through food retailers, strategies including expanding access to farm fresh produce from venues like farmers' markets¹⁷ as well as community gardens¹⁸ could be implemented to increase availability and consumption of healthier foods.

An increasing number of programs and campaigns at the national and state levels are working to improve the food environment in low-income communities. The importance and need for improving the food environment in low-income communities is highlighted by an increasing number of programs and campaigns at both the national and state level. The federal government has elevated the issue of healthy food access and food environments through initiatives like *Let's Move!*, which includes access to healthy, affordable foods as one of its five pillars, as well as the Healthy Food Financing Initiative (HFFI), which helps finance food retailers in underserved areas. At the state level in California, a key priority for the California Department of Public Health's (CDPH) Nutrition Education and Obesity Prevention Program Three-Year Implementation Plan (NEOP Plan) is "Increasing access and consumption of fresh, healthy foods."¹⁹ The NEOP Plan outlines strategies for increasing access to healthy foods in a variety of ways that can synergize with national efforts.

The *Network for a Healthy California (Network)* is a large-scale nutrition education, social marketing, and obesity prevention program of CDPH, providing nutrition education to CalFresh participants and those eligible to receive CalFresh, a federal aid program providing financial assistance for purchasing food to low- and no-income Californians. The *Network* is funded by United States Department of Agriculture's Supplemental Nutrition Education Program (SNAP). Fruit and vegetable consumption has been the *Network's* indicator for healthy foods since its inception in 1996.

The *Network* conducts three biennial statewide surveys of dietary and physical activity behaviors, attitudes, and the environment that help track changes in this indicator and related factors: The *California Dietary Practices Survey of Adults (CDPS)*, the *California Teen Eating, Exercise, and Nutrition Survey (CalTEENS)*, and the *California Children's Healthy Eating and Exercise Practices Survey* of 9- to 11-year-old children (*CalCHEEPS*). Data presented in this brief were taken from the 2011 *CalCHEEPS*, 2010 *CalTEENS*, and 2011 *CDPS*. (See Data Sources and Methods for a description of these surveys).

Survey Findings

The *Network* surveys provide additional support for the positive impact of food access in low-income communities on diet. Fruit and vegetable intake varied among low-income children, teens, and adults from households receiving CalFresh based on their access to fruits and vegetables in their home, school, work, and community environments. Identifying and utilizing effective strategies to improve access to healthy foods in the places where people live, work, learn, and play can improve the health of low-income Californians.

Fruit and Vegetable Access in the Home

In the home environment, availability and access to ready-to-eat fruits and vegetables was explored among youth. Both children and teens reported eating two-thirds of a cup more fruits and vegetables when there were vegetables cut-up and ready-to-eat at home. Teens also reported eating more fruits and vegetables (0.7 cup) when fruit was available to eat at home.

Youth Access to Fruits and Vegetables Reported at Home, by Consumption			
Home Access	Mean Cups of Fruits and Vegetables		
	Child	Teen	
<i>Vegetables (cut up) Available at Home</i>	N=331	N=613	
Always/Sometimes	1.6***	Yes	2.8***
Never	0.9	No	2.1
<i>Fruits Available at Home</i>	N=334	N=615	
Always/Sometimes	ns	Yes	2.7**
Never	ns	No	2.0

** p<.01, *** p<.001; ns = not significant

Fruit and Vegetable Access at School

Most youth spend a great deal of time and eat at least one meal daily at school. In the school environment, two elements of fruit and vegetable access were examined: tasting fruits and vegetables in the classroom and participation in the school breakfast program. Youth with access to fruits and vegetables during the school day reported eating more. Getting to taste fruits and vegetables in the classroom was associated with greater fruit and vegetable intake (0.4 cup more) among 9- to 11-year-old children. Teens who reported eating school breakfast daily reported eating a half cup more fruits and vegetables than their classmates who ate school breakfast less often.

Youth Access to Fruits and Vegetables Reported at School, by Consumption

Mean Cups of Fruits and Vegetables			
School Access	Child		Teen
Tasted FV in Classroom	N=330		
Yes	1.7**		NA
No	1.3		NA
Ate School Breakfast	Yesterday	Past Week	
	N=334	N=587	
Yes	ns	5 days	3.0**
No	ns	0-4 days	2.5

** p<.01; ns = not significant; NA = not asked; FV = fruits and vegetables

Fruit and Vegetable Access at or near Work

For adults, access to fruits and vegetables at or near the worksite was investigated. Higher consumption of fruits and vegetables was found among adults reporting employer-provided produce or regular purchases of produce near work. Adults whose employers provided fruits and vegetables by means of onsite farmers' markets, weekly local produce delivery, or free snacks of fresh fruit reported eating over a cup more fruits and vegetables daily than adults without access to fruits and vegetables at work. Adults who buy vegetables near their worksite (often or sometimes) also reported eating nearly a cup more fruits and vegetables daily than adults making these purchases less often (rarely or never).

Adult Access to Fruits and Vegetables at or near Work, by Consumption

Mean Cups of Fruits and Vegetables	
Worksite Access	Adult
Employer Provided FV	N=851
Yes	3.6*
No	2.5
Buy Vegetables near Worksite	N=851
Often/Sometimes	3.2*
Rarely/Never	2.4

* p<.05; FV = fruits and vegetables

Fruit and Vegetable Access in the Community

Low-income Californians who frequented community access points, including gardens, farmers' markets, and neighborhood food retailers, showed higher fruit and vegetable intake. Both teens and adults who worked in a garden to grow fruits and vegetables reported eating about a half cup more fruits and vegetables than their peers who never worked in a garden. Adults who bought most of their fruits and vegetables at farmers' markets reported eating more fruits and vegetables with a half cup more fruits and vegetables consumed by adults frequenting farmers' markets to buy most (Almost All/Most/About Half) of their produce compared to those purchasing less (A Little/None). In addition, adults who reported regular access to quality, affordable fruits and vegetables in their neighborhood (Always/Often/Sometimes) reported higher intake of fruits and vegetables than those with limited access (Seldom/Never).

Teens who reported having fruits and vegetables available when they were hungry reported eating a cup more fruits and vegetables. In this case, access could refer to any of the places that teens spend time: their home or a friend's house, at school, or in their neighborhood or larger community. Regardless of the location, and perhaps contrary to popular belief, this suggests that if fruits and vegetables are readily available to teens, they will eat them.

Access to Fruits and Vegetables in the Community, by Consumption

Community Access	Mean Cups of Fruits and Vegetables	
	Teen	Adult
<i>Worked in a Garden</i>	N=613	N=851
Yes	2.9*	2.8**
No	2.5	2.3
<i>Access to Quality/Affordable FV in Neighborhood</i>		N=850
Always/Often/Sometimes	NA	2.6*
Seldom/Never	NA	2.1
<i>Amount of FV Bought at Farmers' Market</i>		N=849
Almost All/Most/About Half	NA	2.9***
A Little/None	NA	2.4
<i>FV Available when Hungry</i>	N=615	
Yes	2.7***	NA
No	1.7	NA

* $p < .05$, ** $p < .01$, *** $p < .001$; NA = not asked; FV = fruits and vegetables

Summary and Conclusions

With a key priority of obesity prevention efforts focused on increasing access and consumption of fresh, healthy foods, this analysis identified important access points and behaviors in the home, school, work, and community environments that showed higher fruit and vegetable intake among low-income children, teens, and adults in California. Low-income Californians reported eating more fruits and vegetables when they reported:

HOME

- Availability of healthy snacks at home such as fruits and vegetables that are cut up and ready to eat.

SCHOOL

- Access to fruits and vegetables served in the school breakfast program.
- Exposure to fresh, healthy foods provided by fruit and vegetable taste testing in the classroom.

WORKSITE

- Employer-provided fruits and vegetables at worksites.
- Availability of fruits and vegetables they purchased near worksites.

COMMUNITY

- Experience growing fruits and vegetables in gardens.
- Opportunities to purchase fruits and vegetables at farmers' markets.
- Access to high quality and affordable fruits and vegetables in the neighborhood.

Although fruit and vegetable consumption has increased since 1997 among low-income Californians, it remains below recommended levels.²⁰ The implementation of the Healthy, Hunger-Free Kids Act²¹ for SNAP education (SNAP-Ed) in 2012 provided the *Network* with an opportunity to augment its nutrition education efforts with community and public health approaches utilizing SNAP-Ed funded and non-funded partnerships and engaged community members. A number of such evidence and practice-based interventions and strategies have been recommended that can contribute to reaching the goal of having a variety of affordable, good quality, healthy foods accessible within the communities of low-income Californians.^{17-19,22,23} Some examples include:

- Promoting participation in SNAP, the federal school meal programs, and other supplemental nutrition programs
- Instituting healthy procurement practices and environmental approaches (including nutrition standards for vending machines) in government entities, worksites, schools, child care, after school programs, and other institutions
- Facilitating the development of school and community gardens in low-income neighborhoods that are integrated with nutrition education, including cooking classes
- Increasing availability of fresh, healthy produce by working with local growers to initiate farm-to-fork efforts in a variety of settings such as:
 - Establishing farmers' markets in low-income neighborhoods or less traditional areas, such as WIC clinics, low-resource schools, low-income worksites and encouraging the farmers' markets to accept EBT and WIC vouchers;
 - Supporting regular delivery of cost-effective Community Supported Agriculture at social service settings like county welfare offices and non-profit organizations;
 - Providing students with an additional opportunity to enjoy fruits and vegetables as part of the school day by establishing school salad bars;
 - Establishing occasions for taste tests of fruits and vegetables in school cafeterias, nutrition classes or work place meetings as a way to increase exposure to a variety of fresh produce;

- Incorporating fresh produce into school meals and into foods offered at food pantries
- Developing relationships for farmer visits to low-resource schools and student field trips to farms
- Expanding retail opportunities to obtain healthy, affordable foods in low-income neighborhoods by working with small markets and corner stores to improve food choices, quality, placement, and food displays and working on the development of supermarkets, grocery stores, and cooperatives in neighborhoods without sufficient healthy food retail outlets
- Facilitating the implementation of point of sale signage and other marketing methods to promote consumption of healthy foods versus less healthy foods; promoting healthy products through the location and placement of healthy foods (e.g., healthy checkout lanes)

By improving access to healthy food where people live, work, learn, and play in combination with high quality nutrition education, social marketing, and the utilization of policy, systems, and environmental changes, public health initiatives can better support improvements to the health of low-income Californians.

Data Sources and Methods

CalICHEEPS, *CalTEENS*, and *CDPS* were CalFresh list-assisted telephone interviews conducted in English and Spanish with random samples of California households receiving CalFresh. The telephone interviews collected information from children (9-11 years), teens (12-17 years), and adults (18+ years) regarding dietary intake and access to fruit and vegetables. *CalICHEEPS* (2011) included a parent-assisted 24-hour dietary recall to capture the diet of 9- to 11-year-old children. In total, 334 children from CalFresh households completed the telephone interview, with a response rate of 60 percent. *CalTEENS* (2010) and *CDPS* (2011) used a simplified 24-hour recall which asked about each meal on the previous day, including breakfast, lunch, dinner, and all snacks. In total, 615 teens from CalFresh households and 851 adult CalFresh recipients completed the telephone interview. Cooperation rates were 58 percent for teens and 37 percent for adults. The CalFresh samples for each survey mirrored the CalFresh population, so the data were not weighted.

This study used bivariate analyses to identify potential determinants of fruit and vegetable intake among children, teens, and adults. Specifically, t-tests were conducted for all mean comparisons and are reported in the tables in the paper. Additionally, ANCOVAs were conducted controlling for significant demographic factors (e.g., gender, race, age,

and education) to adjust for potential confounding factors (only t-test results that were still significant after controlling for significant demographic factors were reported in the tables in the paper). Analyses of *CalICHEEPS* were conducted using SPSS Statistics 20.0 (SPSS Inc., 2011, Chicago, IL); *CalTEENS* and *CDPS* data were analyzed using SAS software Version 9.3 (SAS Institute Inc., 2002-2010, Cary, NC).

Limitations

A limitation of *CalICHEEPS*, *CalTEENS*, and *CDPS* is the inability of a single 24-hour recall to directly estimate the distribution of usual intakes in a population due to within-person variance. However, the recall is useful for estimating a population's mean usual daily intake as a marker of progress toward meeting recommendations. These analyses were only conducted using samples of CalFresh recipients in California and therefore may not be generalizable to the general population in the State, other states, or the nation. In addition, with all three instruments there is both a self-report and social desirability bias that may impact the data reported by respondents.

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