

« *Food store environment in USA* »

Editorial

On the importance of community research...

The basic rules of healthy diets are now reasonably well established. They are currently more and more promoted through improving consistent nutrition-health policies increasingly implemented throughout the world; and consistently again they fail to reach the population subgroups who would benefit the most from following these basic rules. We all know that, obviously, spectacular cutting-edge science working with all the powerful “omics” will more and more and continuously provide refined and better views about the underlining molecular mechanisms; however, reading the research papers summarized in this issue will only lead to a very simple question: and so what?

Some of the barriers that prevent nutrition policies to be a success are clearly illustrated in these papers using different settings and different research tools. These papers consistently point out the strong opposition of the food offer and environment with the healthy basic rules, especially for the poorest communities, and this is certainly not specific for the United States where this research has been performed. It is likely that this situation provides reasonable profits allowing adequate economic survival of the grocery or convenient stores described in these papers. It is likely also that it provides possibly more than adequate profits for the manufacturers of these foods; as far as there is externalization of the high costs linked to the now well-known side effects of this food environment.

Though this research will not provide high impact factor or “h” factor to the researchers, there is a clear need for increased funding of more and more studies in this direction. These studies could potentially better document and design what could be more efficient action levers for improving public health nutrition than only trustful but out-of-context health messages!

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Grocery Stores – Challenges and Opportunities in Promoting Healthful Foods

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In many areas of the United States public health professionals, elected officials, community leaders, foundations and others are engaged in strategies to increase access to fresh fruits and vegetables and other healthy foods in low income communities. Grocery stores can be part of the solution to increase access.

2311 food and beverage products were analysed

A recent study¹ highlights the need to engage with grocery stores in order to influence the types of foods they advertise on sale. “An Analysis of Bronx-based Online Grocery Store Circulars for Nutritional Content of Food and Beverage Products” assessed the nutritional quality of foods and beverages advertised by 15 Bronx-based grocery stores with respect to the diabetes epidemic. Specifically, this study assessed the extent to which these grocery stores offered nutritious foods on sale in their weekly circulars. The Bronx is a borough of New York City with a high proportion of low income families and high rates of Type 2 diabetes and obesity. Over a two month period, 2,311 food and beverage products placed on the first page of online circulars for these Bronx-based grocery stores were analyzed for:

1. total sugar content;
2. number of starchy and non-starchy fruits and vegetables;
3. total fiber and carbohydrate content;
4. whether the product was processed; and
5. sale price.

An abundance of low nutritional value foods at affordable prices

The study found that the first page of grocery circulars featured a high proportion of sugar-sweetened beverages, baked goods, refined breakfast cereals, cereal grains and pasta.

Approximately 59% of the beverages advertised on sale were sugar sweetened beverages and 84% of the products were processed. Only 1.4% of the advertised specials had a fiber content of 5 or more grams per serving and only 16.5% were for fresh fruits and green, leafy vegetables. Although this cross-sectional study took place over a short time frame, the authors note it provides useful insights into a problem impacting many low-income neighborhoods, the abundance of foods of poor nutritional quality priced to sell.

In order to curb the diabetes epidemic, the authors conclude that it is important for grocery stores to participate in prevention efforts by increasing the availability and affordability of fruits and vegetables, fiber-rich foods and whole grain products. They suggest placing healthier foods prominently in grocery stores and actively promoting them to customers in low-income neighborhoods.

The SpartanNash (SN) pilot in the state of Michigan

An example of a grocery store company² playing a leadership role in helping low income consumers purchase more fresh fruits and vegetables is SpartanNash (SN) in Michigan. Three SN stores are pilot testing a healthy food incentive program called Double

Up Food Bucks (DUFB). DUFB provides low income customers who receive Supplemental Nutrition Assistance Program (SNAP) benefits with a dollar-for-dollar match to purchase fresh, locally grown fruits and vegetables. When customers purchase any fresh produce at participating stores, they accrue matching DUFB of up to \$10 per visit. The incentive dollars are stored on SN’s loyalty card system, called the Yes Rewards card. SNAP families can spend their DUFB on any Michigan grown fruits and vegetables just as they might spend any other reward points. Using SN’s loyalty card system allows the retailer, program administrators and evaluators to track shopper purchase patterns and see if the incentives have increased fruit and vegetable purchase and consumption.

Encourage other retailers to take similar actions

SN is partnering with Fair Food Network (FFN), a Michigan-based nonprofit organization, to pilot DUFB. FFN is providing funding for the incentives through grants from several foundations and leading community outreach and evaluation. SN made investments in a sophisticated and secure transaction system. To ensure a successful customer experience, FFN and SN are collaborating on communications. Prominent in-store signage promotes and explains how DUFB works. Produce is marked with Michigan-grown labels. At checkout and the customer service desk, store associates hand out flyers that explain how the program works in English and Spanish. FFN is also sending postcards to SNAP recipients’ homes in neighborhoods surrounding the stores in Grand Rapids, Battle Creek, and Detroit, Michigan.

Making sure SNAP consumers understand the potential of DUFB to increase their fresh produce purchasing power is critical for the program’s success especially given the many other ways SNAP dollars can be spent. Early results have shown that daily produce sales have been up as much as 17 per cent from the prior year. SN plans to expand to other locations to reach more low income families.

SN is excited to be the first retail grocery chain in the country to implement produce incentives for SNAP families and this will hopefully pave the way for other grocery retailers across the country to drive increased produce sales to consumers using food assistance dollars.

Other grocery retailers in the United States now have a great opportunity to scale up these types of programs by leveraging new federal funding of \$100 million available in the 2014 Farm Bill³. With the goal of increasing fruit and vegetable consumption and promoting healthier diets among low-income Americans, “Food Insecurity Nutrition Incentive” (FINI) competitive grants from USDA⁴ will provide funding for interested grocery retailers to offer programs similar to DUFB, test innovations and evaluate impact.

SN is a model for other grocery retailers interested in partnering with community organizations to increase access to more fresh fruits and vegetables in low income neighborhoods with the highest rates of chronic disease.

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Campus evaluation of the food store environment

Focus on quality and availability of fruit and vegetables

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According to the National Center for Education Statistics, 66% of the 30.4 million young adults in the United States between 18 and 24 years old are enrolled in postsecondary education¹. College students' poor dietary habits and increasing body weight^{2,3} increase their risk for obesity⁴ and other chronic diseases⁵ later in life. The food environment may play a critical role in shaping dietary habits and weight status⁶.

Food environments have been described and evaluated, and different food store environment measures have been used to identify the accessibility, availability, affordability, and quality of healthy food in these environments. The food store environment for postsecondary campuses has yet to be described.

Fifteen postsecondary campuses participated and 81 stores evaluated

The aim of our study was to evaluate the food stores on and near 13 universities and two technical colleges in the United States between 2009 and 2011 (53% Northeast, 33.3% Midwest, 13.3% Southeast).

Each campus team used a 1.5-mile radius beyond the campus boundary from which they selected the food stores most frequented by students. The Nutrition Environment Measures Survey for Stores (NEMS-S) developed by Glanz and collaborators⁷ was modified to evaluate food stores*. Analysis of variance with post hoc Tukey B and t-tests assessed differences between store types and by institutional size.

The study evaluated 81 stores including campus, convenience/drug and grocery stores (respectively 17%, 39% and 44%).

Healthy foods, quality and availability of F&V: higher scores for grocery stores

As there were no significant differences between off-campus convenience/drug and on-campus stores' total scores and subscores; they were combined into one category (convenience stores).

In general (Table 1), grocery stores had significantly higher scores than convenience stores for healthy foods:

- Three times higher than convenience stores on the total food store environment score, and for healthy food availability and quality of fruits and vegetables (F&V);

- Six times higher on total fruits/vegetables available.

However, grocery stores scored significantly lower than convenience stores on the mean price sub-scores, indicating healthier foods cost more than the less healthy alternatives in grocery stores (not in convenience stores).

There were no differences by institutional size for grocery stores.

Based on: Horacek TM, Erdman MB, Reznar MM, Olfert M, Brown-Esters ON, Kattelmann KK, Kidd T, Koenings M, Phillips B, Quick V, Shelnett KP, White AA. Evaluation of the food store environment on and near the campus of 15 postsecondary institutions. *Am J Health Promot.* 2013 Mar-Apr;27(4):e81-90.

* Each store earned a "food store environment" score similar to a NEMS-S score, between zero and 81 points, comprising four subscores (healthy foods available comparison, total fruits/vegetables available, quality of fresh fruits/vegetables, and price). Subscore points for the healthy foods available comparison category were accumulated for the presence of healthful alternatives, and additional points were earned for the number of varieties of healthful alternatives. The total fruits/vegetables available subscore included fresh, frozen, and canned options. The quality of fresh fruits/vegetables subscore ranked the percentage of acceptable fruits/vegetables. The price subscore was negative if a healthy alternative was more expensive than the standard item, and positive if it was less expensive.

However, smaller institutions' convenience stores had significantly lower availability and quality of fruits/vegetables and total food store environment scores. For convenience stores, 90.9% of large institutions had fresh fruits, whereas significantly fewer small and medium institutions had any (respectively 50% and 66.6%). Only 10%, 20% and 45.4% of the small, medium and large institution, respectively, sold any fresh vegetables at their convenience stores.

Table 1: Comparison of Food Environment Constructs Scores by Shopping Venues, all institutions combined

	GROCERY Mean (SD)	CONVENIENCE Mean (SD)	P ^a
Total score	52.30 (8.68)	16.78 (6.69)	<0.001
Subscores			
Total F&V available ^b	19.50 (3.81)	2.44 (1.73)	<0.001
Quality of fresh F&V ^c	5.92 (0.50)	1.80 (2.18)	<0.001
Healthy food availability comparison ^d	19.5 (3.81)	2.44 (1.73)	<0.001
Price ^e	- 0.58 (3.59)	0.90 (1.96)	0.031

a. The t-test significance level comparing NEMS-S total score by shopping venue.

b. Total fruit/vegetables available (fresh, frozen, and canned options; possible range, 0–24).

c. Quality of fresh fruits and vegetables (points awarded for percentage of acceptable produce; possible range, 0–6).

d. Healthy food availability comparisons (frozen dinners, ground beef and lean ground meat, vegetarian burgers and hot dogs, hot dogs, cereal, whole wheat bread, baked chips, low-fat baked goods, low-fat and nonfat milk and alternatives, 100% fruit juice, diet soda; possible range, 0–33).

e. Price (the lower the score, healthier foods cost more than the less healthy alternatives; possible range, -9 to 18).

Improve the quality of campus food store environments by supporting environmental and policy initiatives

A college campus provides a food environment with an array of shopping venues, most of which are not consistent with dietary recommendations for obesity prevention. The limited quality of healthy food in on-campus and convenience stores and the exacerbated deficiencies for small postsecondary institutions provide evidence to support environmental and policy initiatives to improve the quality of campus food store environments.

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Campus food and beverage purchases and off-campus living

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Food environments can have an important influence on eating behaviors¹. Young adults have the poorest dietary habits of all age groups, including frequent fast-food consumption^{2,3} and low rates of adherence to national dietary guidelines^{4,5}. Previous research suggests that campus food environments may influence the dietary decisions of students who live on campus, but it is not known whether students who live off campus are similarly affected.

The study examined the relationship between food/beverage purchasing behaviors and diet quality in college students living off campus. The aim was to examine the frequency of purchasing food and beverages from campus area venues, purchasing fast food, and bringing food from home. The study also explored the dietary intake and meal patterns of college students who frequently perform these behaviors.

Data were collected from a web-based questionnaire completed by 1,059 students living off campus (mean age=22 years) from one community college and one public university. The questionnaire self-reported socio-demographic characteristics and frequency of purchasing food/beverages. Dietary outcomes took into account breakfast and evening meal consumption (day/week) and summary variables of fruit and vegetable, dairy, calcium, fiber, added sugar, and fat intake were calculated from food frequency screeners.

Overall, 45% of students purchased food/beverages from at least one campus area venue ≥ 3 times a week

Beverages were the most common type of campus area purchasing (27% purchased ≥ 3 times a week). Vending machines were the least common, with slightly more than half of students never making these kinds of purchases.

About 45% of students made ≥ 3 purchases per week from at least one campus area source. Bringing food from home to consume on campus was also common. Nearly half of all students (46%) stated doing so at least three times a week. Frequent fast food purchasing was less common, with 22% of students purchasing fast food (such as McDonald's, Burger King, Hardee's) at least three times a week.

Socio demographic characteristic associated with purchasing behavior

No differences in purchasing behaviors were found for age or gender. But the study revealed that women consume food prepared at home more frequently than men (52% versus 40% for men). Students living in the home of their parent(s) or family

are more likely to purchase food/beverages on campus (52%). Students receiving public assistance were nearly twice as likely as those not receiving assistance to frequently purchase fast food.

Association between bringing food from home and healthy dietary practices

When examining all three purchasing behaviors (campus area, fast food, and bringing food from home) simultaneously, campus area and fast food purchasing were both independently associated with higher consumption of fat and added sugars.

Students who frequently purchased food/beverages on or near campus had poorer dietary patterns, which mirrored results for frequent fast-food consumers. In addition, they were more likely than other students to skip meals.

In contrast, students who frequently brought food from home to consume on campus had healthier dietary patterns and consumed breakfast approximately one more day per week than those who infrequently brought food from home.

Implications for Research and Practice

Previous studies have found that eating in prepaid dining halls on college campuses may influence young adults' dietary quality. This article extends this research by examining multiple food and beverage purchasing behaviors on and off campus and focusing exclusively on students living off campus.

Significant measures are necessary to ensure a healthy and balanced diet among students. Health promotion efforts on college campuses should consider policy and environmental strategies to increase healthy food availability and purchasing on campus. Food and nutrition practitioners also have opportunities to promote home food preparation among college students, which may help positively shape young adults' diets.



Based on: Pelletier JE, Laska MN. Campus food and beverage purchases are associated with indicators of diet quality in college students living off campus. *Am J Health Promot.* 2013 Nov-Dec;28(2):80-7.

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