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Characterizing customers at medical center farmers' markets¹

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Abstract

Approximately 100 farmers' markets operate on medical center campuses. Although these venues can uniquely serve community health needs, little is known about customer characteristics and outreach efforts. Intercept survey of markets and market customers between August 2010–October 2011 at three medical centers in different geographic regions of the US: Duke University Medical Center, Cleveland Clinic, and Penn State Hershey Medical Center were conducted. Markets reported serving 180–2000 customers per week and conducting preventive medicine education sessions and community health programs. Customers (n=585) across markets were similar in sociodemographic characteristics – most were middle-aged, white, and female, who were employees of their respective medical center. Health behaviors of customers were similar to national data. The surveyed medical center farmers' markets currently serve mostly employees; however, markets have significant potential for community outreach efforts in preventive medicine. If farmers' markets can broaden their reach to more diverse populations, they may play an important role in contributing to community health.

Keywords

Farmers' Markets; Medical Center Campuses; Market customers; Community Outreach

Introduction

Farmers' markets have been increasing in prevalence, and a 3.6% growth from 2012 to 2013 has led to 8,144 markets identified by the U.S. Department of Agriculture's (USDA)

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directory(1). The approximately 100 farmers' markets that operate on medical center campuses present unique opportunities for such markets to provide complete, patient-centered care and serve community health needs(2). While such markets have traditionally benefitted medical center employees, new legislation – including the Affordable Care Act and related IRS requirements mandating that medical centers address community needs to maintain tax-exempt status – could engender greater market outreach(3). However, little is known about medical center farmers' markets customers and current outreach efforts(4).

Medical center farmers' markets have the opportunity to accomplish more than simply selling produce. They may be an ideal venue for helping medical centers meet Affordable Care Act outreach requirements. Incorporating farmers' markets on medical center campuses provides opportunities for healthcare volunteers to offer preventive screening services, nutritional consultation, and health outreach efforts to diverse populations – services unavailable at traditional markets(2). Medical center markets typically operate at least 6 months per year and can function year-round in indoor locations and milder climates, enabling opportunities to build long-term collaborations with health service providers. This natural recurrence of markets allows for longitudinal customer interactions that may be more effective than the health fair model typically used for outreach efforts. However, more needs to be known about the demographic and health characteristics of customers at farmers' markets to guide effective delivery of market-based clinical health services and direct future outreach efforts.

To our knowledge, no prior studies have explored demographic and health-related characteristics of customers at medical center farmers' markets. To further describe medical center markets and their customers, we conducted a multi-site survey of customers at markets on the campuses of the Duke University Medical Center (DUMC), Cleveland Clinic (CC), and Penn State Hershey Medical Center (PSHMC). Our aim was to determine market customers' characteristics to provide insight on how similar markets can further develop outreach services to meet community health needs.

Methods

Study Design

We conducted an intercept survey of medical center farmers' market customers at three academic centers in different geographic regions of the US: DUMC (South), CC (Midwest), and PSHMC (Northeast). Market characteristics (i.e., products sold, activities, average attendance, health-related programming, etc.) were obtained from the respective market's staff via a questionnaire filled out by market managers. All three markets operate on a weekly basis during the summer and fall months and sell a variety of produce and non-produce items. In addition, markets had ancillary activities, including cooking demonstrations, recipe card distribution, live musical acts, and community group booths (i.e., recreation centers, assisted living homes, integrative medicine experts, local environmental groups, WIC and SNAP personnel, etc.). Markets also conducted preventive medicine education sessions with medical center nursing, nutrition, or fitness staff members, and provided opportunities for medical center cafeterias to buy leftover produce at the close of each market day. The study was approved by the Institutional Review Boards at each site.

Participants were recruited between August 2010 and October 2011. Market customers were eligible to participate if they were at least 18 years old and able to understand English.

Permission to administer the survey was obtained from market managers at each site. Potential subjects were approached by study staff during market hours at welcome tents within the respective markets and were asked to complete the questionnaire on-site. Research staff informed subjects of the voluntary nature of participation, and subjects agreeing to participate gave verbal informed consent. Participants were eligible to enter a raffle for a \$50 gift card. A total of 585 market customers were recruited, consented and completed the questionnaire. Weekly market customer numbers were estimated based on recorded customer counts by respective market managers as 180, 250, and 300 for DUMC, CC, and PSHMC respectively. The survey was administered at each site during operational market hours. It was completed during one week at DUMC, during two weeks at CC, and during three weeks at PSHMC.

Questionnaire Design and Analysis

Questionnaire items assessed market customers' demographic characteristics, health characteristics and behaviors, and desired market services. Demographic variables included age, race/ethnicity, education level, and employment status. Health characteristics included self-reported medical conditions (high blood pressure, diabetes, heart disease, high cholesterol, and arthritis), height and weight for calculation of body mass index (BMI), and a single item to assess health status from the CDC Healthy Days Quality of Life measure (5). Fruit and vegetable items were adapted from the Behavioral Risk Factor Surveillance System(6). Physical activity was measured with the short form of the International Physical Activity Questionnaire(7). Questionnaire items to determine desired market services were designed by the investigators, and assessed market attendance frequency, market services of interest, and opinions on market prices. Descriptive statistics were conducted to characterize the sample. Spearman correlations and separate logistic regression analyses were used to describe associations between frequency of market attendance (at least weekly vs. less frequently) and self-reported health characteristics and behaviors, including physical activity and fruit and vegetable intake. Participant characteristics (age, BMI, clinic site, gender, race, education and employment status) were entered into the multiple logistic regression models. Adjusted odds ratios and 95% confidence intervals from the logistic regression models were used to describe the independent association of self-reported health characteristics and behaviors with the frequency of market attendance after controlling for the demographic characteristics in the model. Analyses were performed in STATA version 12.0 (StataCorp LP, College Station, TX).

Results

Attendance at the three medical center markets ranged from 180–300. Market customers at all three farmers' markets were similar in sociodemographic characteristics (Table 1). Customers were white, female, middle-aged, and well-educated. The majority (68.0–82.5%) of market customers were employees of their respective medical center. Medical center patients and their families comprised a minority of market customers (4.6–10.3%).

As shown in Table 1, most market customers reported excellent or very good health. Mean BMI ranged from 25.4–26.8. The most frequently reported medical condition was hypertension, followed by high cholesterol and arthritis. Most market customers regularly saw their primary care provider. Only a quarter of market customers reported eating 2 or more servings of fruits daily, although approximately half ate 3 or more servings of vegetables. Almost half of market customers reported meeting federal guidelines for physical activity (i.e. > 150 minutes/week)(8).

A major difference between customers of the different markets included mode of transport to the market, with wide variations in the number driving, walking, biking and using public transportation. However, customers who attended the market at least weekly did not differ from those who visited less frequently in their mode of transport to the market. Further, customers who were medical center employees were more likely to have walked to the markets, while patients or their family members were more likely to have driven. The majority of market customers visited farmers' markets at least once monthly. Most customers indicated market prices were appropriate, although many reported that prices were higher than their grocery store. There was no statistically significant correlation between frequency of attending markets and price perception. The most desired market service was cooking demonstrations.

Multiple logistic regression models, controlling for participant characteristics, found no association between frequency of market attendance (at least weekly vs. less frequent) and self-reported health (Odds Ratio (OR): 1.1; 95% Confidence Intervals (CI): 0.7–1.8). Further, there were no significant differences in market attendance and self-reported healthful activities, including guideline-concordant physical activity (OR: 1.2; 95% CI: 0.7–2.1) and fruit and vegetable intake (OR: 1.1; 95% CI: 0.7–1.6).

Discussion

Medical center farmers' markets and their customers surveyed in this study had many similarities despite their varied locations. Most market customers were highly educated medical center employees who had visited their primary care physicians within the past year – a population that is not typically a high priority for preventive health screenings and targeted interventions. However, given the limited time in primary care to dedicate to preventive medicine, the market may be an ideal place to engage customers in nutritional counseling that their primary care provider may not be able to address(9; 10). Further, nearly 1 in 5 market customers had hypertension and 1 in 6 had high cholesterol, both chronic diseases that benefit from healthful lifestyle changes(11).

Few market customers were achieving guideline-concordant fruit and vegetable intake. A recent study by Evans and colleagues found that farm stands in low-income communities led to increased rates of fruit and vegetable intake(12). However, in the present study, guideline-concordant fruit and vegetable intake was not correlated with frequency of market attendance in adjusted analyses. Further research will need to be conducted to separate the influence of market attendance from other potential sources of access to fruits and vegetables, such as grocery stores and restaurants. Market customers also reported slightly

greater rates of guideline-concordant physical activity than national trends(13). However, nearly one-half of market customers were not meeting activity guidelines. Counseling such individuals, particularly those medical center employees engaged in medical service provision, may enable these individuals to better serve as health-related role models to patients or to less-educated family or community members.

Given the market locations on medical campuses, it is perhaps not surprising that community members comprised only a minority of medical center market customers. For medical center markets interested in community outreach efforts, the next challenge would be to determine how to reach medical center patients and their families as well as underserved community members. Although each market will have specific outreach needs, opportunities to increase community awareness of markets may include advertising campaigns in community centers and clinic locations as well as schools, churches, and other community-based venues. Identifying community partners for the market may also lead to increased community customers in addition to providing opportunities for collaboration to grow and strengthen the market.

Although markets may have potential to reach beyond their own employees and serve as advocates for public health, as called for in the new mandate for Patient-Centered Medical Homes and IRS requirements under the Affordable Care Act(2; 14), several barriers to using farmers' markets remain. Among low-income customers, lack of awareness that nutrition assistance programs may be utilized at markets, higher prices, inconvenient locations and hours (especially relative to traditional food stores), and a more complex shopping experience could be significant barriers(15; 16). While most market customers in the present study reported that market prices were appropriate, this finding may reflect a more affluent customer base that is less price conscious. Balancing the challenge of price while serving participating farmers/producers may be challenging; however, medical centers have potential to improve location convenience and hours by bringing mobile markets to low income neighborhoods as part of their community outreach activities. Further, medical center markets could decrease the complexity of the shopping experience by employing a market-wide purchasing system, particularly for WIC customers(16).

Our study has several limitations. First, the convenience sample of market customers recruited for this study may not be representative of other market customers. Second, future studies should use objective measures of health status, in addition to the self-report measures used in the current study.

Despite these limitations, our study provides an initial step in exploring characteristics of customers attending medical center farmers' markets, an area that has been minimally investigated. The study presents data on market customers from three different medical center markets located in distinct geographic regions, which strengthens the generalizability of study findings. Future studies are needed to determine the impact of market programming on customers' health; however, farmers' markets have significant potential for community outreach efforts in preventive medicine. Our data suggest that if farmers' markets can broaden their reach to more diverse populations, they may play an important role in contributing to community health and patient-centered care.

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Table 1
Medical Center Market Customer Characteristics across Sites (n=585)

This cross-sectional survey of markets and market customers (n=585) took place between August 2010-October 2011 at three medical centers in different geographic regions of the US: Duke University Medical Center, Cleveland Clinic, and Penn State Hershey Medical Center.

Customer Characteristics	Duke University (n=165)	Cleveland Clinic (n=214)	Penn State Hershey (n=206)
Female (%)	75.6	84.6	75.1
Mean age, years (SD)	41.9 (14.0)	47.3 (13.7)	40.8 (14.1)
Ethnicity:			
-white	74.4	67.5	90.2
-black	14.0	24.1	1.0
-hispanic	1.8	2.0	2.0
-other	9.8	6.4	6.8
Education level:			
-less than a High School Degree	0.6	2.0	1.5
-High School degree	15.3	23.3	16.6
-Vocational degree	12.3	24.8	13.2
-Bachelors	39.3	30.2	42.9
-Masters+	32.5	19.8	25.9
Medical Center employee	82.5	74.3	68.0
Medical Center patient	4.6	10.3	10.3
Transportation to market:			
-Drove	30.7	41.2	93.2
-walked	60.1	49.8	4.4
-biked	3.1	1.4	2.4
-Public transportation	6.1	7.7	0
Last visit to primary care provider:			
-within 6 months	64.2	54.6	54.6
-within 1 year	25.2	33.5	29.3
-within 2–3 years	7.6	8.5	13.7
-4+ years	3.1	3.4	2.4
Overall health:			
-Excellent	27.6	26.6	35.5
-Very good	48.5	36.2	37.0
-Good	21.5	27.1	23.2
-Fair/poor	2.5	10.2	4.4
Mean body mass index, m/kg ² (SD)	25.4 (5.1)	26.8 (6.1)	25.8 (5.5)

Customer Characteristics	Duke University (n=165)	Cleveland Clinic (n=214)	Penn State Hershey (n=206)
Medical Conditions:			
-hypertension	19.1	21.6	10.3
-diabetes	4.4	5.1	2.5
-heart disease	0.6	3.2	2.0
-high cholesterol	15.5	16.3	12.8
-arthritis	10.6	17.0	13.3

Table 2

Customer Characteristics	Duke University (n=165)	Cleveland Clinic (n=214)	Penn State Hershey (n=206)
Frequency of market attendance:			
-every 3 month	18.1	10.8	18.0
-monthly	40.3	30.1	27.7
-weekly	40.3	55.1	48.7
->once a week	1.4	4.0	5.6
Market services of interest:			
-child care	4.2	5.0	3.9
-health screenings	46.7	40.2	36.1
-informational booths	48.5	36.3	40.5
-entertainment	39.4	41.3	43.9
-seating area	56.4	42.5	33.7
-cooking demos	70.3	60.9	67.8
Opinion on prices:			
-expensive	16.3	22.2	14.8
-appropriate	80.6	76.7	83.3
-less expensive	3.1	1.1	2.0
Market prices compared to a grocery store:			
-more expensive	30.6	39.3	43.3
-same	59.4	48.6	42.8
-less expensive	10.0	12.1	13.4
Fruit and vegetable intake			
>=2 fruit servings/day	25.5	19.6	22.8
>=3 veggie servings/day	64.2	49.5	65.0
>=5 total servings/day	40.6	28.5	37.4
Physical Activity			
>= 150 minutes/week	49.7	47.7	68.0