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**Characteristics and Fruit and Vegetable Intake of
Low-Income YMCA Veggie Van Participants in
Grand Rapids and Muskegon, MI**

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HNR 499 Senior Project

Abstract

Background: Increased access to affordable produce may increase fruit and vegetable serving intake. The objective of this study was to characterize the individuals utilizing the Veggie Van in low-income areas of Grand Rapids and Muskegon, MI including food security status and fruit and vegetable servings.

Methods: The participants were residents in Muskegon and Grand Rapids, MI purchasing food from the low-income sites of the YMCA Veggie Van. Demographics, food security, participation in food assistance programs, and income of the participants was collected. Fruit and vegetable servings were measured with three 24-hour recalls. Anthropometric measures (height, weight, and waist circumference) were collected for all eight participants. Three participants completed both the survey and recalls, three completed only the recalls, and two completed only the survey.

Results: The majority of participants who completed the survey were of low food security (60%). Some of the respondents participated in food assistance programs such as SNAP (80%), WIC (40%) and Double-Up Food Bucks (40%). The median fruit and vegetable (excluding potatoes) servings of participants that completed the 24-hour recalls was 1.44 (IQR 0.56, 1.46) and 1.46 (IQR .93, 2.83).

Conclusion: At low-income sites, the YMCA Veggie Van is reaching primarily low-income individuals with potentially low food security. The fruit and vegetable servings of Veggie Van participants is much lower than the recommendation of 7-9 servings per day, which may suggest that fruit and vegetable intake is influenced by more than increasing access.

Introduction

Residents of low-income communities often consume fewer servings of fruits and vegetables than those who live in areas of higher socioeconomic status (Jack, et al. 2013). This is concerning, as diets low in fruit and vegetable consumption are associated with a higher risk for chronic disease, such as obesity, cardiovascular disease, and some cancers (Hung, et al. 2004). There are several factors that may contribute to lower fruit and vegetable consumption among low-income individuals, such as availability/convenience, quality, selection, and cost (Zenk, et al. 2006). Perceptions of the shopping environment (regarding quality, selection, and convenience) have been shown to be critically important to the consumption of fresh produce, even when controlling for price (Blitstein, et al. 2012).

There have been few studies regarding the issue of access in relation to fruit and vegetable consumption. However, one notable study examined the impact of the introduction of two farm stands in low-income communities on fruit and vegetable intake, and a significant increase in the consumption of produce was observed (Evans, et al. 2012). This study is important because the results indicate that access alone may improve dietary intake. However, there were only two farm stands involved in this study, so a larger impact may be seen with a greater number of sites throughout low-income, urban areas.

The YMCA Veggie Van is a program with similar aims, but with a larger reach at multiple locations throughout two cities. The Veggie Van program is provided by the YMCA under the leadership of Sarah Portenga, RD Healthy Living Director. Those who participate in the Veggie Van program are able to purchase fresh fruits and vegetables at convenient locations throughout Grand Rapids and Muskegon, MI. The program also accepts various forms of

payment, including several food assistance program benefits such as WIC and Double-Up Food Bucks.

However, the introduction of access in a low-income area does not necessarily mean that the participants are the same individuals as those living in the area. Therefore, it is essential to evaluate whether or not such initiatives are in fact reaching the target population of low-income individuals in the community.

The objective of this study was to characterize the individuals utilizing the Veggie Van in low-income areas of Grand Rapids and Muskegon including food security status and fruit and vegetable intake of participants. It was hypothesized that participation in the program would meet or exceed fruit and vegetable daily serving recommendations (7-9 servings/day), as the program provides affordable produce by participation with initiatives such as Double-Up Food Bucks, SNAP, and WIC.

Methods

Subjects:

The population of interest was the residents in Muskegon and Grand Rapids, MI purchasing food from the low-income sites of the Veggie Van. Consented residents participating in the YMCA Veggie Van program were asked to complete a residential survey as part of the Food Access in Michigan (FAIM) project and/or take part in three, 24-hour diet recalls. If the individual was not interested in completing the residential survey at the time of consent, they had the option to provide his/her email address and complete the survey online. Exclusion criteria included: self-identified pregnancy, non-English speaking, nursing, serious complications or illness (ie, cancer, kidney disease), as these individuals would be following a special diet and/or have dietary restrictions.

The Grand Valley State University Institutional Review Board approved the protocol and written informed consent was obtained from each participant. There was no risk to the participants who completed the survey and participation was entirely voluntary. No identifying information was collected as part of the survey, but responses remained confidential. The completed surveys and informed consents were administered by Sarah Craven, and stored in a locked file cabinet in Dr. Lown's research office, 328 Henry Hall. The data obtained from the surveys was stored on a flash-drive, which was stored in the same location.

Demographic and Socioeconomic Characteristics:

The Residential Survey was administered to the consented participants. This survey is used in the Food Access in Michigan (FAIM) study and measures the demographics, food security status, participation in food assistance programs, and income of the participants. This

survey is also available online and participants were asked to provide their e-mail address if they would prefer to complete the survey by this method.

Anthropometrics:

After informed consent was obtained, participants' heights were measured using a Seca 214 portable stadiometer (Seca, Hanover, MD). Weight was measured using a Tanita BWB-800 digital scale (Tanita Corporation of America, Inc., Arlington Heights, IL). The average of two height and weight measurements was used. Height was measured to the nearest millimeter. Weight was measured to the nearest pound. Body mass index was calculated as weight (kg)/height (m²). A Gulick 150 centimeter anthropometric tape was used to measure waist circumference. The waist circumference was measured at the level of the superior anterior iliac spine of the pelvis. The measurement was made at the normal expiration and measured to the nearest 0.25 inch.

Dietary Intake:

Three 24-hour recalls were recorded and analyzed from consented individuals using the Nutritional Data System for Research (NDSR) software. This involves a multiple-pass approach wherein food items are listed and described by location and time consumed, quantity, and method of preparation. Using the NDSR software, a dietary report is then calculated in accordance with the RDA guidelines. The participants who completed the three dietary recalls were mailed a summary of their intake with \$10.00 ATT calling card to compensate them for the minutes used on their phones to obtain the dietary recalls. No calls were made 2 days before or after a major holiday as dietary intake often changes during these periods.

Statistical Analysis:

Data analyses were completed using SAS (version 9.2; SAS Institute, Cary, NC).

Resident survey information was entered in Qualtrics. Anthropometric information was entered and cleaned in EpiInfo. Fruit and vegetable intake was described by medians and interquartile ranges. Discrete variables (gender, age category, ethnicity, education, income, food security status, participation in nutrition assistance programs, garden participation) were described by frequency.

Ethics:

IRB approval was obtained through the Grand Valley State University Human Research Review Committee. Project Title: [359233-3] Examining Disparities in Food Access and Enhancing the Food Security of Underserved Populations in Michigan.

Results

Demographic/Socioeconomic/Anthropometric Characteristics:

The mean BMI (kg/m²) (SD) for (n =8) participants was 31.6 (8.3) and the mean waist circumference was 42.5 inches. The table below includes the demographic characteristics, food security status, participation in food assistance programs, and income of the participants that was collected.

	Survey Participants (n=5)
Female (%)	80.0
White (%)	80.0
Annual Household Income < \$10,000 (%)	80.0
SNAP Participant (%)	80.0
WIC Participant (%)	40.0
Double-Up Food Bucks Participant (%)	40.0
Low Food Security (%)	60.0

Table 1: *Demographic/Socioeconomic Characteristics of Participants*

Dietary Intake:

The median fruit and vegetable (excluding white potatoes) servings of (n=6) participants that completed the 24-hour recalls was 1.44 (IQR 0.56, 1.46) and 1.46 (IQR .93, 2.83).

Conclusion

Individuals utilizing the YMCA Veggie Van are consuming below the recommended servings of fruit and vegetables (7-9 servings per day). However, a study in low-income individuals found a similar intake with 1.1 and 1.2 mean servings of fruits and vegetables (Leung, et al. 2012). As evidenced by the socioeconomic characteristics of the study population, the YMCA Veggie Van does appear to be reaching the targeted low-income population. Future research with the Veggie Van to include surveys translated into Spanish to reach the Hispanic population is recommended.

Limitations:

While there was some overlap, the group of participants that completed the three 24-hour recalls was not the exact group of participants that complete the survey. The 24-hour recall content was also self-reported. In addition, the results of this study are limited and may not correlate with populations of a different geographic area or populations of differing socioeconomic status and where primary language is not English. A limitation of this study was the inability to enroll non-English speaking Veggie Van participants and this may have contributed to the low number of respondents. Due to the cross-sectional nature of the study, there was not an option to analyze the direct impact of the Veggie Van on the variables of interest.

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References

- Evans, Alexandria E., Rose Jennings, Andrew W. Smiley, Jose L. Medina, and Shreela V. Sharma. "Introduction of farm stands in low-income communities increases fruit and vegetable among community residents." *Health & Place* 18.5 (2012): 1137-43. ScienceDirect. Web. 28 Apr. 2014. <<http://www.sciencedirect.com/science/article/pii/S135382921200069X>>.
- Hung, HC, KJ Joshipura, R Jiang, FB Hu, and D Hunter. "Fruit and vegetable intake and risk of major chronic disease." *Journal of the National Cancer Institute* 96.21 (2004): 1577-84. PubMed. Web. 28 Apr. 2014. <<http://www.ncbi.nlm.nih.gov/pubmed/15523086>>.
- Jack, D, K Neckerman, O Schwartz-Soicher, GS Lovasi, and J Quinn. "Socio-economic status, neighborhood food environments and consumption of fruits and vegetables in New York City." *Public Health Nutrition* 16.7 (2013): 1197-205. PubMed. Web. 28 Apr. 2014. <<http://www.ncbi.nlm.nih.gov/pubmed/23388104>>.
- Leung, C. W., Ding, E. L., Catalano, P. J., Villamor, E., Rimm, E. B., & Willett, W. C. (2012). Dietary intake and dietary quality of low-income adults in the Supplemental Nutrition Assistance Program. *The American Journal of Clinical Nutrition*, 96(5), 977–988. Web. <<http://www.ncbi.nlm.nih.gov/pubmed/23034960>>.
- Zenk, Shannon N., Amy J. Schulz, Barbara A. Israel, Sherman A. James, and Shuming Bao. "Fruit and Vegetable Access Differs by Community Racial Composition and Socioeconomic Position in Detroit, MI." *Ethnicity & Disease* 16 (2006): 275-80. Print