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“The Clementine Collective”: A Corner Store intervention of clementine fruits in a high need neighborhood in Staten Island, New York.

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Key words: Food security, COVID-19, food desert, health disparities, underserved population, health equity.

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ABSTRACT:

Individuals living in underserved neighborhoods face significant barriers to getting fresh produce. It has been extensively researched that providing individuals with fresh fruits and vegetables can have positive physical and mental impact on the lives of individuals in underserved neighborhoods and the lives of their families. Unfortunately, individuals who reside in such neighborhoods are often viewed as not being motivated to consume fresh fruits and vegetables, even where barriers to eating such foods are removed. This study aims to determine whether, in the COVID-19 era, individuals in underserved neighborhoods would consume fresh fruits if presented with them in an appealing and consistent manner. To test the hypothesis that individuals in such high-need neighborhoods would consume fresh fruits during COVID-19 if readily and consistently available, clementine fruits in the quantity of 50 per day were placed in a stand in a corner store in the New Brighton neighborhood of Staten Island. The results show a discernible response on the part of the corner store customers and supported the hypothesis that individuals, if given the chance, these individuals would consume fresh fruits distributed and available in a consistent manner. While further research needs to be done, especially with respect to responses from store owners, variety of fruits consumers

will eat, and overall buy-in for such programs from consumers, community members and local non-profits, the results of this study demonstrated that consumers in underserved neighborhoods would consume a variety of fruits and vegetables from a corner store the COVID-19 era.

INTRODUCTION

The ability for individuals to obtain fresh produce and consume them are multifactorial. ¹A common misconception regarding people who live in food deserts specifically is that there is a lack of desire to have healthy food. Food deserts are defined by the US Department of Agriculture (USDA) as “low income neighborhoods that distinctly lack supermarkets and grocery stores.”² Furthermore, “food deserts are associated with chronic conditions including obesity, heart disease, and diabetes, but the association is not fully explained by the existence or absence of a large food retailer.”³ Issues regarding obesity and other health related illnesses remain large food deserts and “low-income neighborhoods [offer] greater access to food sources that promote unhealthy eating.” ⁴ The paradox for people who live in lower income communities is that, while they may wish to consume high quality, healthy food, their access to this food is limited at best, and non-existent at worst. “Low-income and minority neighborhoods frequently have higher density of convenience stores and fast-food establishments and less access to supermarkets and grocery stores than majority white and more affluent neighborhoods.”⁵

This study sought to answer the question as to whether the issue of food deserts, food insecurity and overall lack of healthy food choices could be somewhat ameliorated by a consistent stream of healthier choices in a neighborhood corner store. The study team was specifically interested in assessing the problem during COVID-19 when food security issues were at a premium.

METHODS

The corner store selected for the site of this study is located on the north shore of Staten Island, New York, one of the five boroughs of New York City. The store is located in Staten Island's New Brighton neighborhood, less than 100 feet away from a New York City Housing Authority (NYCHA) Richmond Terrace low-income housing development. NYCHA is the largest public housing authority in North America. It was created in 1935 to provide decent, affordable housing for low-and moderate-income New Yorkers.⁶ "In 2017 over 60 percent of the roughly 174,000 households in NYCHA's public housing developments earned 30 percent of Area Median Income (AMI) or less. That translates to just \$28,600 annually for a family of four."⁷ The area surrounding the housing development can be defined as a food desert, with the nearest major grocers options that provide a selection of fresh produce is approximately 1.5-2.0 miles from the development. During the spring and summer months, there is a daily farmer's market that sells a variety of fresh, locally-sourced produce approximately .3 miles from the housing development.

The study team deliberated over which type and variety of fruit or vegetable to utilize for the study and ultimately selected clementines as the fruit for the study. This fruit was selected based on its ability to be transported easily, the fact that it had skin that was easily peelable, could be safely eaten without thorough washing prior to consumption, and would be visually appealing to the public.

The study team met every Tuesday from 2:30-3:30pm via a virtual conferencing system to discuss various aspects of the study such as replenishment of the fruit, the frequency of distribution of the fruit, and the study programming overall. The study lasted from April 20, 2020 until May 17, 2020.

During the first three days of the study, the number of clementines that were put out for study participants was 25 per 24-hour period. The study experienced two incidents. One was that the study basket with the clementines in it was stolen on day 3 of the study. The second was on day 5 of the study, once the stolen basket was replaced, the owner of the deli put the remaining 200 clementines for the week out for consumers. These were taken by consumers in one 24-hour period.

Based on these two incidents, and in discussion with the owner of the store, the study team decided to increase the units of clementines from 25 in a 24-hour period to 50 in a 24-hour period, or 350 clementines per week. The study team then worked with local organizations and businesses to get sponsors for the four-week study. The sponsors were responsible for ensuring funds were available for the study team to purchase the clementines during their study week. The study team also had an in-kind donor that provided the physical stand that was utilized to display and distribute the clementine fruits on a daily basis. The clementine fruits were a constant however, and never varied from week to week in their consistency.

RESULTS

The first question for the study was whether the issue of food deserts, food insecurity and overall lack of healthy food choices could be somewhat ameliorated by a consistent stream of healthier choices in a neighborhood corner store. This question has vexed researchers in previous studies.⁸ The answer to this question was in the affirmative. The corner store utilized in the study had not supported fruits and vegetables consistently prior to the study intervention. As stated above, the store originally worked with the study team to have 25 clementines per day placed in a communal basket. The basket was stolen on Day 3 of the study and on Day 5 of the study the store owner put 200 plus clementines out for customers. They were gone within 24 hours. Day 6 of the study, the study team agreed to increase the clementines to 50 per day and install a more stable metal stand for the study. The rate of 50 clementines per day is the rate that was retained until the study ended on May 17, 2020. The clementines were consistently taken by store patrons on a daily basis at the rate of approximately 2 per customer for the entirety of the study.

The second question the study sought to answer was whether the study could be effectively conducted during COVID-19. The study team believed there would be serious healthy food issues

for underserved communities during COVID-19. There were logistical issues in conducting the study during COVID-19, such as getting the clementines transported to the corner store, and ensuring the store would be open. The store remained open for the entirety of COVID-19 and the customer traffic remained the same during COVID-19 as pre COVID-19. An added positive of doing the study during COVID-19 was ensuring individuals had a source of healthy food during the pandemic. Finally, would residents in a neighborhood situated in an area with limited access to fresh fruits and vegetables be receptive to an infusion of said fruits and vegetables during COVID-19? This was answered in the affirmative. While a second study would yield more results regarding the behavior and motivations of patrons, the volume of clementines specifically that were taken answered this in the positive.

DISCUSSION

The issues of food security, healthy food options and overall food wellness are pervasive in certain areas of this country and the world.⁹ Finding solutions to these issues has been a daunting task for community organizers and researchers alike.¹⁰ That is the task that the research team in this study took on. The unknown in this study was the amount of fruit that would be consumed by customers in a corner store in Staten Island, New York, whether customers would consistently eat the fruit and whether there would be a commitment from the store to ensure that the fruit was displayed in a manner that would be attractive to customers. This research demonstrated that in fact, there was a high demand for clementines specifically, and other fruits generally. In fact, the research demonstrated that there was a higher demand for the fruit than the research study team planned for based on the constant nature of the fruit being consumed by customers of the corner store from week to week. This evidence should inspire future research that can also query customers regarding

motivations for eating the fruit, the amount of the fruit they would consume, different varieties of fruit that could be consumed, and whether these same customers would purchase the fruit if a purchase option were available. This information is currently missing from the data gathered in this study, but can be gathered from future research studies. This study sought to answer the question as to whether the issue of food deserts, food insecurity and overall lack of healthy food choices could be somewhat ameliorated by a consistent stream of healthier choices in a neighborhood corner store. The answer is yes as evidenced by the response of the community to the healthier options, the consistent demand for the fruit products and in particular the clementines, and the amount of fruit that was consumed by individuals on a regular basis. The hypothesis of this study was that, if consumers in a food desert were given a consistent, free, healthy food alternative during COVID-19, they would choose to consume that healthy option. The study has proven this. The limitations of the study involve the inability to speak directly with consumers to gather study data, the study being conducted during an on-going COVID-19 pandemic thus making consistent fruit drop-offs somewhat challenging, and consistent supplies of fruit based on availability of certain fruit during the COVID-19 pandemic. The study team compensated for these limitations to the best of its ability. Future studies should account for these limitations. Recommended next steps include a human subject research study that would incorporate surveys, interviews, and observation of human behavior of the consumers and store owners. Expansion of the study to other stores, as well as expanding the healthy option choices. Working with additional partners in the community to ensure that the largest number of consumers who are interested in participating in the study are able to do so in the most efficacious and healthy manner possible. Next steps for this study team will be to submit a human subject research project that would incorporate the limitations described above as well as recommendations. The hope is that this research will inspire other researchers to explore the intersection of corner stores, healthy fruit options, consistently working with community members,

and community engagement to ensure the health and well-being of underserved neighborhoods from a healthy food option perspective. Additionally, the program will be expanded to include educational webinars, “recipes of the week”, a youth council, introduction of additional fruits and vegetables, and other interventions that would improve the overall health and wellness of the community.

The findings of this study have to be seen in light of some limitations. The first limitation concerns the nature of the study itself. This study was submitted to the Long Island University IRB and approved as a not human subject research study. The goal of the study was to accurately assess the viability of such a program, the type of fruit that would be desirable to individuals, and the quantity of fruit that would be sustainable for a corner store with approximately 400 customers per day.

During the course of the study, the research team noted that having a human subject research study would make data gathering more robust and informative, with the ability to interview customers in a methodological more efficacious manner. The second limitation concerned the study being conducted during COVID-19. While the study team wished to conduct the study during COVID-19 mainly to ensure a healthy food source for individuals during the pandemic, constraints on customers movements, the study team’s ability to consistently stock the fruit at the same time every week, as well as changes in social distancing and health mandates of New York made gathering data regarding the utilization of the fruit somewhat challenging. Possible ways to overcome these limitations in future studies include alternative methodologies for a future human research subject study including interviewing customers, surveying individuals in the neighborhoods where the fruit container is located and working closely with the store owners to ensure seamless infusion of the fruits to customers.

Another limitation to the study was the ability to consistently ensure the timing of when the clementines were on display and ready for customers to consume them. Due to varying issues both

because of COVID-19 and because of the study team's ability to be available at the same exact time during any given day, the consistency of time with respect to when the clementines were put out for consumers varied. The study team's solution for this for study #2 is to create a Clementine Collective Youth Council made up of 5-10 youth between the ages of 16-18 who will work with the study team to ensure clementines are distributed in a consistent manner every day. The Youth Council will also work with the study team on research methods and will be trained in aspects of the research study that will be beneficial both for the study team and for the youth as they pursue higher education and themselves get ready to do research at the collegiate level. This group will be led by an expert in peer education, anthropology and public health outcomes and measurements.

CONCLUSION

The hypothesis of this study, that individuals living in an underserved neighborhood in Staten Island New York would consume fresh fruits in a corner store during COVID-19 was proven. The hope of the study team is that with future research on the habits of such populations, incentives and needs, research results will lead to overall policy changes and increased resources for neighborhoods in dire need of support for healthier lifestyles. This should be a partnership with nonprofits, elected officials, policy makers and above all, the individuals living in these neighborhoods.

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HUMAN PARTICIPANT PROTECTION

This study was submitted to the Long Island University Post IRB and received a “not human subject research” determination on April 14, 2020. Project 20/04/079-Post.

Declarations of interest: Conflict of Interest: The authors have no conflicts of interest to disclose.

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⁷ Report: NYCHA’s Outsized Role in Housing New York’s Poorest Households <https://furmancenter.org/news/press-release/report-nychas-outsized-role-in-housing-new-yorks-poorest-households#:~:text=In%202017%20over%2060%20percent,for%20a%20family%20of%20four>

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