

A Culinary and Lifestyle Program for Older Adults: Assessing Impacts on Chronic Disease Biomarkers and Health Outcomes

Sabrina A. Falquier Montgrain, MD^{1,2,3}; Callie Brust, MPH, RDN, CHES¹; Jen Nation, MA¹; Patty Corona¹

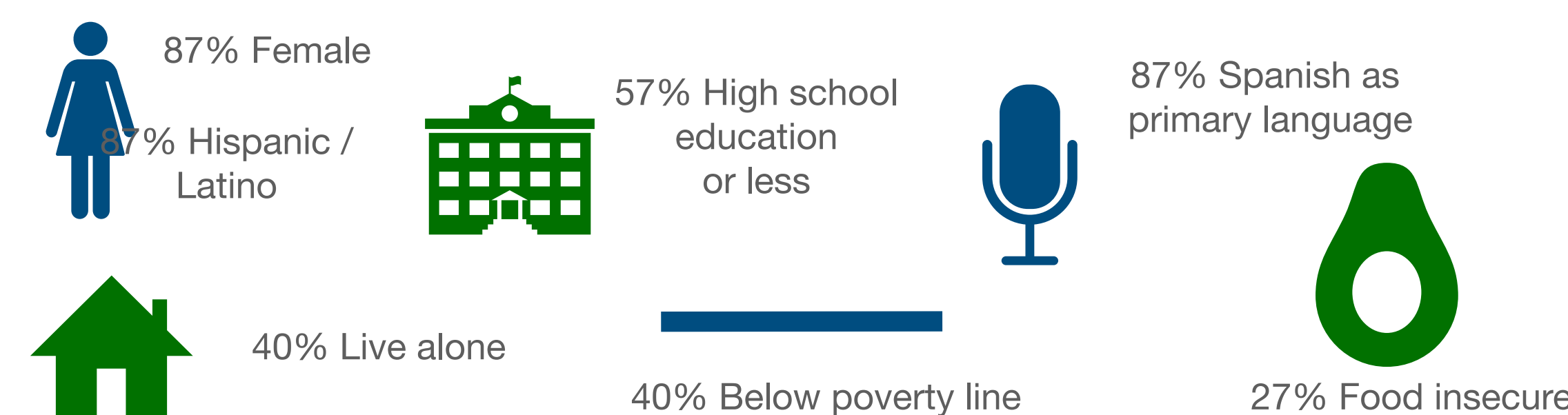
1. Olivewood Gardens and Learning Center, National City, CA; 2. Sharp Rees-Stealy Medical Group, San Diego, CA; 3. Sensations Salud, LLC, San Diego, CA

Background

Olivewood Gardens & Learning Center's Cooking for Salud® program is a 7-week lifestyle modification program that gives participants tools to change their food-related habits by participating in culinary instruction in a teaching kitchen centered around nutrition, mindfulness, and wellness. Each week focuses on different aspects of nutritional knowledge and culinary skills which builds on the previous weeks and features guest chefs leading hands-on cooking classes on site. Topics covered include: drink alternatives to sugar-sweetened beverages, incorporating culturally-relevant vegetables and fruits into every meal, whole grains, knowledge of oils, well thought-out protein options, batch cooking, cooking on a budget, nutritional knowledge, effects of balanced meals compared to high sugar, fat, or processed grain on the body short and long term.

Olivewood Gardens & Learning Center is located on 8 acres and cultivates 2 acres for growing produce. The non-profit serves local kids, teens, and adults in National City, CA which reports the highest rates of death from chronic diseases (60%) in San Diego county, including diabetes and heart disease. Through nutrition education, hands-on garden programming, and practical cooking classes, community members are equipped with tools needed to make healthy choices for themselves and their families. Cooking for Salud® began in 2012 and now has 260 program graduates, or Kitchenistas®. The Kitchenistas® engage in ongoing, peer-led health and wellness education, personal and professional development, and community outreach.

With this in mind, in the Fall of 2018, Olivewood Gardens hosted a group of 15 older adults for the 14th cohort of Cooking for Salud®. Data were collected to monitor participants' behaviors, knowledge, and mindfulness along with biomorphic data, including lab values, to assess improvements in chronic disease risks as a result of this program. The objective of the study was to evaluate the clinical health outcomes of participants in Cooking for Salud®, a culinary-based lifestyle modification program.



Methods

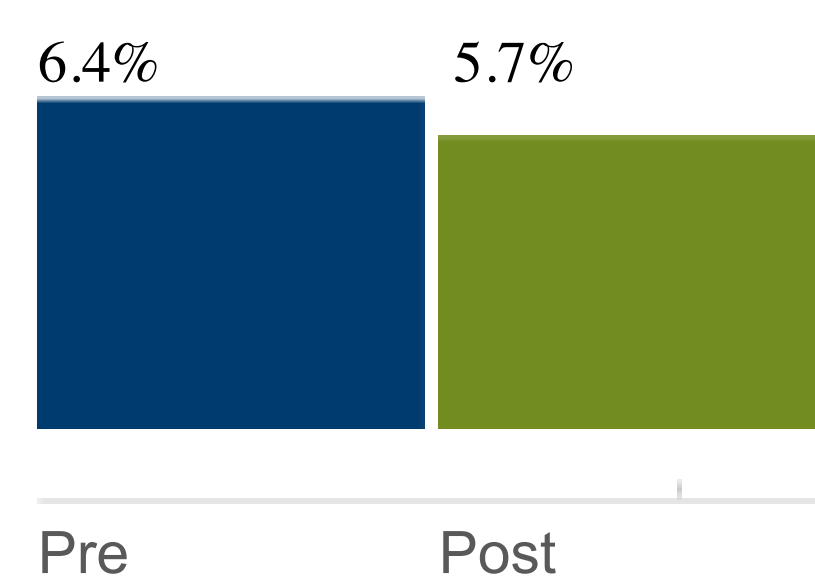
- Participants were recruited during nutrition classes at local senior centers and senior living facilities
- Recruited individuals 55+
- Effort to utilize participants' cultural food traditions
- Baseline survey and biomorphic data were collected prior to the intervention and again at the completion of the program
- Biomorphic data included: HgbA1c, LDL, HDL, Triglycerides, blood pressure, weight, height, BMI, and visceral fat
- Observational and focus group data obtained
- Focus group discussions were held 3 months post-intervention
- Hybrid traditional pre-post survey design with a retrospective pre-post design
- Quantitative data analysis included descriptive statistics to summarize the data and paired-sample t-tests
- Qualitative data were analyzed using content analysis for theme identification
- Surveys were adapted from validated surveys



Clinical Results

100% of participants positively changed one or more clinical health measures
82% increased their confidence in applying healthy cooking practices

HgbA1c



* The difference from Pre to Post was statistically significant ($p < 0.05$)

Figure 1: Pre and Post Average Blood Sugar Level (A1c)* (n=13)

The HbA1c (A1c) test reflects a person's average blood sugar level over a 90-day period. Reductions in the A1c can be an indicator of dietary change and/or good management of diabetes. Normal A1c levels are below 5.7%. Figure 1 shows that participants' average A1c had a statistically significant decrease from the beginning of the program to the end of the program. This reduction in blood sugar suggests possible positive dietary changes. HbA1C (5.7 +/- 2.1 vs 6.4 +/- 2.1, $p < 0.05$).

Blood Pressure

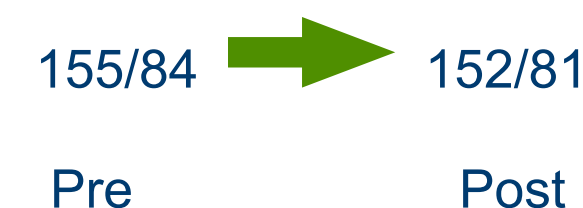


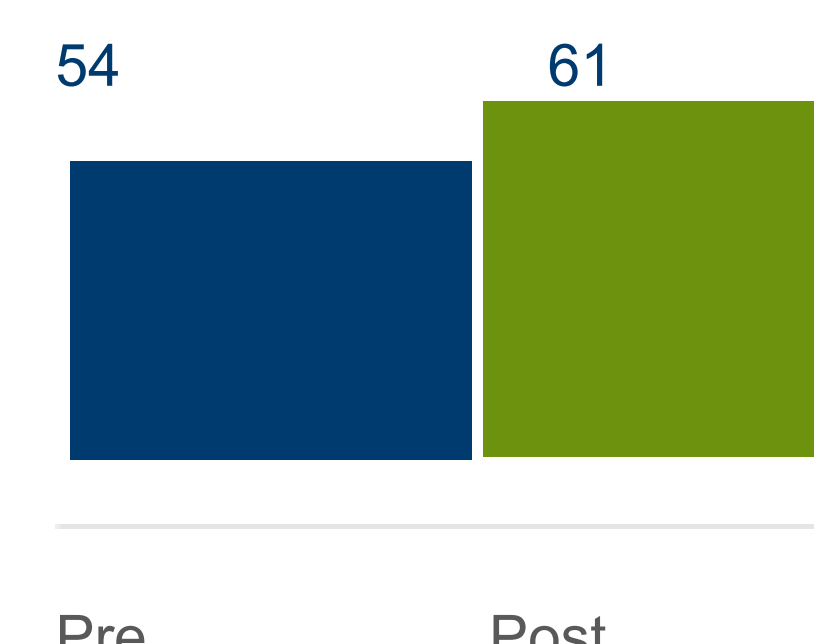
Figure 2: Pre and Post Average Blood Pressure (n=13)

Three primary measures of heart health - blood pressure, cholesterol, and triglycerides - were all measured pre and post participation in Cooking for Salud®. Average changes across all measures trended positively. Although not statistically significant, participants' average blood pressure decreased (See Figure 2) and half of participants had lowered their blood pressure by the end of the program.

73% of participants reported they were on medication for blood pressure, cholesterol, or diabetes. Patients provided a list of medications prior to the start of the program, and no changes in medications were identified at the post test evaluation; thus, medications were not considered in the analysis.

Lipid Panel

HDL



* The difference from Pre to Post was statistically significant ($p < 0.05$)

Figure 3: Pre and Post Average HDL "Good" Cholesterol Levels* (n=13)

In terms of cholesterol, higher levels of HDL are associated with a lower risk of heart disease. As shown in Figure 3, participants' average HDL (i.e., "good" cholesterol) increased significantly by the end of the program. HDL Cholesterol (61 +/- 13 vs 54 +/- 8.6, $p < 0.05$). Participants' LDL ("bad" cholesterol) also increased slightly (from 106 to 108), but this change was not statistically significant.

Triglycerides

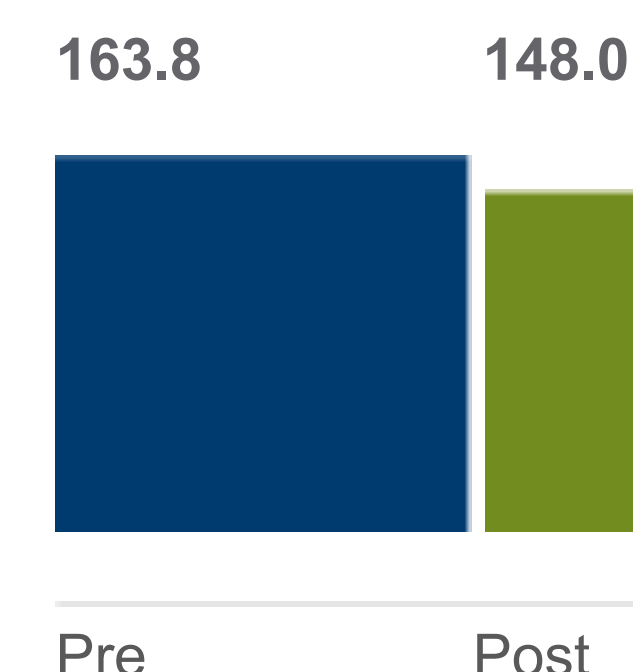


Figure 4: Pre and Post Average Triglyceride Levels (n=13)

In addition to blood pressure and cholesterol levels, the level of triglycerides in the blood is another important measure of heart health. High triglycerides are associated with heart disease and other chronic health conditions and can be reduced with lifestyle changes. Figure 4 shows that average triglyceride levels also decreased from the beginning of the program to the end of the program. However, this decrease was not statistically significant.

Conclusions

- These pilot data suggest that an innovative culinary-based lifestyle modification program can positively impact biomorphic data and behavioral change indicators
- A culinary-based program can be utilized as an effective method for chronic disease improvement and prevention.

Limitations:

- Small sample size
- Post survey and biomorphic measures were conducted immediately following the program which only assesses short-term impact
- No control group
- Unknown if results can be replicated with another population and/or more participants
- Because participants had varying literacy levels and spoke different languages, the survey administration was not identical for each participant. For example, those with low literacy rate had the survey read to them by another individual, which may have caused pressure to give the socially desirable answer

Future Directions

- Reassess survey and biomorphic data at 6-12 months, 24 months, and 36 months after intervention
- Include control group - a comparable group of individuals who do not participate in Cooking for Salud® program to be assessed under same measures in same time period
- Include multiple Cooking for Salud® generations to increase participant number and follow for longer time frame
- Ensure curriculum emphasizes the value of maintaining participants' cultural food traditions
- Revise communication and recruitment methods for seniors after the program ends
- Develop a logic model and refine goals to specifically address the aging community



Acknowledgements

Olivewood Gardens would like to acknowledge:

- The Nonprofit Institute's Castor Center for evaluation
- The San Diego Foundation Age-Friendly Communities Program for funding support
- Kitchenistas® for their organization, teaching, and program support