ROOTS community health center

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FINAL REPORT

ROOTS FOOD IS MEDICINE PILOT PROJECT

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This final report was prepared by ETR for Roots Community Health Center.

advancing health equity etr.

ACKNOWLEDGMENTS

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I. EXECUTIVE SUMMARY

The purpose of the final report is to summarize the elements of the Food is Medicine Pilot Project, the findings of the evaluation, detail the lessons learned, and describe our recommendations. Roots successfully implemented a multi-faceted program that provided healthy food, nutrition and fitness education, and individual maternal navigation services to pregnant Black women and their families. ETR collaborated with Roots to co-create and design a mixed-method evaluation of the project. Our quantitative methods consisted of measures that document biophysical and psychosocial indicators at the project's baseline and endpoints; whereas qualitative methods included focus groups designed to explore barriers and facilitators to nutritional wellness during the intervention as well as changes in individual's behavior and attitudes.

The quantitative evaluation data highlighted the benefits of the program and women reported positive feedback for the maternal navigation support they received during pregnancy. An increase in healthier eating habits and access to healthier food may have contributed to the positive changes reflected in biophysical indicator data.

Overall, women spoke favorably of the Food is Medicine program. They enjoyed the recipes, variety of fresh food, portion sizes, and convenience of the Marley Spoon meal kits. However, there were logistical challenges related to the timing and location of the delivery. When we asked about how this program could help women to feel as if they were part of a sisterhood, participants shared that while they appreciated the opportunity to build a sisterhood, they also wanted more casual spaces to build community. COVID-19 presented a barrier to building community and hosting in-person meetings.

We suggest expanding the timing of the program, the scope of the content covered in the program, and considering ways to increase accessibility. Our evaluation data points to Black women's unique needs regarding receiving support and care for their whole selves: moving forward it would be useful to understand individuals' scheduling needs and communication preferences to facilitate engagement with the program. Our findings suggest that achieving optimal nutrition can positively impact the overall health and wellbeing of Black women during pregnancy.

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II. GENERAL BACKGROUND

Background on the Partnership between Roots and ETR

Roots and ETR created this collaborative partnership to develop and implement this project that centers on the needs of pregnant Black women and their families. Both our organizations are led by Black women and have demonstrated commitment to operating from a social justice-oriented lens to support and serve our communities.

Roots Community Health Center, founded in a culturally urban landscape, is rooted in the history of Black communities caring for one another. Roots' mission is to uplift those impacted by systematic inequities and poverty by providing culturally responsive, comprehensive healthcare, behavioral health and wraparound services; identifying and addressing the root causes of illness and suffering; and emphasizing self-sufficiency and community empowerment.

ETR is a national non-profit devoted to advancing health equity through science-based programs and services. We are driven by our mission to advance health and opportunities for youth, families, and communities. This project's approach effectively reflects ETR's mission, vision, and values of improving health outcomes for all communities, using science to learn from others, and employing participatory practices that center the experiences of the community.

Roots contracted with ETR to serve as their external evaluator. The final report that follows details a description of the Food is Medicine Pilot Project and the findings from the evaluation.

Description of the Food is Medicine Pilot Project

The CDC states that having a healthy BMI, increasing physical activity, and following a balanced diet are all steps that can positively impact health outcomes. These are protective factors that could change outcomes for pregnant Black women. Roots developed and implemented a culturally responsive pilot project—the Food is Medicine project—that sought to address maternal health disparities by exploring the benefits of providing meal kits and nutritional support to 25 Black women who were pregnant and living in Santa Clara County. As a part of the project, Roots provided participants with nutrition and fitness education, access to virtual group exercise classes, access to stress-reducing tools, and virtual maternal navigation support.

Members of the Food is Medicine Pilot Project Team. Top Row: Sarah Griffiths, Jocelyn Dubin, Bottom Row: Porchea Fort, Nkemka Egbuho

Description of the Evaluation of the Food is Medicine Project

ETR served as the evaluation partner on the project, seeking to explore how participation in a "Food Is Medicine" intervention influences the health outcomes of Black women who are pregnant. Specifically, the key evaluation question explored how providing healthy food options and nutrition education as part of standard prenatal practice can support the holistic health of pregnant Black women and their families. ETR employed a pretest-posttest design utilizing a mixed-method data collection procedure to assess the benefits of the intervention and document the participants' experience. The evaluation included online surveys and focus groups to explore the barriers and facilitators of the intervention and collect participants' feedback on their experiences receiving and accessing nutritional support during their pregnancy. As part of the evaluation, Roots collected key nutritional-centered biophysical indicators to measure participants' health status at the beginning and end of the project period (12 weeks). The biophysical data were limited to BMI, blood pressure, glucose, and hemoglobin levels. Data from each would be triangulated to define study findings and project recommendations.

III. THE ELEMENTS OF THE FOOD IS MEDICINE PROJECT

As part of this project, Roots staff members provided nutritional support, a session with the Roots registered dietitian, wellness and fitness classes, and maternal navigation support. The maternal health navigator played a crucial role in the success of this project. She expertly coordinated the delivery of the weekly meal kits and bi-weekly grocery bags filled with fresh fruits and vegetables, while providing continuous support and encouragement to the women enrolled in this project. See the table below for a detailed description of the project elements:

Individual Virtual Maternal Navigation Services

Maternal navigation support provided education and goal setting to program participants regarding their physical and mental health, nutrition, family planning, safe sleep, and other relevant topics. The sessions allowed participants to engage with other Roots programs that provide resources and assistance for families. The Maternal Navigator facilitated an adapted version of the CDC curriculum **"Steps to a Healthier me and baby-to-be"** as a tool to guide conversations with participants.

Marley Spoon Meal Kits

For 12 weeks, participants received up to three meals per week delivered directly to their homes.

Grocery Delivery

Participants received a bi-weekly delivery of fresh fruits, vegetables, and basic pantry items.

Women of Wellness (WoW) Program

For a duration of 6 weeks, participants engaged in instructor-led virtual fitness workouts (live and recorded) that were tailored for pregnant women. Participants also received a weekly newsletter that covered various nutrition topics.

The WoW program also included:

- **Wellness Wednesdays** that offered a safe space for women to interact with a licensed mental health clinician to discuss various topics related to their mental health, identify their mental health needs, and share tools that promote mental wellness.
- The **Cook & Chat Nutrition Workshop** that was facilitated by a Registered Dietitian and included an interactive nutrition activity, educational presentation, an open discussion, and a cooking demonstration.
- **Group Wellness sessions** that covered health topics such as: nutrition, exercise, mental health, and prenatal wellness. These group sessions included an education component, discussions with relevant health professionals, and various interactive activities.

IV. ANALYSIS OF THE FOOD IS MEDICINE PROJECT EVALUATION DATA

Quantitative analysis:

Our quantitative approach included online surveys that record participants' demographic information collected at baseline. Then we compared participants' responses regarding their main sources of food, various scale scores (Nutrition Screening Tool, Food Insecurity Experience scale, Perceived Stress scale, and Discrimination in Medical Setting scale), and biophysical indicator measures (BMI, blood pressure, glucose measurement, and hemoglobin measurements) from baseline (T1) to follow up (T2). Due to a small sample size (N=23 at T1 and T2), we limited T1 to T2 comparison to bivariate analysis (comparing T1 to T2 with one outcome measure at a time) and used appropriate non-parametric versions of statistical tests.

We compared each item's affirmative responses (percent yes) between T1 and T2 with McNemar's Chi-Square test for paired dichotomous data. For the scale scores and biophysical indicators, we used the Wilcoxon signed-rank test, a non-parametric version of the paired T-test to compare the mean scores between T1 and T2.

Finally, we described participants' experience with the Food is Medicine program. In the follow-up (T2) survey, we asked participants to name their favorite element of the program, to state which element of the program they would like to have routinely offered, to assess their confidence in sharing knowledge gained from the program with a friend or family member, and to share the likelihood of incorporating skills learned from the program in daily life and in a future pregnancy.

Qualitative analysis:

To better understand the experiences of participants, ETR conducted three focus groups with 17 women. The 60-minute focus groups were conducted in October and November 2021, and February 2022. The number of focus group participants ranged from four to eight and focus groups were facilitated by ETR project staff using a guide designed to gather feedback on the intervention, insights on how the project supported nutritional knowledge and access, and the perceived impact of the project. Focus groups were recorded for analysis purposes only and transcribed on Rev.com; themes were analyzed and summarized by two ETR staff members not involved in the project.

V. SUMMARY OF FINDINGS

Qualitative Data Summary

Themes that emerged from the qualitative findings include: feedback on the meal kits and grocery bag delivery experience, considerations for program content and structure, opportunities to build sisterhood among Black women, the timing of program enrollment, and how to increase the accessibility of the Food is Medicine program.

Overall, participants spoke favorably about the Food is Medicine project during the focus group discussions and appreciated what the program offered. One woman shared:

> ***"I don't have a lot of people who had babies around me, so definitely the support helped a lot during my pregnancy, and all the information, the classes, everything definitely helped."***

Some women recommended the program to family and friends who were pregnant. They also appreciated the Roots program staff helping coordinate meal kit delivery and program offerings.

Marley Spoon Feedback

Women enjoyed the variety of the food within the meal kits. When asked about whether the meal kits supported building knowledge about nutrition and healthy diets, women commented that Marley Spoon made fresh vegetables more accessible, reduced time spent cooking and meal planning, and provided food throughout the week. Having pre-portioned ingredients reduced food waste and supported portion control. The kits brought more variety to women's diets and helped with food budgeting.

> ***"I feel like the sides they gave us were really healthy options. A lot of them gave me more ideas on what I can do for sides instead of heavy stuff all the time"***

The recipes were also popular. Multiple women mentioned saving recipe cards to remake and enjoyed using familiar ingredients in new ways. The recipes made it easier for women to cook with partners, parents, and siblings, and a few participants noted that they were able to take a break from cooking because their less experienced partners were able to cook the recipes. Women reported that recipes were inclusive and supported vegan and vegetarian diets. A few participants shared suggestions to make the meals more family friendly,

such as requiring fewer dishes for preparation and clean up and providing options to substitute out ingredients family members disliked.

Most of the negative feedback for Marley Spoon concerned logistical issues. There were many challenges with the delivery process, such as issues receiving delivery updates, inconsistent delivery times, deliveries made to the wrong address, and boxes being stolen. Participants had mixed experiences and preferences regarding communication about delivery status. Some received texts directly about delivery times, while others had to coordinate with the Roots maternal health navigator. Women saw benefits to both approaches but would have liked the option to decide which approach worked best for them.

Health Trust Grocery Bag Feedback

Regarding the bi-weekly delivery of grocery bags with various pantry items, one woman found the portion sizes too large and had to give food away, but overall people were happy with the amount of food offered.

The grocery bag delivery also presented an accessibility issue—the bags were heavy for a pregnant person and some women had other children to care for so they couldn't retrieve their bags on their own. Some focus group participants shared that the quantity of food in the grocery bags was sometimes too much for women and their families; they were concerned about wasting the food.

Program Feedback and Recommendations

Create more opportunities for connection and to build sisterhood

When asked about the aspects of the project designed to increase sisterhood and build community, women commented that offering more in-person activities or a wider schedule of virtual activities would be beneficial. Overall, scheduling and safety restrictions due to the COVID-19 pandemic were cited as barriers to building community. Although virtual classes were offered, participants' busy schedules did not allow them to join consistently, and they missed opportunities to meet each other if they did not attend the same classes. Recommendations for how to facilitate community building, included making regular introductions to each other and building in more time for group discussions and informal activities. While recognizing that the COVID-19 pandemic limited safe access to in-person activities, women commented that having in-person meetings or drop-in spaces for informal community building would be valuable.

> *"Maybe if there was a way to bring that in through more meetings like this, or even I don't know, videos instead of emails just so you can see somebody's face and be able to talk to each other, like this [focus group] right here, these beautiful ladies, it would've been great to connect maybe once a trimester or something through the pregnancy and just say, hey, what's going on? How's everything going?"*

Organize program to maximize accessibility

Women had several recommendations to increase accessibility to the program during their pregnancy. One person pointed out that having a calendar of activities available at the beginning of the program would help with their planning. Participants also requested that the program staff ask women what times work for them and to offer classes at a range of times. Women also cited "pregnancy brain" as a hindrance to remembering classes—some suggested that Roots program staff send text reminders about classes and events, and noted that emails can easily be lost, so calls and texts were preferred. Having childcare available would also increase access to in-person events if participants had children.

Consider starting the project earlier in pregnancy

One woman suggested building community throughout pregnancy with opportunities to connect during each trimester, and others suggested beginning in the second trimester.

> *"I think it would have been helpful to start in the second trimester rather than the third trimester. Your first trimester is pretty hard. Your second trimester, things chill out a little bit, and then it picks up again in the third trimester, so there was a lot of times where I couldn't participate in things, because I just wasn't feeling."*

Provide more resources for participants to learn information and connect with services/service providers

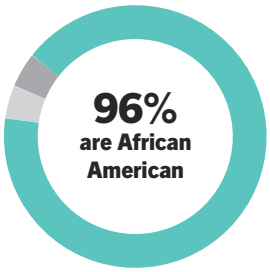
Women gave specific suggestions for additional resources they would like. They wanted more medical information about pregnancy, childbirth, and breastfeeding through classes. They wanted to build skills to advocate for their medical care, tailored to the experiences of Black women. One woman wanted information about services for low-income families. Participants also wanted a direct connection to service providers, such as doulas and professionals to answer medical questions. They also saw informal connections to other participants as opportunities to share information and resources.

A key takeaway from the focus groups is that women enjoyed the nutritional food assistance and the support and structure that the Food is Medicine project provided. Their reflections and recommendations regarding logistical challenges in receiving food or attending workshops during pregnancy point to a need for flexibility and tailoring options to the individual needs and communication preferences of Black women and their families.

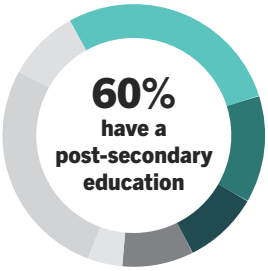
Quantitative Data Summary

Results indicate that Black women who are pregnant benefited from Food is Medicine Pilot Project. Women raved about the benefits of the program and reported positive feedback for the maternal navigation support they received during pregnancy. An increase in healthier eating habits and access to healthier food may have contributed to the positive changes reflected in biophysical indicators data. Previous studies have identified these associations between food security, diet quality, and dietary intake during pregnancy These studies, in addition to this project, illustrate that access to healthy, nutritious foods and community based support is an integral part of addressing maternal and infant health disproportionalities. Consequently, the impact of dietary intake on biophysical indicators has strong implications for reducing maternal and neonatal morbidity and mortality in Black women. Our findings suggest that achieving optimal nutrition promotes women's overall health and well-being during pregnancy.

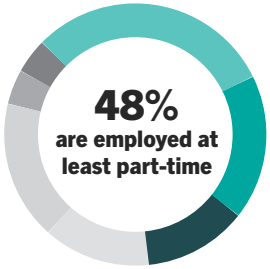
Demographics* of Project Participants:



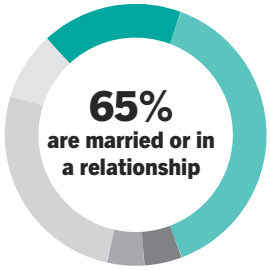
Participants are mostly African American.



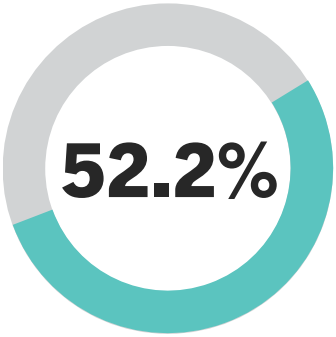
More than half of the participants have a post-secondary education and a quarter of the participants did not finish high school.



Close to half of the participants are employed at least part time.



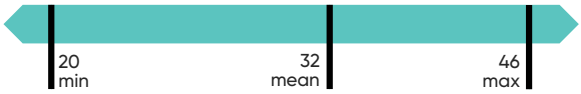
More than half of the participants are either married or in a relationship living with a partner.



More than half of participants are earning less than $25,000/year.

To provide some context, according to most recent data from the U.S. Census Bureau the median household income in Santa Clara County is $130,890.[iii] **In 2021, the federal poverty level was $26,500 for a family of four.**

Most of the participants are in their thirties.



The participants typically have children living with them.

*Full table of demographics data available in **appendix**.

Where participants sourced their food for themselves and their families:

When participants were asked where they get most of their food **two encouraging results stand out:**

- Number of **participants using fast food was reduced** (T1=13, 56.5% to T2=10, 43.5%). Even though this difference was not statistically significant (McNemar test p-value=0.38 where it needs to be less than 0.05), the reduction in affirmative response is a positive trend.
- In addition, the number of **participants using grocery delivery service was increased**. This difference was not statistically significant, but this is an encouraging trend.

Comparing Scale Measures from Baseline (T1) to Follow up (T2):

We used the below validated scales to measure nutrition frequency, food insecurity, perceived stress, and discrimination experienced in medical settings.

We computed **Nutrition Screening Tool** mean score from twelve items (1 to 6 Likert scale) where a higher score represents more positive eating habits.

- Nutrition Screening Tool mean score **improved** from T1 to T2.

We computed **Perceived Stress Scale** mean score from ten items (0 to 4 Likert scale) where a higher score represents more stress.

- Perceived Stress Scale mean score **did not change** from T1 to T2.

We computed **Food Insecurity Experience Scale** summed score from eight items with affirmative responses (1= Yes, 0= No or Don't know) where a higher score represents experienced higherfood insecurity.

- Food Insecurity Experience Scale mean score **dropped notably** from T1 to T2. This reduction in mean score was statistically significant.

We computed the **Discrimination in Medical Settings (DMS)** scale mean score from seven items (1 to 5 Likert scale) where a higher score represents experiencing more discrimination.

- DMS scale mean score **increased** from T1 to T2. This difference was **not statistically significant**.

Biophysical Indicators:

Measures	T1 Mean (SD) or n (%)	T2 Mean (SD) or n (%)	p-values
BMI	34.6 (min=26.30, max=47.80)	33.83 (min=25.20, max=44.90)	0.11
Systolic blood pressure	111.5 (min=92, max=152)	111.0 (min=93, max=136)	0.94
Diastolic blood pressure	71.5 (min=57, max=98)	70.7 (min=60, max=86)	0.70
Glucose measurement	106.3 (min=71, max=143)	109.4 (min=79, max=161)	0.72
Hemoglobin measurement	10.61 (min=5.6, max=12.6)	11.84 (min=5.8, max=14.2)	0.001*

- **Hemoglobin measurement** *improved significantly from* T1 to T2. The data indicated a positive change in participants' hemoglobin values, especially when assessing women's health because we know that having a balanced diet that includes food sources of iron can help prevent anemia. Checking for anemia is a regular practice during prenatal exams and this involves assessing a pregnant woman's hemoglobin levels.[iv]

- With **blood pressure measurement**, we separated systolic blood pressure and diastolic blood pressure to compare their mean values from T1 to T2. *Neither systolic blood pressure nor diastolic blood pressure showed any remarkable differences from T1 to T2.*[v] The blood pressure numbers reported by participants were mostly in the normal range which is especially important for women who may be under high levels of stress. High blood pressure, or hypertension, can cause complications such as preeclampsia, eclampsia, and stroke in pregnant women.[vi]

- **Glucose measurement** *showed little change* from T1 to T2. The glucose levels measured were non-fasting, random glucose measurements which are harder to interpret. One consideration for collecting this data in the future would be to measure participants' fasting glucose levels. Most women were in the borderline diabetic glucose range, previous literature has pointed to the correlation between stress and glucose – that could be further explored for future programs.[vii]

- There was a *slight reduction* in **BMI** from T1 to T2. The National Academy of Medicine has issued guidelines on weight gain during pregnancy that are based on an individual's body mass index (BMI) before becoming pregnant.[viii] The reduction in participants' BMI when measured at the endpoint is an encouraging trend. Research shows that pregnant women who are overweight or obese are at an increased risk for preeclampsia, gestational hypertension, and gestational diabetes.

• Food is Medicine Program Experience:

We asked the participants to rate their favorite element of the program (1 to 5 scores where 1=least favorite and 5=most favorite).

- Meal kits delivered weekly were ranked the favorite (mean rating=4.6, standard deviation=0.95).

Four other program elements ranked very similarly: the 6-week Women of Wellness (WoW) program, virtual maternal navigation services, Cook and Chat nutrition workshop, and the twice-a-month delivery of grocery bags.

We also asked the participants which program elements they would be interested in having routinely offered.

- Not surprisingly, Meal kits delivered weekly had the most interested response (Very interested= 17 (73.9%), Interested= 5 (21.7%), Not interested= 1 (4.3%).

Participants showed a similar level of interest in the other three program elements: Twice a month delivery of grocery bags, the 6-week Women of Wellness (WoW) program, and access to virtual maternal navigation services.

- More than half of the participants responded they are confident in sharing the knowledge they have gained from the Food is Medicine program with a friend or family member.

The majority of the participants responded they are likely to incorporate the skills learned from the Food is Medicine program into their daily life.

VI. LESSONS LEARNED AND RECOMMENDATIONS

There were many key takeaways learned from the implementation of the Food is Medicine Pilot Project. The project's high retention rate is due to the continuous outreach efforts of the Roots team members who understood the work needed to keep Black women engaged in prenatal care—building strong relationships, following up with care, and assigning a dedicated navigator whose sole responsibility was ensuring the care for these women and their families through their birthing process. From a public health standpoint, we need to continue to support mothers during pregnancy and postpartum while creating services that support their needs. That support can help reduce stress and impact birth outcomes that support healthy communities.

Utilizing the Marley Spoon meal kit delivery service presented certain challenges. Future iterations of a similar Food is Medicine program could consider using another meal kit provider, possibly choosing a local delivery service better able to provide customized, culturally affirming meals. One potential benefit of using a local provider is that this would build connections with the community and support a local business. If a similar national delivery service is used, programs could consider allowing participants to manage their own user accounts, thereby reducing the burden on project staff as well as giving participants more autonomy over their chosen meal kits.

From a program eligibility perspective, focus group participants recommended allowing women to enroll during an earlier stage of pregnancy. Women who enroll earlier in pregnancy may find it easier to participate in group activities and events.

When considering the staffing needs to implement a program such as this one it is important to remember the extensive program-related responsibilities necessary for success. From outreach and recruitment at local community agencies and organizations, to setting up individual food delivery accounts for each participant, to sometimes daily follow-up required by the maternal health navigator. A future iteration of this program could benefit from multiple staff who have distinct responsibilities to address the various program implementation needs. There is significant tracking and follow-up required to ensure that women are getting their needs met and feeling supported throughout the process.

APPENDIX

Table 1. Participant description at baseline (N=23)

	Mean (SD) or n (%)
Mean age	32 (SD=6.02, min=20, max=46)
Race/Ethnicity*	
Hispanic	1 (4%)
African American	22 (96%)
Native Hawaiian or Other Pacific Islander	1 (4%)
Education	
Some high school	6 (26.1%)
High school diploma or equivalency (GED)	2 (8.7%)
Some college but no degree	6 (26.1%)
Associate degree	3 (13%)
Bachelor's degree	2 (8.7%)
Master's degree	2 (8.7%)
Professional degree	1 (4.3%)
Current Employment Status	
Full time	7 (30.4%)
Part-time	4 (17.4%)
Unemployed, but looking for work	3 (13.0%)
Unemployed, but not looking for work	3 (13.0%)
I care for a child or family member full-time	4 (17.4%)
Student	1 (4.3%)
Other	1 (4.3%)
Household Annual Income	
Less than $25,000	12 (52.2%)
$25,000- $50,000	4 (17.4%)
$50,000- $75,000	2 (8.7%)
$75,000- $100,000	1 (4.3%)
Above $100,000	4 (17.4%)
Current Relationship Status	
Not currently in a relationship	6 (26.1%)
In a relationship, not living with a partner	2 (8.7%)
In a relationship and living with a partner	4 (17.4%)
Married	9 (39.1%)
Other	(4.3%)
No response	1 (4.3%)
Household Structure	
Mean number of children	2 (SD=1.88, min=0, max=7)
Mean number of adults	2 (SD=1.04, min=1, max=5)

*Participants were allowed to check more than one Race Categories. One participant checked (Race-Other) but did not write in to specify.

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