2024 | PILOT 2

# HEALTHY PREGNANCY PROGRAM

HennepinHealthcare

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# PARTNERSHIP

In 2024, Hennepin Healthcare (HHS) & Open Arms of Minnesota (OAM) completed a second pilot of the Healthy Pregnancy Home-Delivered Meals program.

## FOCUS

Addressing barriers to a healthy pregnancy and postpartum period for people with nutritional risk factors

## HOW

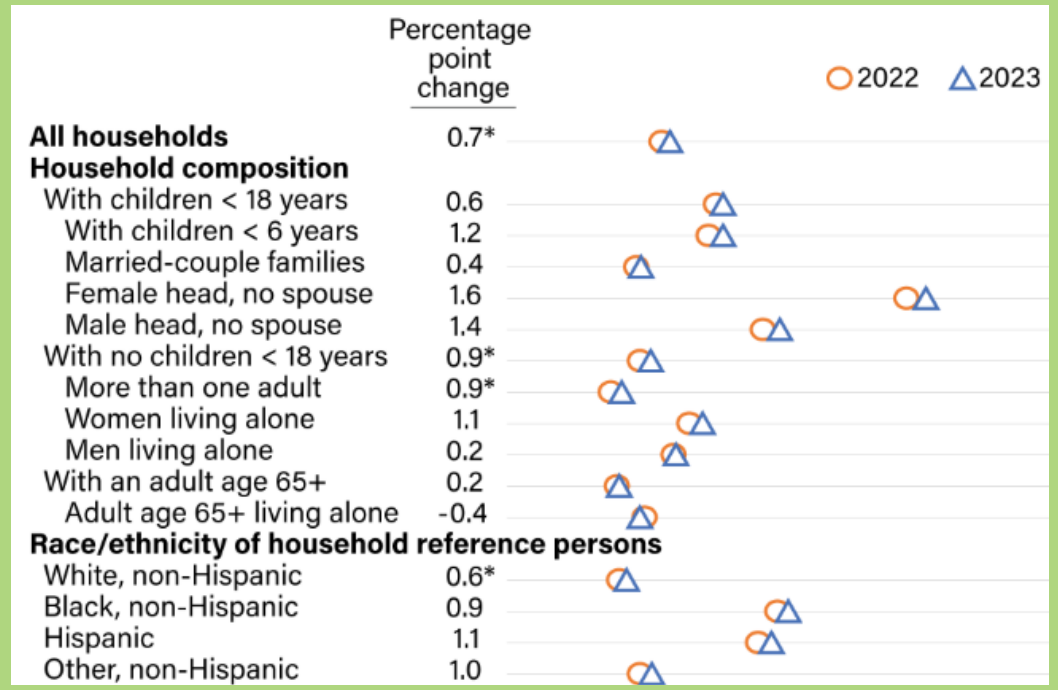
Providing services and resources to reduce food insecurity, improve nutrition status, increase nutrition education knowledge, and reduce stress

## FUNDING

Funding for this pilot program was provided by Hennepin County.

# THE CASE FOR FOOD SUPPORT DURING PREGNANCY

**Prevalence of food insecurity, 2022 and 2023**[1]




Sources


1. USDA ERS - Key Statistics & Graphics
2. Agho and Pligt van der. BMC Pregnancy and Childbirth (2023) 23:862
3. https://www.kff.org/racial-equity-and-health-policy/issue-brief/racial-disparities-in-maternal-and-infant-health-current-status-and-efforts-to-address-them/


## FOOD INSECURITY

In 2023, the United States Department of Agriculture estimated that **13.5% of all US households** were food insecure, a **0.7% increase** from 2022.[1]

Food insecurity during pregnancy can lead to:

> Poor ***pregnancy*** outcomes, such as gestational diabetes and iron deficiency[2]
>
> Poor ***birth*** outcomes such as low birth weight of baby and maternal depression[2]

# THE CASE FOR FOOD SUPPORT DURING PREGNANCY

## INEQUALITIES

♀ Women's role in meal preparation, status as primary caregivers, and their added nutritional needs during pregnancy and lactation increase risk of food insecurity.

≠ Disparities exist in maternal health and birth outcomes for people who are Black, Indigenous, and people of color (BIPOC).[3]

Sources


1. USDA ERS - Key Statistics & Graphics
2. Agho and Pligt van der. BMC Pregnancy and Childbirth (2023) 23:862
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# HISTORY & LEARNINGS

## FROM THE 2023 PROGRAM

- Healthy Pregnancy Program in 2024 expanded delivery options, provided more culturally relevant foods, and offered a choice between medically tailored groceries or prepared meals.

- **Fifty-five out of 68 participants enrolled (81%) completed the 2024 program.** This compares to 34% who completed the 2023 program.

| | 2023 | 2024 |
|---|---|---|
| **Insurance eligibility criteria** | UCare Prepaid Medical Assistance Program only | Medicaid-eligible, All Payers |
| **Recruitment and enrollment process** | Multiple handoffs during recruitment - Hennepin Healthcare passed referrals to UCare who passed applications to Open Arms | Hennepin Healthcare sent referrals directly to Open Arms |
| **Type of weekly food offering** | • Prepared meals only (lunch and dinner)<br>• Nausea care packs<br>• Heart-healthy, vegetarian, and flavor neutral menus | • Prepared meals or groceries (participant choice)<br>• Additions of Hmong & East African prepared meal menus<br>• Protein calorie packs<br>• Nausea care packs |
| **Amount of food provided** | • 14 meal units each week<br>• One additional meal unit if nausea care pack added | • 10 meals (units) each week, including protein calorie packs<br>• One additional meal unit if nausea care pack added |
| **Duration of program** | • During pregnancy: Up to 32 weeks<br>• Postpartum: Eight weeks | • During pregnancy: Up to 20 weeks<br>• Postpartum: Four weeks |
| **Nutrition support** | • Nutrition screening by dietetic technician<br>• Comprehensive nutrition assessment by registered dietitians<br>• Optional ongoing visits with registered dietitians | • Nutrition screening by dietetic technician<br>• Nutrition counseling offered (no requirement of registered<br>• dietitian visit)<br>• Nutrition education through tailored nutrition handouts mailed alongside their Welcome Packets |
| **Resource response** | Resources were offered by a UCare Community Health Worker, as needed | • Planned outreach throughout program<br>• All participants were referred to WIC, if not already engaged |

## GOALS

Address food insecurity and improve birth outcomes for high-risk pregnant people

## PROGRAM COMPONENTS

- Home-delivered prepared meals for up to 20 weeks during pregnancy plus the first 4 weeks after their baby was born
- Nutrition education and counseling with a Registered Dietitian (optional)
- Connection to WIC and other social drivers of health resources

## TARGET AUDIENCE

50 to 70 HHS patients who were pregnant and experiencing a high-risk pregnancy (as determined by established HHS clinical criteria).

## TIMELINE

- Enrollment period: Rolling enrollment from April 2024 through August 2024
- Programming period: April 2024 to January 2025

# PROGRAM DESIGN: FOOD

Free, medically tailored food was delivered to the participants once per week during pregnancy and the first 4 weeks after baby was born. Each delivery contained **10 meals** for the participant.

### MEDICALLY TAILORED PREPARED MEALS

Option of lunch or dinner. Eight menu options, including Heart-Healthy, Flavor Neutral, Hmong, and East African

**OR**

### MEDICALLY TAILORED GROCERIES

Three-week rotating selection of shelf-stable items, fresh produce, and frozen proteins

**+**

### PROTEIN CALORIE PACK

Collection of high-protein, grab-and-go items including cottage cheese, sun butter, granola bites, hard-boiled eggs, oatmeal, and cheese sticks

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### OPTIONAL OPT-IN: NAUSEA CARE PACK

Designed to help alleviate nausea symptoms. Includes tea, applesauce, oatmeal, juice box, saltine crackers, and crystalized ginger.

# PROGRAM DESIGN: NUTRITION SERVICES

All participants completed a nutrition assessment during their intake call with a Registered Dietetic Technician at Open Arms.

All participants were offered no-cost nutrition education and counseling by the Open Arms' Registered Dietitians available throughout the program.

> **Nutrition education topics included:** Iron-rich foods and how to increase iron absorption, managing blood sugar levels, and nutrients/foods to limit and/or avoid during pregnancy.

# PROGRAM DESIGN: RESOURCE CONNECTION

Throughout the program, all participants were asked about any additional needs related to social drivers of health. This includes:

Multiple touchpoints with both Hennepin Healthcare & Open Arms of Minnesota staff

Connection to WIC, SNAP, and other resources

# PARTICIPANT FEEDBACK

### MIDPOINT WELLNESS CALL

Open Arms staff called participants halfway through program to check on program satisfaction & identify any changes to food or program logistics

### POSTPARTUM CALL

Hennepin Healthcare RNs called all participants after delivery and asked about follow-up care (well-child visits, etc.) & WIC program status

### OFFBOARDING CALL & SURVEY

Open Arms staff called all participants two weeks before meal deliveries ended and invited to complete a survey and share about their experience with the program

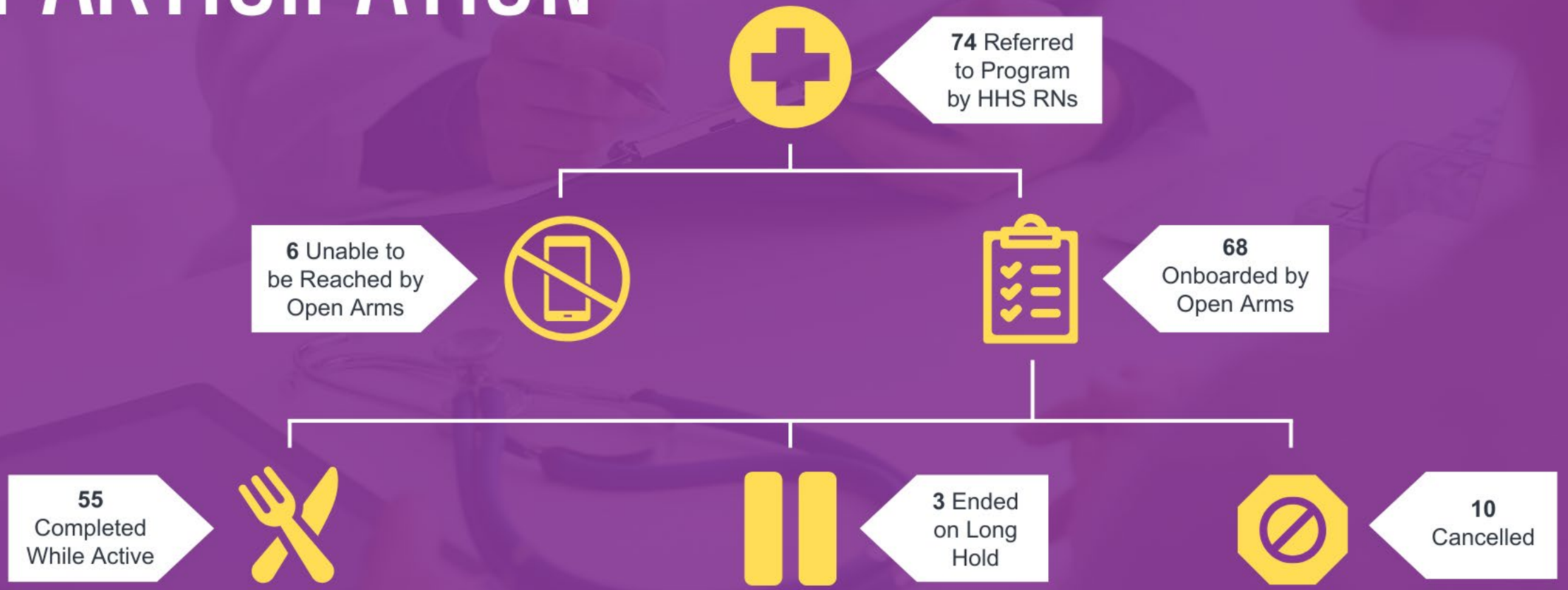
# PROGRAM ELIGIBILITY CRITERIA

- ✓ Patient who was 20 weeks or later in pregnancy
- ✓ Received pregnancy-related healthcare in the Hennepin Healthcare system
- ✓ Considered low income based on enrollment in Medical Assistance or lack of medical coverage
- ✓ Had access to a fridge or freezer and a microwave (microwaves were provided if a patient did not have one)
- ✓ Met at least one of the eligible clinical conditions*:
  - High blood pressure (current, history of, risk factors for)
  - Pre-eclampsia (current, history of, high risk factors)
  - Gestational diabetes (current gestational diabetes or diabetes, history of, risk factors for)
  - Anemia (current, history of, history of blood transfusion)
  - Risk factors in previous pregnancy (low birth weight of baby, preterm birth, recent pregnancy)
  - Pre-Pregnancy BMI of <18.5 or >30

*Clinical criteria was reviewed by HHS Clinical advisors from Pediatrics and Women's Health.

# PROGRAM PARTICIPATION

**Of the 68 participant cohort, 55 members completed the program through their delivery date or beyond.**



# PROGRAM PARTICIPATION

Open Arms provided a choice between **groceries** or **prepared meals**

## GROCERIES

**90%**

of participants (61 in total)

## PREPARED MEALS

**10%**

of participants (7 in total)

# REPORTED REASONS FOR PARTICIPATING

**Question:** Why did you choose to join the program? Please choose all that apply.


55 responses

# ENROLLED PATIENT DEMOGRAPHICS

| | Cohort (*n*=68) |
|---|---|
| **Demographics** | |
| **Age Category (years)** | |
| **Under 18** | 1 (1.5%) |
| **18-24** | 14 (20.6%) |
| **25-34** | 35 (51.5%) |
| **35+** | 18 (26.5%) |
| **Race & Ethnicity** | |
| **Black (African or African American)** | 15 (22%) |
| **Native American (American Indian or Alaskan Native)** | 1 (1.5%) |
| **Asian** | 1 (1.5%) |
| **Hispanic/Latino** | 51 (75%) |
| **Language** | |
| **English** | 17 (25.0%) |
| **Spanish** | 47 (69.1%) |
| **Other** | 4 (5.9%) |
| **Region of Origin** | |
| **Africa** | 3 (4.4%) |
| **Asia** | 1 (1.5%) |
| **Central America*** | 3 (4.4%) |
| **South America** | 27 (39.7%) |
| **North America** | 28 (41.2%) |

**Includes the Caribbean.*

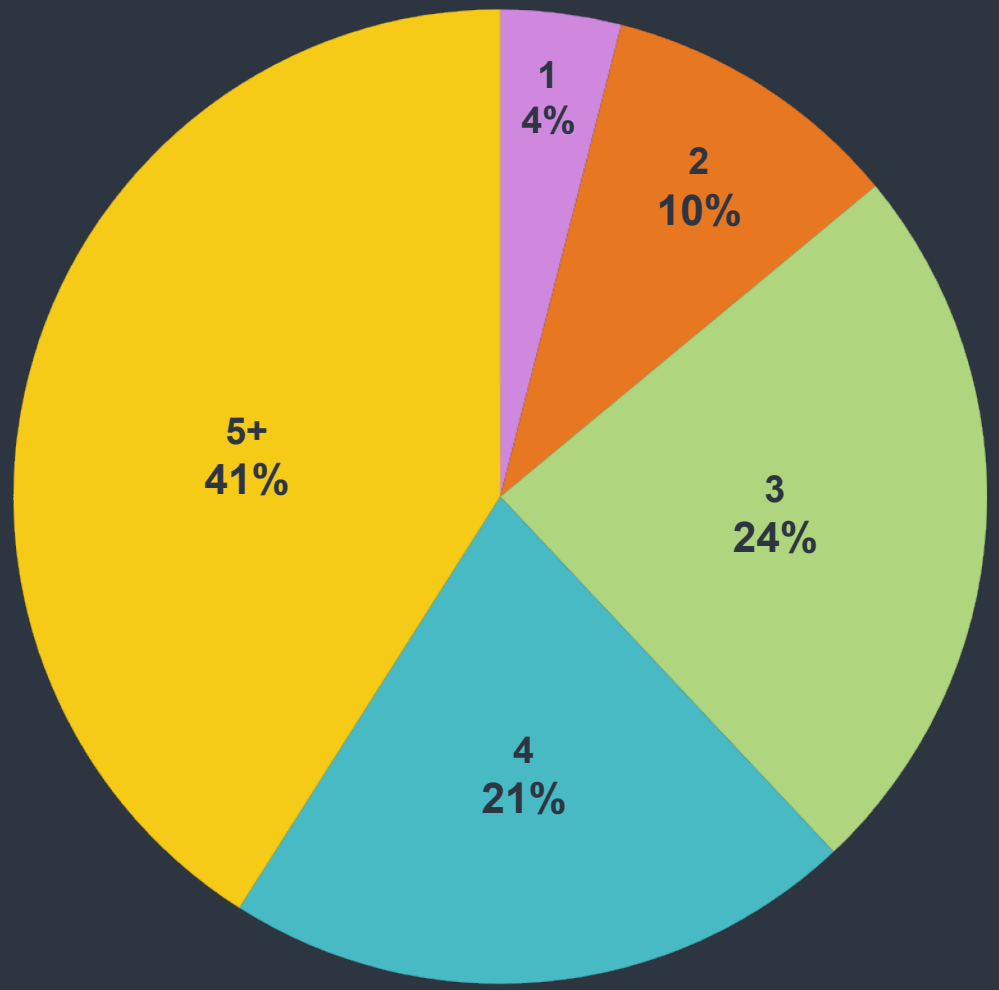
- Full cohort identified as Black, Indigenous, and People of Color (BIPOC)
- Most cohort members were Hispanic (Latino) or Black (African American or African).
- 69% of the cohort preferred to speak Spanish.
- All but one cohort participants were 18 years or older, with the largest share between 25 and 34 years old.

# ENROLLED BIRTH RISKS

**BIRTH RISKS INCLUDED THE FOLLOWING MEDICAL CONDITIONS OR RISK FACTORS:**

- Prediabetes
- Type 2 diabetes
- Hypertension
- Gestational diabetes
- Anemia
- BMI ≤18.5 or ≥30 (pre-pregnancy)
- Advanced maternal age
- Gestational hypertension
- Gestational history of high blood pressure, preeclampsia, premature birth, gestational diabetes mellitus, or low birth weight.

## PERCENTAGE OF COHORT WITH 1 OR MORE RISK FACTORS (N=68)




## MOST COMMON BIRTH RISKS AT INTAKE

| | |
|---|---|
| **82.4%** | Preeclampsia |
| **51.5%** | Pre-pregnancy Body Mass Index (BMI) ≤18.5 or ≥30 |
| **50.0%** | Gestational diabetes |

# MEASUREMENT AND EVALUATION

Sources of information used to evaluate program impact and areas for improvement:

**Programmatic data** to track participation and program delivery

**Participant feedback** to learn about active participants' program experiences

**Healthcare data** to describe cohort and birth outcomes

- **Midpoint Wellness Calls Participation:** Completed 65 of the 66 attempted calls (98%)
- **Postpartum Calls Participation:** Completed 65 of the 67 attempted calls (97%)
- **Offboarding Survey Participation:** Completed 55 of the 59 attempted calls (93%)

# LIMITATIONS OF EVALUATION

**Small sample size**

- Limits the generalizability of the findings despite good response to final survey (81% of total participants: 55/68)

**Inability to Track Food Consumption**

- It's possible that participants shared the food items with family members or did not eat it all. We also do not know what else participants ate during the program.

**Inability to Track External Program Engagement**

- We did not have closed loop referral data to track participants' engagement with WIC or other recommended resources.

**Comparison Group Limitations**

- Socioeconomic status (SES) level between cohort and comparison group is a confounding variable as the cohort had a significantly higher level of poverty. We cannot know what impact this may have had on differences between the groups.
- Food insecurity amongst the comparison group is also largely unknown as many were not screened during pregnancy.
- There is also no data on well-child checks or neonatal intensive care unit utilization for babies born to the comparison group.

# SATISFACTION WITH PROGRAM OPERATIONS

- Overall satisfaction with the program was very high, with 100% of participants reporting they were either satisfied (16%) or very satisfied (84%) with the program.
- 91% of participants reported it was easy (38%) or very easy (53%) to get started with the program.
- 100% of participants reported that the way that they received the food from Open Arms was convenient for them.
- 98% of participants reported that they would use the program again in a future pregnancy.
- 100% of participants reported that they would recommend the program to another person who is pregnant.

**"I would recommend this program 100%. I was happy with everything and wouldn't change anything. It was very healthy. The flavor of the meals I received was excellent."**

**"Open Arms and Hennepin Healthcare really made this process easy and seemed to care the whole time. Thank you."**

# SATISFACTION WITH FOOD OFFERINGS

**Satisfaction with the food offerings was also high. All participants agreed or strongly agreed that:**

- the food they received included foods that they wanted to eat
- the food fit their cultural preferences
- they got enough food
- there was enough variety in the food they received

**"I'm so grateful that you helped me with the food, and it helped me so much. And the food was healthy and delicious."**

# IMPROVING OVERALL HEALTH

**91%**

of participants reported that getting meals from Open Arms improved their health a little (44%) or a lot (47%)

**67%**

of participants reported that they wouldn't have had enough food to eat during their pregnancy without receiving food from Open Arms

**This program was so good for my body and mind. This really helped with hypertension and [my] gallbladder. It was such a good variety of healthy foods. I would have had enough food during my pregnancy, but it definitely wouldn't have been as healthy or delicious. Thank you so much.**

*- Program Participant*

# HEALTH AND NUTRITION

## 96%

of participants agreed (29%) or strongly agreed (67%) that that getting meals from Open Arms helped them eat healthier foods

## 100%

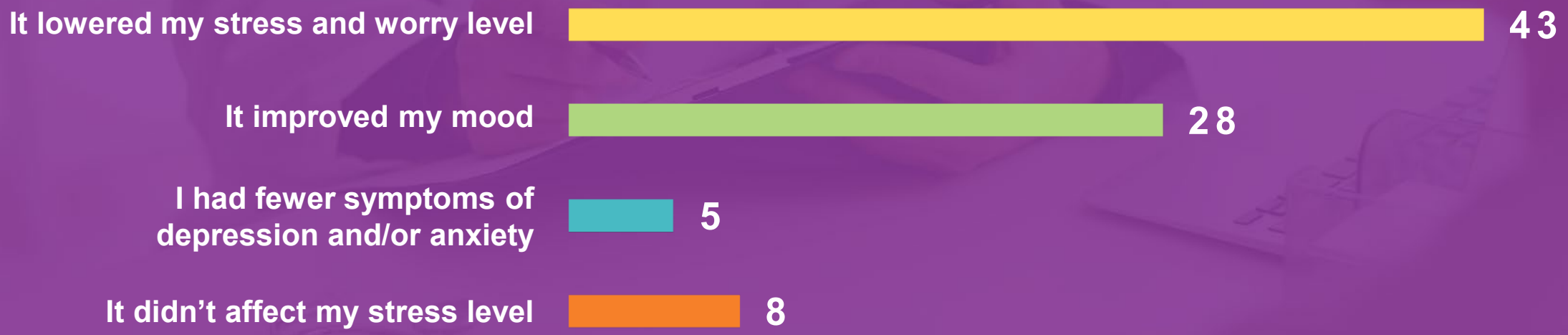
of participants agreed (60%) or strongly agreed (40%) that the nutrition materials they received from Open Arms helped them understand the importance of nutrition during pregnancy

## 100%

of the 15 participants that responded agreed (73%) or strongly agreed (27%) that the nutrition counseling they got from an Open Arms RD helped them understand the importance of nutrition during pregnancy.

# STRESS AND MENTAL HEALTH

**Question:** How did getting food from Open Arms affect your stress or worry level? Please choose all that apply.




98% of respondents agreed (38%) or strongly agreed (60%) that participating in the program meant they were able to spend less money on food thereby reducing financial stress.

**"I so appreciate that the food came directly to my house. It helped my anxiety so much."**

**55 responses**

# RESOURCE CONNECTIONS AND SUPPORT

The program offered participants connection to both WIC & SNAP if they were not already enrolled.

## Women, Infants & Children Program (WIC)

- 46 participants were already enrolled before starting the program.
- Of the 55 participants who completed the final offboarding survey, 53 indicated that they used their WIC benefits during pregnancy.

## Supplemental Nutrition Assistance Program (SNAP)

- There were 38 referrals to Second Harvest Heartland (SHH) completed during Postpartum Calls. These patients were then contacted by outreach staff at SHH to determine eligibility for SNAP and given assistance with the application for it.

**“You at Open Arms also helped me get connected with WIC after spending so long on the phone waiting. Thanks so much to all of you.”**

# PROGRAM LEARNINGS

***Overall, participating in the Healthy Pregnancy Program helped low-income birthing parents with medically high-risk pregnancies improve their nutrition status, increase their nutrition knowledge, and reduce their stress levels.***

**Flexible Program Designs Increase Engagement**

- This program's changes to logistics and food offering improved engagement and retention, compared to the 2023 program.

**Care Coordination Supports Engagement with the Healthcare System**

- Individualized resource connection fostered strong relationships between patients and nurses, likely contributing to higher rates of program engagement and completion of recommended care.

**Healthy Pregnancy Program Helps Meet Pregnancy and Postpartum Nutritional Needs**

- Combining food delivery with connection to WIC increased the likelihood that participants received the recommended amount of food and specific nutrients for pregnant and postpartum people.

# RECOMMENDATIONS FOR FUTURE PROGRAMS

**Hennepin Healthcare recommends the Healthy Pregnancy Program be funded as a solution to reduce the risk of poor pregnancy and birth outcomes.**

Considerations for future program models:

- Ensure participant-centered programming, including flexibility and choice of foods, to increase participant engagement.
- Complement the Healthy Pregnancy Program with care coordination services for high-risk pregnancies.
- In addition to nutrition education and practical meal preparation guidance, integrate multiple food support resources, such as WIC and SNAP, to ensure all nutritional needs are met to support a healthy pregnancy.

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# SPECIAL THANKS TO:


- Members of the program cohort who participated in the evaluation of this program.
- Team members at Hennepin Healthcare and Open Arms who made this program and evaluation possible. Every role from recruitment to service delivery was vitally important.
- The Hennepin Healthcare clinical advisors, Dr. Diana Becker Cutts and Jessica Holm (APRN, CNM, FACNM), who helped advocate for patients experiencing high-risk pregnancies and their babies and design a program to reduce nutritional risk factors.
- The Hennepin Healthcare staff who completed a comprehensive report and evaluation of the program to showcase this important work and its impact on the community: Christine Melko, MPH, RD, LD; Jennette Turner, MPH; Isabella Bennett, MS.