2024 Healthy Pregnancy Program

Evaluation Report

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Summary

The Program

In 2024, Hennepin Healthcare, in partnership with Open Arms of Minnesota, completed a second pilot of the Healthy Pregnancy Home-Delivered Meals program. This program, like the first one (completed in 2023), was designed to address barriers to a healthy pregnancy and postpartum period for people with nutritional risk factors by providing services and resources that have the potential to reduce food insecurity, improve nutrition status, increase nutrition education knowledge, and reduce stress. The second program built on learnings from the first. Both offered nutritious food delivered to the homes of patients with low incomes and who were experiencing high-risk pregnancies. Improvements made to the 2024 program included offering participants more food choices, more culturally relevant food products, and a connection to the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) for all the participants.

A cohort of 68 participants were enrolled in the program out of 74 patients referred. This evaluation of the program describes those who participated and the impact and learnings from this second round of implementation.

Key Learnings

Fifty-five of the 68 participants completed the program through their delivery date. The cohort was made up entirely of participants who identified as Black, Indigenous, and People of Color (BIPOC). For these individuals:

- Overall satisfaction with the program and the food was very high. Participants are likely to recommend the program to someone else who is pregnant.
- The main motivators of program participation were eating healthier foods during pregnancy and having enough food during their pregnancy.
- Food support during pregnancy resulted in a reduction in stress and better overall health.
- Ongoing care coordination provided by Hennepin Healthcare and Open Arms of Minnesota team members throughout the program contributed to robust enrollment, engagement with the program, and utilization of healthcare services.
- When compared to patients who were pregnant with similar demographics, program participants had a higher social risk at baseline. However, the incidence of poor pregnancy outcomes was the same between the two groups, suggesting program participation potentially impacted the health risk in those who completed the program.
- The results of this program are promising and warrant further replication and study. Further exploration is needed.

Contents

Introduction

In 2024, Hennepin Healthcare and Open Arms of Minnesota (referred to as "Open Arms" throughout remainder of this report) partnered on a program to provide nutrition assistance to patients experiencing both medically high-risk pregnancies and food insecurity, the Healthy Pregnancy Home-Delivered Food Program (referred to as "Healthy Pregnancy Program" throughout the remainder of this report). This work built on successes and learnings from a previous pilot program created by Hennepin Healthcare, Open Arms, and UCare in 2023. The goal of both programs was to improve pregnancy and birth outcomes for these uniquely vulnerable patients. Notable disparities exist in maternal health and birth outcomes between BIPOC and White people, especially for African Americans, who also experience food insecurity at a disproportionate rate compared to the general population (Gillespie & Privitera, n.d.). Most participants in the 2023 cohort, and the entire 2024 cohort of participants, were BIPOC.

Supporting Evidence

Research supports the connection between a healthy diet and healthy birth outcomes. Pregnancy is a time of increased nutritional demand on the body, when vulnerability to certain nutrition-linked conditions is increased. Several maternal risk factors for poor outcomes during pregnancy, such as gestational diabetes and preeclampsia, are associated with dietary patterns (Raghavan et al., 2019a). Limited evidence points to the possible benefits of healthy maternal dietary patterns extending to the fetus; however, more research is needed in this area (Raghavan et al., 2019b). Yet, consequences of food insecurity and its dietary implications can contribute to negative health outcomes for people who are pregnant and their babies (Sosnowski et al., 2023). Therefore, it is critical that those who are pregnant are screened for food insecurity and connected to appropriate resources and programs to address their needs.

One of the ways healthcare systems address food insecurity in their patient population is through Food is Medicine (FIM) programs. FIM programs are interventions focused on addressing chronic diseases through the provision of nutrition and diet-related resources (U.S. Department of Health and Human Services, 2024). Although the Healthy Pregnancy Program does not fit the definition of an FIM intervention (i.e., does not address chronic disease), it has similar intent and components.

History & Learnings from the 2023 Program

In 2023's Healthy Pregnancy Program, 21 of 62 enrolled participants completed the program through eight weeks postpartum. For these participants, having healthy foods selected, prepared, and delivered at no cost were the main reasons for satisfaction. They also reported reductions in stress and better overall health from having food support during their pregnancies. For the 41 who dropped out of programming, the greatest barriers to program completion were the logistics of food deliveries and storage. Some also reported that the meals were not representative of their cultural and flavor preferences. Clinical and birth outcomes were not measured for the 2023 Healthy Pregnancy Program.

Changes made to the Healthy Pregnancy Program in 2024 addressed this feedback with expanded delivery options, more culturally relevant foods, and a choice between medically-tailored groceries or prepared meals (Table 1). Clinical and birth outcomes were measured for the 2024 Healthy Pregnancy Program.

Table 1 ***Key Differences Between 2023 & 2024 Healthy Pregnancy Programs***

Healthy Pregnancy 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 registered nurse recruiters sent referrals directly to Open Arms
Type of weekly food offering	• Prepared meals only (lunch and dinner) • Nausea care packs • Heart-healthy, vegetarian, and flavor neutral menus	• Prepared meals or groceries (participant choice) • Additions of Hmong & East African prepared meal menus • Protein calorie packs • Nausea care packs
Amount of food provided	• 14 meal units each week • One additional meal unit if nausea care pack added	• 10 meal units each week, including protein calorie packs • One additional meal unit if nausea care pack added
Duration of program	• During pregnancy: Up to 32 weeks • Postpartum: Eight weeks	• During pregnancy: Up to 20 weeks • Postpartum: Four weeks
Nutrition support	• Nutrition screening by dietetic technician • Comprehensive nutrition assessment by registered dietitians • Optional ongoing visits with registered dietitians	• Nutrition screening by dietetic technician • Nutrition counseling offered (no requirement of registered dietitian visit) • 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 • All participants were referred to WIC, if not already engaged

**For information about the 2023 Healthy Pregnancy Program, refer to Healthy Pregnancy Home-Delivered Meals Pilot Program - Open Arms of Minnesota.*

Because of these changes, the 2024 Healthy Pregnancy Program had significantly higher retention rates than in 2023. Fifty-five out of 68 participants enrolled (81%) completed the 2024 program. This compares to 34% who completed the 2023 program. This report evaluates those outcomes along with the 2024 Healthy Pregnancy Program's design, successes, and other learnings.

Program Design

Meal deliveries began in April 2024 for the first members of the program cohort and ended in early January 2025. Patients were referred to the program through Hennepin Healthcare and were identified through both direct referrals during prenatal appointments and indirect referrals through telephonic outreach using an eligibility file.

The target population for the program met the following criteria at intake, or at the time of program referral:

- 20 weeks or later in their pregnancy,
- were receiving pregnancy-related healthcare in the Hennepin Healthcare system,
- were considered low income based upon their enrollment in Medical Assistance or lack of medical coverage,
- were considered "high-risk" by a set of clinical and social criteria agreed upon by Hennepin Healthcare obstetrics/gynecology providers,
- had access to a fridge or freezer and microwave. (Microwaves were provided if a patient did not have one.)

The program included:

- Free, healthy food delivered once per week. Participants were eligible to receive meals from 20 weeks of pregnancy to approximately four weeks postpartum.
- Choice between either prepared meals or groceries. Each delivery contained up to 11 meal units for the participant including protein calorie packs (high-protein snacks) and optional nausea care packs.
- Referrals to WIC and connection to other supportive resources.
- Nutrition education and counseling as an optional service.

Participants were given multiple options to receive food (volunteer driver delivery, shipping, or participant pick-up), and were able to reschedule and cancel deliveries to accommodate varied logistical needs. Thirteen participants' meal deliveries were paused due to participant request or missed deliveries; this constituted a "long hold." Ten participants began receiving meals again after a long hold.

Open Arms provided flexibility in the type of food and the amount of food provided. Participants who selected groceries received both fresh and shelf-stable items to self-prepare up to seven meals each week. The contents of the grocery bags varied weekly. The prepared meals option included either a "lunch set" or a "dinner set" of seven meals each week. Participants who selected the prepared meals were offered a variety of menus from which to choose. While most of these participants received the standard heart healthy menu (low in salt and saturated fats), participants could choose from a variety of other menu options, including flavor neutral, Hmong or East African menus. Participants could change their meal type from prepared meals to groceries, or vice versa. Five participants switched from one meal type to the other during programming; three of the five switched from prepared meals to groceries.

Nutrition Education & Counseling

Throughout the program, participants had the option to complete telephonic nutrition counseling sessions with a registered dietitian at Open Arms. In addition to these conversations, at the start of their food deliveries, all participants were sent written nutrition education materials on the importance of good nutrition during pregnancy. Materials were from the Academy of Nutrition and Dietetics and the National Institutes of Health and were available in English and Spanish. Participants who had specific concerns were also able to talk with an Open Arms registered dietitian for optional nutrition counseling.

Included with the grocery bags were registered dietitian-approved recipe suggestions for meal preparation using provided ingredients.

Planned Outreach & Resource Response

Throughout the program, all participants were asked about their need for additional nutrition support or other resources to address social drivers of health (SDOH). This included referring participants who were not already engaged to WIC and/or to Second Harvest Heartland (SHH), Hennepin Healthcare's community partner for connection to the Supplemental Nutrition Assistance Program (SNAP), and other resources. Outreach and support were provided by Open Arms staff and two Hennepin Healthcare registered nurses. There were four main points of telephonic contact with participants, including the onboarding process and three structured calls (Table 7).

See the Appendix for more information about meal programming (Table 5), nutrition education materials (Figure 33) and outreach (Table 6).

Communication within Healthcare System

To help provide visibility of Hennepin Healthcare's patients' program participation to their healthcare team, two types of documentation were completed in the patients' electronic health records (EHRs). Once a patient was referred to the program, the Hennepin Healthcare recruiter:

1. Created a note in the patient's chart for all care team members to see.
2. Sent direct messages to both the patient (to acknowledge participation) and the patient's primary care provider (to raise awareness to help reinforce participation).

Methods

Several sources of information were used to evaluate program successes and areas for improvement, including both qualitative and quantitative data collected from participants and administrative and healthcare data.

Participant Feedback

Midpoint Wellness Call

At the halfway point of the meal delivery program, active program participants received a structured telephone call from Open Arms staff. The purpose of this call was to check on program satisfaction and identify any changes to food or program logistics that could improve their experience.

Postpartum Call

All program participants, including those who paused or ended their meal deliveries, were called by Hennepin Healthcare registered nurses after they delivered their infant(s). During these structured phone calls, patients were asked about follow-up care (e.g., well-child check and postpartum visits scheduled) and their WIC program status.

Program participants were then asked for their consent for the Hennepin Healthcare program team to access their infant's medical records and to share their infant's de-identified data at a group level. Consent was obtained from 62 of the 68 participants and was documented in both the participant's and infant's EHRs. Consent was obtained for 63 infants, as there was one set of twins.

Offboarding Call & Survey

One to two weeks before their meal deliveries ended, active participants were contacted by Open Arms staff, invited to complete a survey via phone, and asked to share about their experience with the program. When Open Arms staff were unable to reach the participants, Hennepin Healthcare registered nurses included the offboarding survey as part of their postpartum call.

See the Appendix for more information about this planned outreach to collect participant feedback.

Programmatic & Healthcare Data

Hennepin Healthcare and Open Arms provided data from various sources to describe the participant cohort and their pregnancy experiences and birth outcomes. Sources included Hennepin Healthcare's EHRs (Epic), external records via Care Everywhere (Epic), and Open Arms program enrollment and tracking records.

Comparison Group

Healthcare utilization and clinical measures for pregnancy and birth outcomes of participant cohort members were compared against a comparison group made up of Hennepin Healthcare patients who were representative of gestational age and clinical eligibility criteria.

The comparison group was formed using the same eligibility query used to identify high-risk patients and recruit the cohort, as well as the same eligibility criteria: public or no insurance status, and at least one qualifying clinical risk factor. Using a full matching approach, patients were matched based on their background demographics (race and/or age group) and if their chart was "flagged" for them having at least one of the following conditions: diabetes, hypertension, obesity, and/or history of preterm birth (which was then confirmed by reviewing their prenatal risk screening, when available). *Note: though the comparison group was matched as closely as possible to the participant cohort, patients in the participant cohort had higher levels of social risk factors.*

See the Appendix for more information about how the comparison group was identified and how data was statistically analyzed.

Limitations

Small Sample Size

The small size of the cohort limits the generalizability of the findings. For example, while there was a good response to the survey (81%), the findings may not be representative of all cohort members. Although the sample size is small, the findings provide valuable preliminary insights into this understudied topic of meal support programming during pregnancy.

Inability to Track Food Consumed by Participants

Consumption of program-provided food was not tracked. It is possible that patients shared the food items with family members or otherwise did not eat all of it.

Inability to Track Engagement in External Programs

This program did not have closed loop referral data and was unable to track participants' engagement with WIC or other recommended resources. WIC data in the report was self-reported by participants.

Limitations with Comparison Group

Due to time and cost constraints, the comparison group is the same size as the cohort, which may increase the risk of bias.

The socioeconomic status (SES) level of the cohort compared to the comparison group is a confounding variable. The cohort had a significantly higher level of poverty, and it is unknown what impact this may have had on differences between the groups.

The food insecurity status of comparison group members was largely unknown, as many were not screened until their inpatient stay during their delivery. Additionally, there is no data on well-child checks or neonatal intensive care unit utilization for babies born to this group.

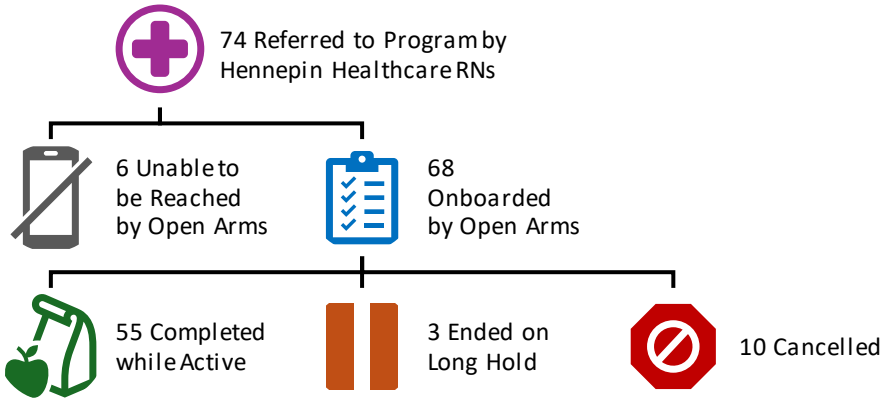
Program Participants & Engagement

The 68 participants who were enrolled in the program, regardless of program completion, are described here.

Program Participation

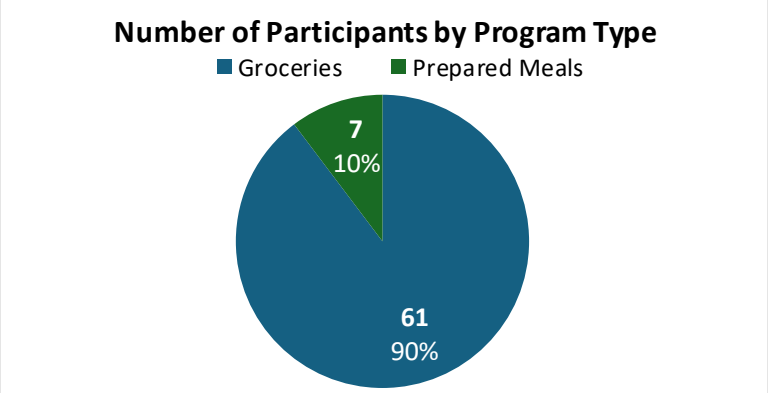
Patients were invited to participate in the Healthy Pregnancy Program by the Hennepin Healthcare registered nurse recruiters. Patients who opted into the program and consented to sharing their information were referred to Open Arms. Among the 74 patients referred to the program, 68 enrolled in the program as cohort members. Of the cohort, 55 members completed the program through their delivery date or beyond (up to approximately four weeks postpartum) and 13 indefinitely paused or canceled their meal deliveries (Figure 1).

Figure 1 ***Program Participation***



Sixty-one participants ended the program receiving groceries and seven with prepared meals (Figure 2). Of the seven participants who received prepared meals, one participant selected the East African menu and one participant selected the flavor neutral menu; all other participants chose the heart-healthy menu. In total, 10,941 meal units were provided to participants throughout the program.

Figure 2 ***Program Type (Final)***



Descriptive Data

Demographics

The majority of cohort members self-identified as Hispanic (Latino) or Black (African American or African), a population at higher risk for adverse birth outcomes (Njoku et al., 2023). Sixty-nine percent of cohort members identified Spanish as their preferred language. All but one of the cohort members were 18 years or older, with the largest share aged 25-34 years (Table 2).

Table 2 ***Background Demographics***

	Cohort (*n*=68)	Comparison (*n*=68)	*p*-value	*t*-stat
Demographics				
Age Category (years)			.98	-.21
Under 18	1 (1.5%)	1 (1.5%)		
18-24	14 (20.6%)	10 (14.7%)		
25-34	35 (51.5%)	39 (57.4%)		
35+	18 (26.5%)	18 (26.5%)		
Race & Ethnicity			.61	.51
Black (African or African American)	15 (22%)	16 (23.5%)		
Native American (American Indian or Alaskan Native)	1 (1.5%)	2 (2.9%)		
Asian	1 (1.5%)	1 (1.5%)		
Hispanic/Latino	51 (75%)	49 (72.1%)		
Language			.45	.76
English	17 (25.0%)	21 (30.9%)		
Spanish	47 (69.1%)	42 (61.8%)		
Other	4 (5.9%)	5 (7.4%)		
Region of Origin			.38	.88
Africa	3 (4.4%)	5 (7.4%)		
Asia	1 (1.5%)	1 (1.5%)		
Central America*	3 (4.4%)	9 (11.8%)		
South America	27 (39.7%)	18 (26.5%)		
North America	28 (41.2%)	35 (51.5%)		

**Includes the Caribbean.*

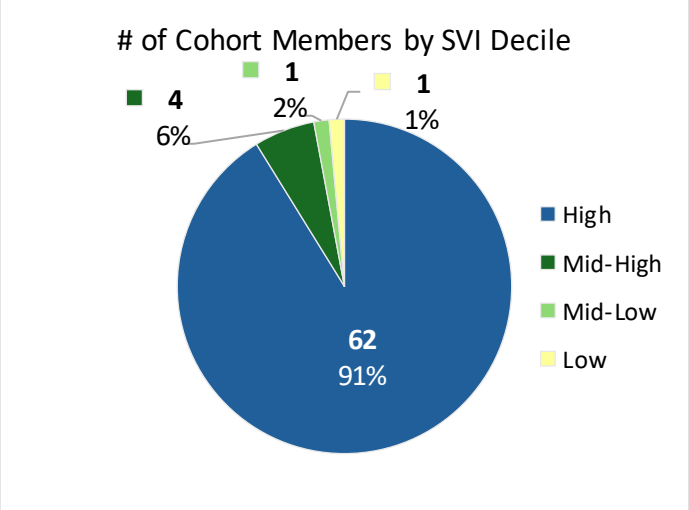
Social Drivers of Health

The Centers for Disease Control and Prevention's Social Vulnerability Index (SVI) was created to define a community's level of social vulnerability. The factors considered in developing the SVI include socioeconomic status as well as data regarding education, family characteristics, housing, language, ability, ethnicity, and vehicle access (Centers for Disease Control and Prevention, 2022). Based on participants' zip codes, 97% of the cohort live in areas of vulnerability and high social need. The cohort was at greater social risk than the comparison group (Table 3).

Table 3 ***SDOH/Social Risk Factors***

Social Drivers of Health	Cohort (*n*=68)	Comparison (*n*=68)	*p*-value	*t*-stat
Low SES	45 (66.2%)	22 (32.4%)	$p < .001$	4.41
Food Insecurity	62 (91.2%)	14 (20.6%)	$p < .001$	8.42
SVI Decile by Zip Code			$p = .01$	2.80
Low	1 (1.5%)	4 (5.9%)		
Mid-Low	1 (1.5%)	6 (8.8%)		
Mid-High	4 (5.9%)	11 (16.2%)		
High	62 (91.2%)	47 (69.1%)		

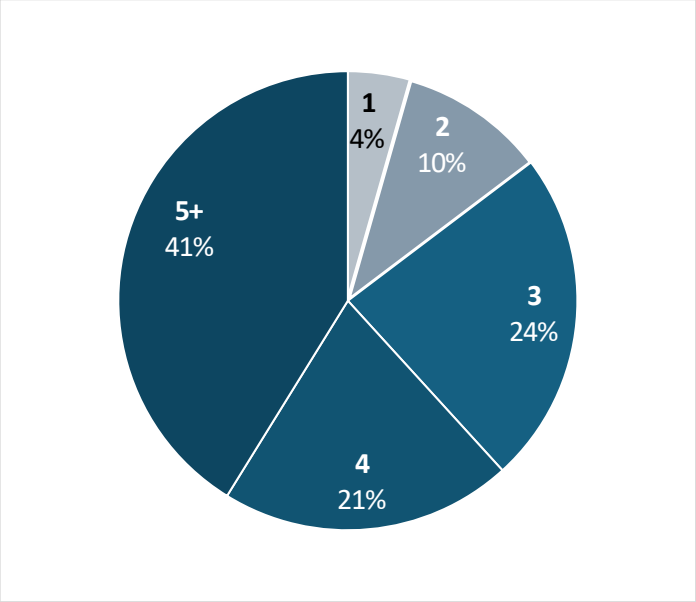
Figure 3 ***Cohort Members by SVI Decile***



Clinical Profile – Birth Risks

Patients were eligible for the Healthy Pregnancy Program based on pre-existing medical conditions, risk factors that arose during pregnancy, and/or a history of gestational risk factors that put them and/or their infant at risk for poor birth outcomes. Nearly four in five cohort members had more than one medical condition or risk factor coming into the program (Figure 4). One in four members had five or more medical conditions or risk factors.

Figure 4 ***Percentage of Cohort Members with 1 or More Risk Factors*** *(n=68)*



Birth risks included the following medical conditions:

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

The largest share of cohort members presented with the following medical conditions or risk factors at intake: preeclampsia (82.4%), a pre-pregnancy BMI of less than 18.5 or greater than 30 (51.5%), and gestational diabetes mellitus (50.0%).

See the Appendix for more detailed information about the types of risk factors among cohort members (Table 9).

Key Findings

Key findings from the Healthy Pregnancy Program are described here and include:

- participants' satisfaction with its operations and food offerings;
- the impact participating had on their nutrition and health status, including stress levels and mental health;
- participants' connection to ongoing food support resources;
- clinical measures for pregnancy and birth outcomes; and
- data on healthcare utilization.

"This was such a major help—especially with my high-risk pregnancy and my energy levels. I [want to] thank you so, so much. This was so great for me."

For the Program Satisfaction, Program Impact, and Trust in the Health Care Team sections of the report, the data reported include survey data from respondents who completed the program (*n*=54) and one individual who cancelled. Program completion is defined as participants who received food from Open Arms through their actual date of delivery, regardless of whether they received meals postpartum.

For the "clinical and healthcare utilization" sections of the report, the data come from individual chart reviews and data queries made using SQL (data management coding language) to pull encounter information from Epic, Hennepin Healthcare's EHR system.

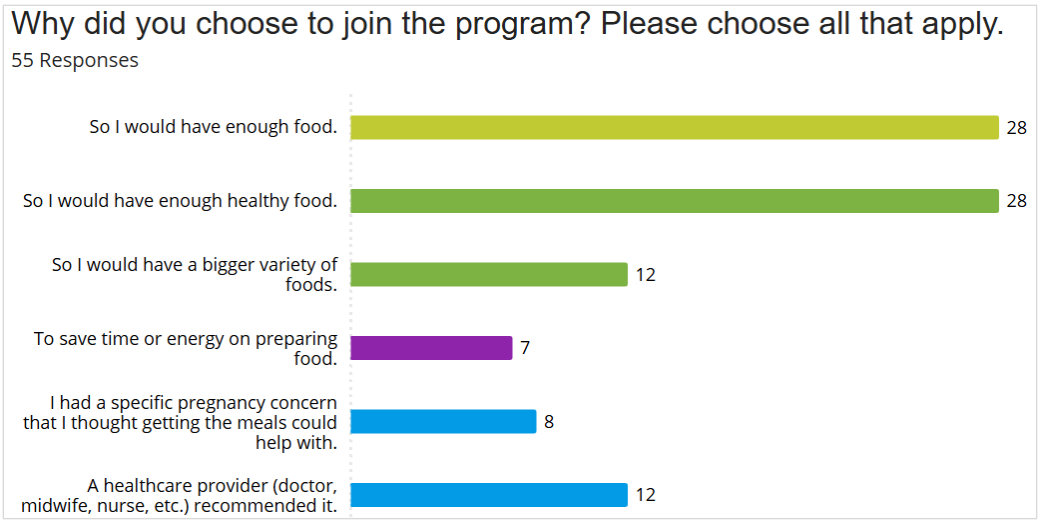
"This program opened my eyes to nutrition and new foods."

Program Satisfaction

Participants enrolled in the Healthy Pregnancy Program for a variety of reasons related to food and health (Figure 5). Data shows that the food and services met their expectations. Participants reported being highly satisfied with the program's operations and food offerings.

"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."

Figure 5 ***Motivations for Joining the Program***



There were no respondents who selected "None of the Above" or "Other: (please describe)" so those options were excluded from the figure above.

Satisfaction with Program Operations

The following data show cohort members' responses to survey questions about how satisfied they were with the Healthy Pregnancy Program overall, as well as ease of enrollment and ongoing participation.

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

Notable points include all respondents saying they would recommend it to someone else who is pregnant, and all respondents saying they were either satisfied or very satisfied with the program and the services they received from Open Arms.

Figure 6 ***Ease of Starting***

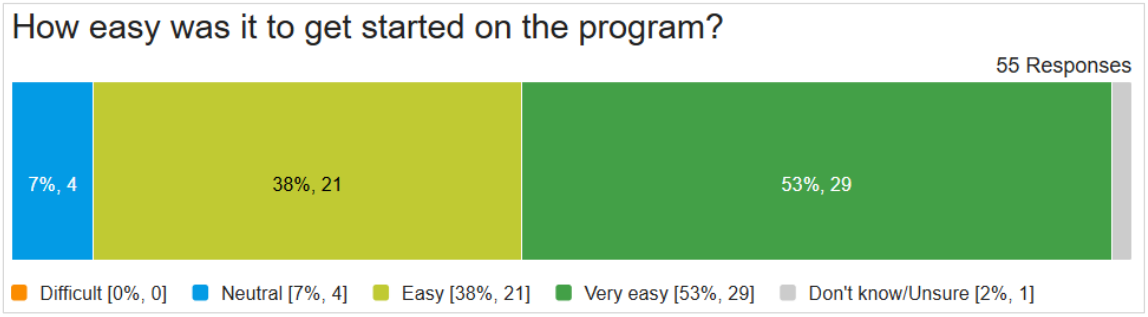


Figure 7 ***Convenience of Food Acquisition***

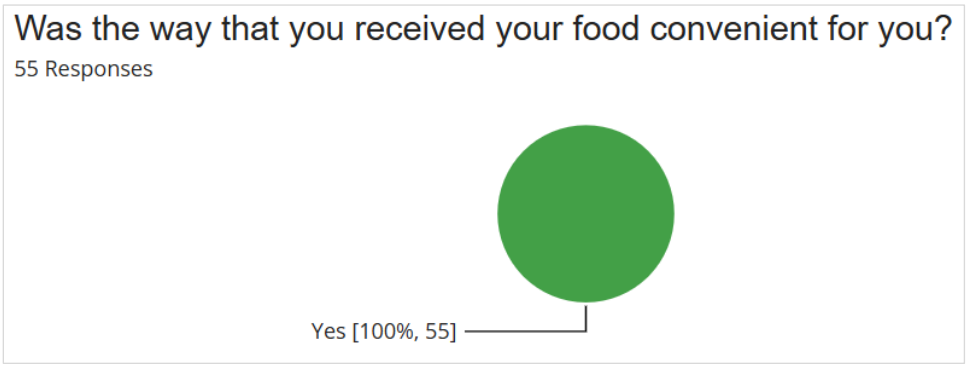


Figure 8 ***Willingness to Use Again***

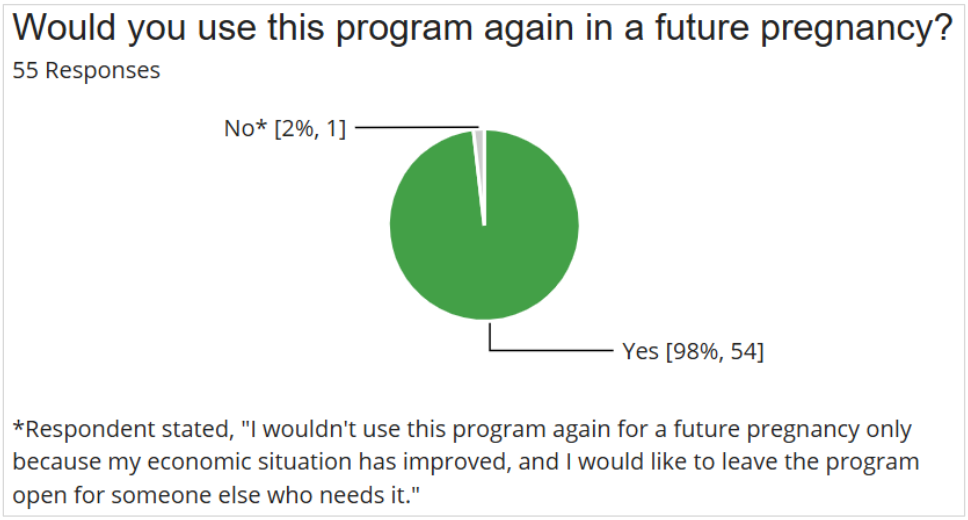


Figure 9 ***Willingness to Recommend***

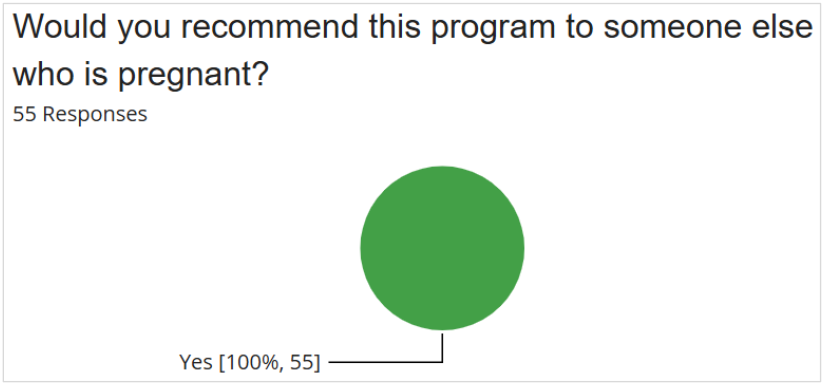


Figure 10 ***Program Satisfaction***

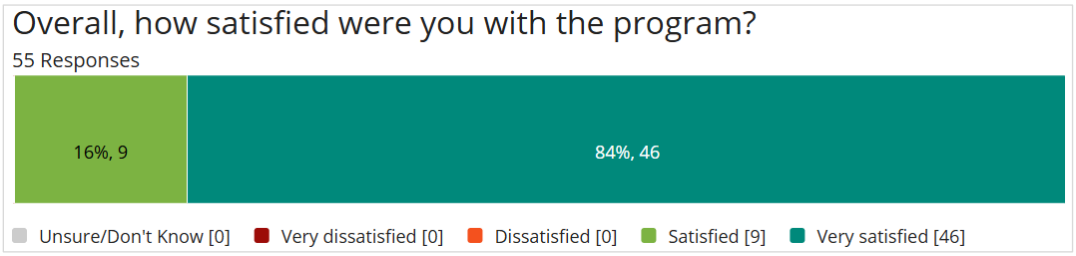
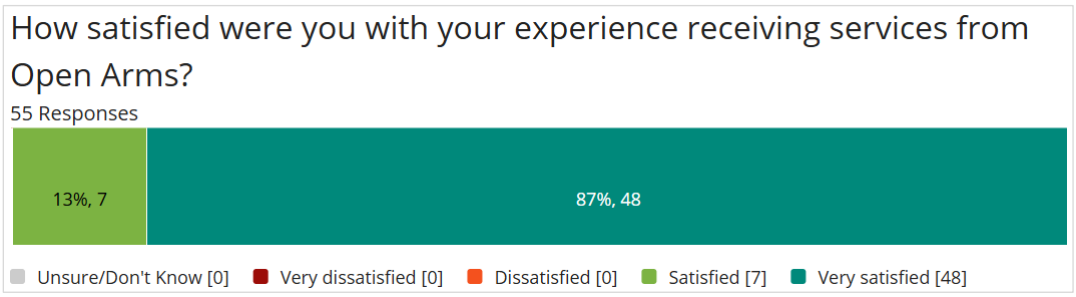


Figure 11 ***Satisfaction with Services from Open Arms***



Satisfaction with Food Offerings

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

Participants in the Healthy Pregnancy Program were able to choose between prepared meals and groceries. The majority of participants selected the groceries option. The following data show cohort members' responses to survey questions about how satisfied they were with the variety, flavor, quantity, and cultural relevance of the food provided. Notable points include all respondents agreeing or strongly agreeing that the food they received included foods they wanted to eat, foods that fit with their cultural preferences, that they got enough food, and that there was enough variety in the food they got.

Figure 12 ***Acceptance of Food Offerings***

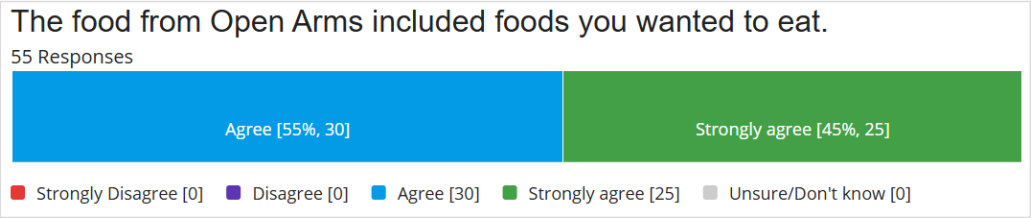


Figure 13 ***Amount of Food***

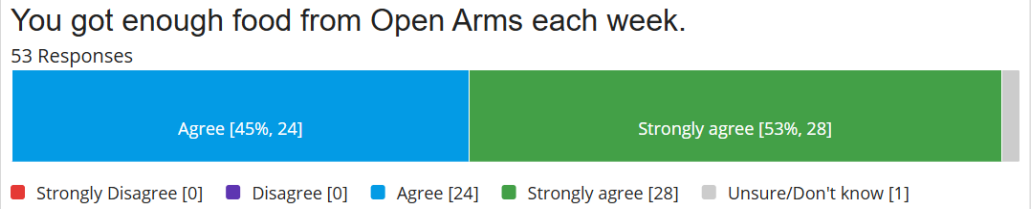


Figure 14 ***Satisfaction with Snacks***

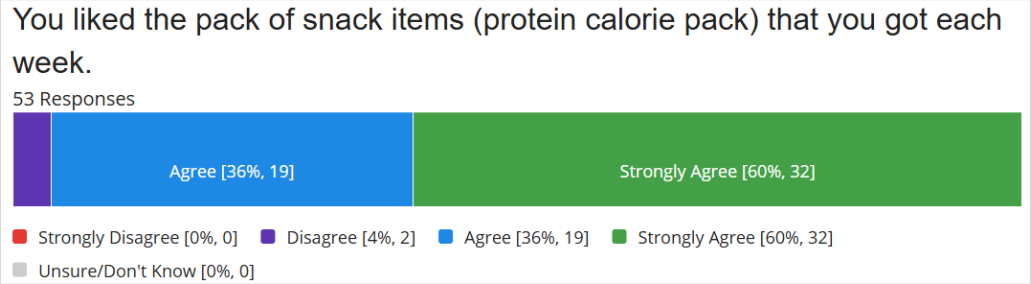


Figure 15 ***Variety of Food Offerings***

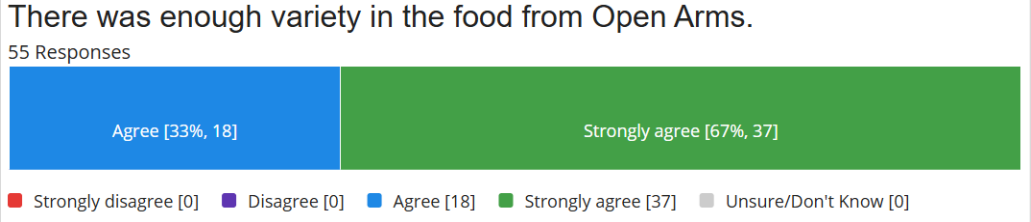


Figure 16 ***Cultural Fit of Food Offerings***

Program Impact

> "This really helped me. I didn't have other provisions when I got pregnant, so this was really good."

Having enough food and, in particular, enough nutritious food were the two primary reasons cohort members enrolled in the Healthy Pregnancy Program (Figure 5). Data shows that participating in this program met both of those goals, improved cohort members' self-reported physical and mental health, increased their knowledge of nutrition, and lowered their stress levels. Through this program, participants were connected to ongoing food support resources, contributing to the future food security of these parents and their babies.

Health & Nutrition

> "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."

The following data shows cohort members' responses to survey questions about how the Healthy Pregnancy Program impacted their health and nutrition. Notable points include 70% of respondents indicating that without the program, they wouldn't have had enough food to eat during their pregnancies (Figure 18), and 96% agreeing or strongly agreeing that the program helped them eat healthier foods during their pregnancies (Figure 19).

Additionally, 91% of participants said the program improved their health (Figure 17), and all participants stated that the educational materials they received from Open Arms helped them understand the importance of good nutrition during pregnancy (Figure 20).

Figure 17 ***Impact on Overall Health***

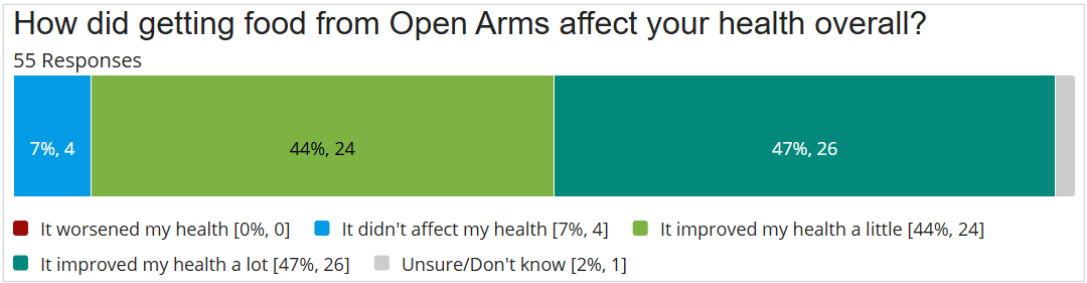


Figure 18 ***Access to Food Resources***

Figure 19 ***Access to Healthy Foods***

Figure 20 ***Impact of Open Arms Nutrition Materials***

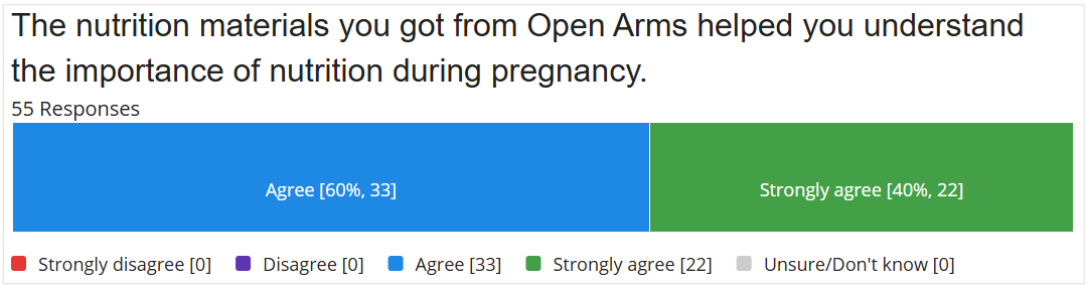


Figure 21 ***Impact of Open Arms Nutrition Counseling***

Stress & Mental Health

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

The following data shows cohort members' responses to survey questions about how the Healthy Pregnancy Program impacted their stress levels and mental health. Notable points include 84% of respondents reporting that the program improved their mood or decreased their stress levels (Figure 22) and 98% of respondents agreeing or strongly agreeing that participating in the program meant they were able to spend less money on food (Figure 23) thereby reducing financial stress.

Figure 22 ***Impact on Stress & Worry Levels***

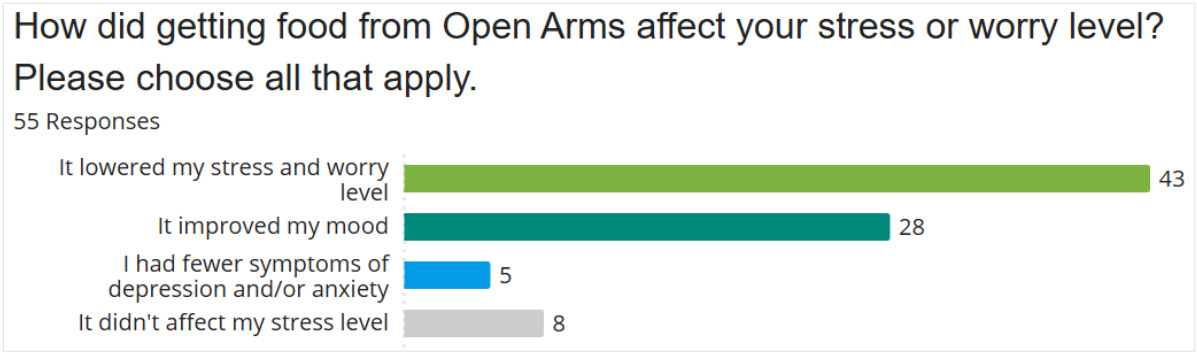
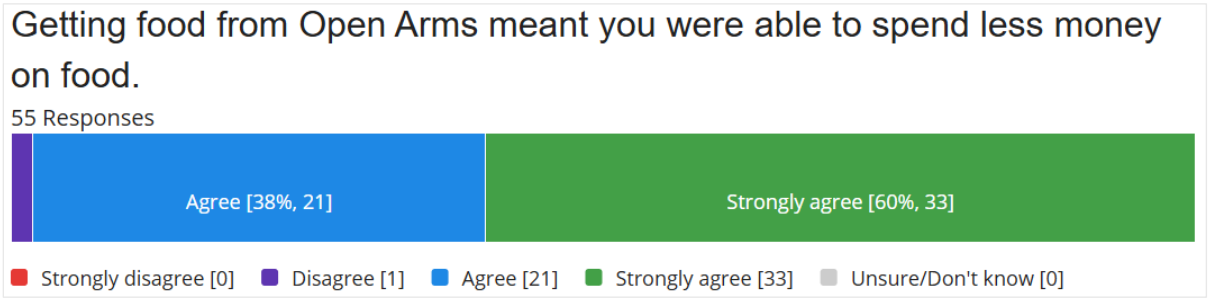


Figure 23 ***Impact on Spending***



Connection with Food Resources & Nutrition Education

The Healthy Pregnancy Program offered participants connection to both WIC and SNAP if they were not currently enrolled in either of those programs at baseline. The following data show participant engagement in the programs. See the Appendix for more information about connection to community resources (Table 8).

> "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."

Women, Infants & Children Program

Before starting the Healthy Pregnancy Program 46 participants self-reported they were already enrolled in WIC (Figure 24). Of the 55 participants who answered the final offboarding survey, 53 indicated that they used their WIC benefits during their pregnancy (Figure 25).

Figure 24 ***WIC Engagement at Baseline***

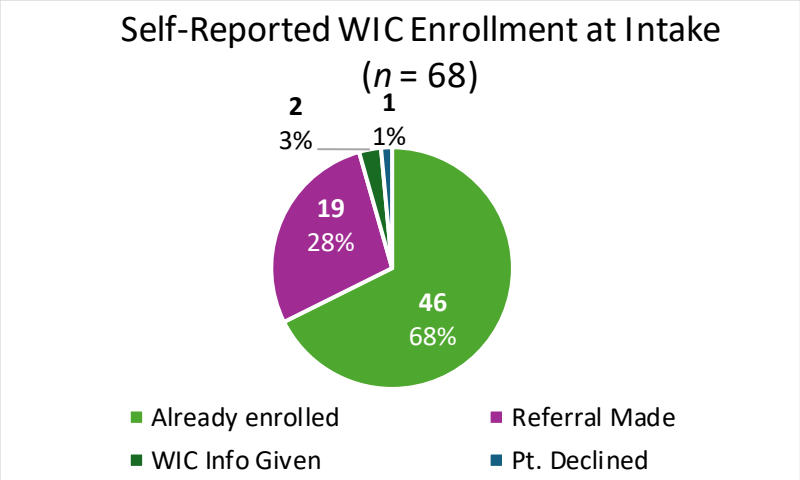
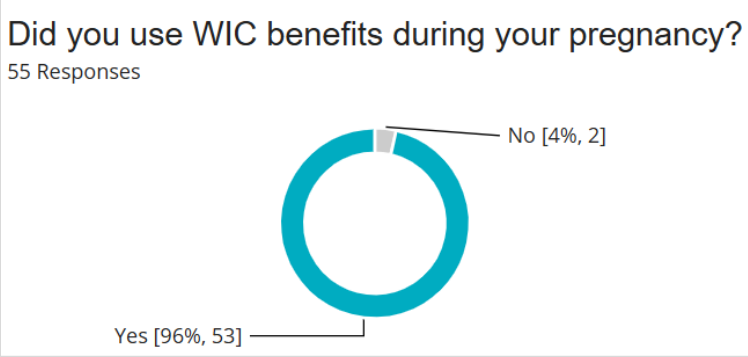


Figure 25 ***Use of WIC Benefits***



Supplemental Nutrition Assistance Program

There were 38 referrals to 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. SHH outreach staff also provided information about other community food resources customized to the neighborhoods where the patient lives, including food shelves, free community meals, and discounted groceries.

Open Arms Nutrition Education

In total, 137 nutrition counseling sessions were completed throughout the program. Every participant had at least one session. The most common topics of the nutrition counseling sessions were how to manage blood sugar levels, what foods and nutrients to limit or avoid during pregnancy, and how to manage or prevent iron deficiency through iron-rich foods. The most common topics of handouts sent to participants were for managing conditions during pregnancy (e.g., gestational diabetes, iron deficiency, preeclampsia) and general nutrition during pregnancy.

Clinical Outcomes

Clinical measures for pregnancy and birth outcomes and healthcare utilization of cohort members were compared to a comparison group made up of Hennepin Healthcare patients who were representative of gestational age and clinical eligibility criteria.

Birth Outcomes

A variety of birth outcomes measures were identified and reviewed for the cohort members' babies. These included Newborn Intensive Care Unit stats and APGAR scores at 1- and 5-minutes. Because of the small cohort size, conclusions were unable to be drawn from this data.

Maternal & Fetal Birth Complications

The cohort members had significantly higher social risks at the beginning of the program compared to the comparison (Table 3), yet the cohort and comparison groups' birth outcomes were similar (Table 4).

Table 4 ***Birth Encounter Complications***

Birth Outcomes	Cohort		Comparison		*p* =	*t*(df)
Maternal Complications	*n* = 68		*n* = 68			*t*(134)
PPH	17	25%	4	5.9%	.002	3.18
Triple I / chorioamnionitis	0	0%	5	7.4%	.024	-2.31
gHTN	6	8.8%	12	17.6%	.13	-1.52
Maternal Fever	2	2.9%	5	7.4%	.25	-1.16
ABLA	7	10.3%	4	5.9%	.35	.94
PROM/PPROM	7	10.3%	3	4.4%	.73	-.34
Preeclampsia	**8**	**11.8%**	**8**	**11.8%**	**.88**	**-.15**
PreE w/ severe features	5	7.4%	6	8.8%		
PreE w/o severe features	3	4.4%	2	2.9%		
Total Maternal Comps. (avg)	.88		.82		.79	.27
No Maternal Complications	33	48.5%	27	39.7%	.30	.15
Infant Complications	*n* = 69		*n* = 69			*t*(136)
Preterm Birth (<37w0d)	12	17.4%	11	14.5%	.66	.45
Post-term Birth (>42w0d)	1	1.4%	0	0%	.32	1.00
Decreased Fetal Movement	6	8.7%	0	0%	.012	2.54
Category II FHT	24	32.4%	16	23.2%	.14	1.49
Low Birth Weight (<2.5kg)	11	16.2%	7	10.3%	.32	1.01
NICU Admit	12^	17.4%	10	14.5%	.65	.46
IUFGR/FGR	2	2.9%	3	4.4%	.65	-.45
Abnormal heart rate/rhythm	7	10.1%	6	8.7%	.77	.29
Infant Respiratory Distress	5	7.2%	5	7.2%	1.00	0.00
Total Fetal Complications (avg)*	.36		.32		.72	.36
No Fetal Complications	18	26.1%	16	23.2%	.70	.39

Acronyms

ABLA: Acute Blood Loss Anemia
IUFGR/FGR: (Intrauterine) Fetal Growth Restriction
FHT: Fetal Heart Tracing
NICU: Neonatal/Newborn Intensive Care Unit
PPH: Postpartum hemorrhage
PROM/PPROM: Preterm/Premature Rupture of Membranes
Triple I: Intrauterine Inflammation, Infection, or both

**Includes sepsis, apnea of prematurity, congenital malformations, etc. that were not delineated as separate complications.*

^Includes 2 infants not immediately admitted to NICU after birth (discovered upon chart review for infants for whom consent to review EHRs was granted). Implies that the number of NICU admits for the comparison group is higher, too.

In the table above, conditions in bold indicate that there were ***no significant statistical differences*** *between the cohort and comparison groups, when looking at each condition separately.*

Healthcare Utilization

A variety of healthcare utilization measures were identified and reviewed for the cohort and comparison groups. These included the number of completed prenatal care visits as well as the numbers of emergency department and labor and delivery visits for all participants who received care at Hennepin Healthcare or other hospitals that provided partial access to Epic records. The difference in completed prenatal care, emergency department, and labor and delivery visits of the cohort when compared to the comparison group was not statistically significant.

Insurance Coverage

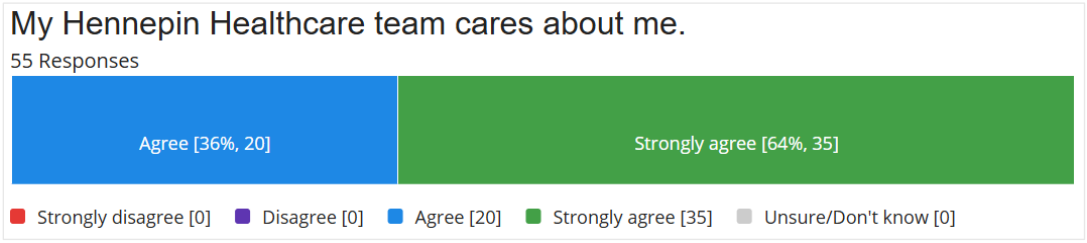
All cohort and comparison group members were eligible for Medical Assistance insurance coverage due to pregnancy, but there were discrepancies between the two groups. Cohort members were less likely to be insured at time of intake (53%) compared to the comparison group (31%), but they were more likely to obtain and maintain insurance coverage during pregnancy and postpartum. The comparison group had significantly more uninsured patients at the time of delivery (13.2%) compared to the cohort (1.5%).

Trust in Healthcare Team

As part of the final survey, cohort members were asked about their perception of the care they received from Hennepin Healthcare. All respondents agreed or strongly agreed that their healthcare team cares about them (Figure 26).

"The hospital staff and food help were wonderful. Everyone took good care of me and my baby."

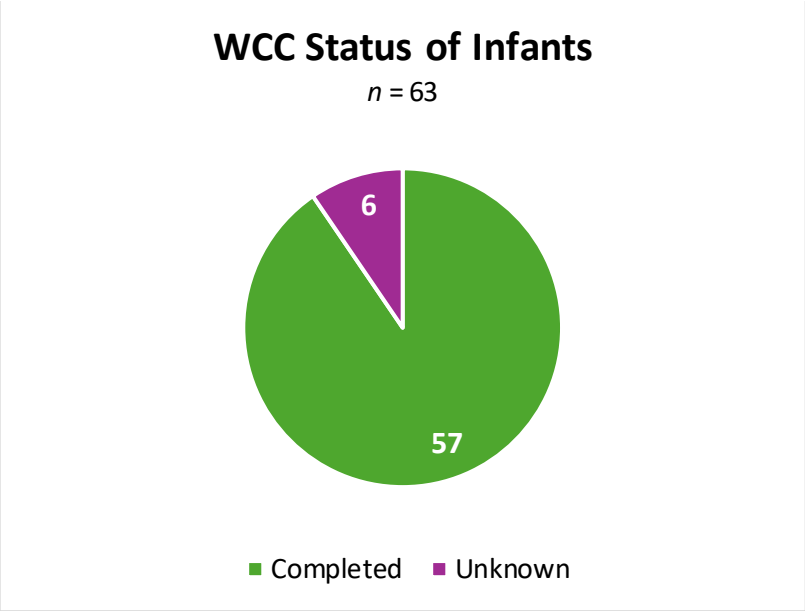
Figure 26 ***My Healthcare Team Cares about Me***



Well-Child Check Visits (Healthcare Engagement for Infants)

Of the 62 cohort members who gave permission to access their infants' medical records, there were 63 babies born. Fifty-seven of the babies were born at Hennepin Healthcare and had their first Well Child Check (WCC) appointment. For six infants, including one set of twins, their WCC completion status is unknown. Four out of these six infants were born at other hospitals and have never been seen at Hennepin Healthcare; the other two expressed plans on seeking WCC or primary care elsewhere (Figure 27).

Figure 27 ***Well-Child Check Completion***



Conclusion

Overall Learnings

Pregnancy is a uniquely vulnerable time for birthing parents and babies, when their nutrition needs are especially high. For those experiencing food insecurity, the risk of not meeting these needs is a threat to both maternal and infant health, one which extends into their children's health in the future. 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.

The Healthy Pregnancy Program cohort group had higher social risk (measured by the SVI) at time of enrollment compared to the comparison group at similar gestational age. Despite this higher social risk for the cohort, the incidence of poor clinical birth outcomes was similar between the two groups. This suggests participation in the program may have offset the risk of poor outcomes in the cohort group.

Overall, the Healthy Pregnancy Program had high satisfaction indicating the current model will be acceptable to individuals who are of a variety of ages, speak different languages, have a variety of cultural backgrounds, and are experiencing high-risk pregnancy.

Modifications to Program Model Increase Engagement

Changes made to this program were based on learnings from the 2023 program and addressed the main barriers to participation: program logistics (storage & delivery) and preference for groceries over prepared meals. These changes were successful as reflected by the higher rates of engagement and retention in 2024.

Care Coordination Supports Engagement with the Healthcare System

The Healthy Pregnancy Program incorporated care coordination by registered nurses at Hennepin Healthcare for each participant in the program. This ensured that participants had individualized connection to resources for ongoing food access as well as supportive services for assistance with other social drivers of health such as housing and baby supplies. Registered nurses sent reminders to cohort members about healthcare visits, answered questions about prenatal concerns, and checked in with the new parents post-birth to ask about the babies. Relationships between cohort members and the registered nurses likely contributed to higher rates of program engagement, completion of recommended care, and insurance coverage. This is reflected in cohort members' high levels of trust in the healthcare system.

Healthy Pregnancy Program Helps Meet Total Nutrition Needs During Pregnancy and Postpartum

The Healthy Pregnancy Program was not designed to meet the entirety of cohort members' nutritional needs. Participants still purchased food and used other resources, including WIC, to feed themselves and their families. Foods provided to pregnant, postpartum and breastfeeding participants through WIC

“are designed to supplement their diets with specific nutrients that benefit WIC's target population” (U.S. Department of Agriculture, 2025). Participants who had WIC support combined with the food provided through the Healthy Pregnancy Program were thus more likely to receive the medically recommended amount of food for pregnant people compared to those enrolled in only one program. Almost 30% of the cohort members did not have WIC benefits at the start of their programs. These patients were referred to WIC by Hennepin Healthcare registered nurses.

Recommendations

Hennepin Healthcare recommends the Healthy Pregnancy Program be replicated and funded to expand the support of pregnant patients with the goal of improving birth outcomes. Considerations for future program models should include:

- Ensuring participant-centered programming, including flexibility and choice of foods, to increase participant engagement. Participants were given options for where their food was received, how their food was provided (prepared meals or groceries), and what variety of foods were offered (based on cultural preferences and medical needs). This ability to customize services acknowledged the autonomy of participants and respected their dignity, preferences, and needs.

- Complementing the Healthy Pregnancy Program with care coordination services for high-risk pregnancies. Care coordination services should include a Health-Related Social Needs assessment to identify patients experiencing food insecurity, care plan development, ongoing case management and monitoring, and health education and nutrition counseling services for those with high-risk conditions.

- Integrating multiple food support resources, such as WIC and SNAP, to ensure all nutritional needs are met to support a healthy pregnancy. Additionally, providing nutrition education and practical meal preparation guidance to empower participants with the skills needed to create balanced, nutritious meals for their and their family’s long-term health.

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Appendix

Open Arms Meal Programming & Nutrition Support

When enrolling in the program, participants had a choice of receiving a weekly delivery of either prepared meals or groceries. Both options were designed to meet participants' nutritional needs during pregnancy and were customized to meet any specific individual medical needs.

Table 5 ***Description of Foods Offered by Open Arms***

Choices	**Food items**	**Description**
All participants selected one of these two medically-tailored options:	Grocery bags	• Both fresh and shelf-stable items to prepare up to seven meals each week. • Registered dietitian-approved recipe suggestions for meal preparation using provided ingredients.

	Prepared meals	Participants could select:
		• "Lunch set" or "Dinner set" of meals
		• One of seven menus (Heart Healthy, Flavor Neutral, Kidney Friendly, Vegetarian, Gluten & Dairy Friendly, Puree, Hmong, East African)
		• Food included in lunch or dinner sets:
		  ○ Lunch = four frozen entrees, entrée sized salad, sandwich kit (makes two sandwiches), five servings of fresh fruit, four servings of dessert
		  ○ Dinner = seven frozen entrees

Standard offering for all participants	Protein Calorie Pack	• Weekly protein packs with grab and go style items such as milk, hard boiled eggs, string cheese, granola bites, cottage cheese, crackers, oatmeal, and sun butter.
Optional offering for all participants	Nausea Care Pack	• Weekly pack offered to participants experiencing nausea until they are no longer experiencing nausea. • The pack includes items such as ginger chews, crackers, tea, applesauce, and other items to help settle the stomach.

Figure 28 ***Sample Menus for Grocery Bags***

Example of week 1 delivery*

Pantry items:
- Olive Oil
- Diced Tomatoes
- Canned Pears
- Brown Rice
- Cold cereal (ex. Cornflakes)
- Shelf stable milk
- Whole wheat crackers
- Canned beans
- Canned mandarin oranges
- Canned corn
- Open Arms Taco Seasoning

Produce:
- Yellow onion
- Celery
- Bell pepper
- Sweet potato
- Garlic
- Fresh fruit (ex. pear, apple, orange)

Frozen items:
- Fully cooked chicken breast

or
- Fully cooked beef burger patty

Grab and Go Pack:
- Refrigerated goods
  - Milk (pint containers)
  - String cheese
  - Cottage cheese
  - Hard-boiled eggs
- Dry goods
  - Open Arms Granola Bites
  - Whole wheat crackers
  - Sun butter cups
  - Oatmeal packets

Example of week 2 delivery*

Pantry items:
- Shelf stable milk
- Unsweetened applesauce
- Canned vegetables (ex. peas, green beans)
- Oatmeal
- Peanut Butter
- Olive oil
- Canned beans
- Whole wheat pasta
- Whole wheat crackers
- Open Arms Salt-Free Seasoning

Produce:
- Yellow onion
- Carrots
- Celery stalks
- Zucchini/summer squash
- Fresh fruit (ex. apples, pears, oranges)

Frozen items:
- Fully cooked chicken breast

or
- Fully cooked beef burger patty

Grab and Go Pack:
- Refrigerated goods
  - Milk (pint containers)
  - String cheese
  - Cottage cheese
  - Hard-boiled eggs
- Dry goods
  - Open Arms Granola Bites
  - Whole wheat crackers
  - Sun butter cups
  - Oatmeal packets

Figure 29 ***Example of Grocery Bag Items***

Figure 30 ***Sample Menus for Prepared Meals***

SAMPLE MENU

Heart Healthy

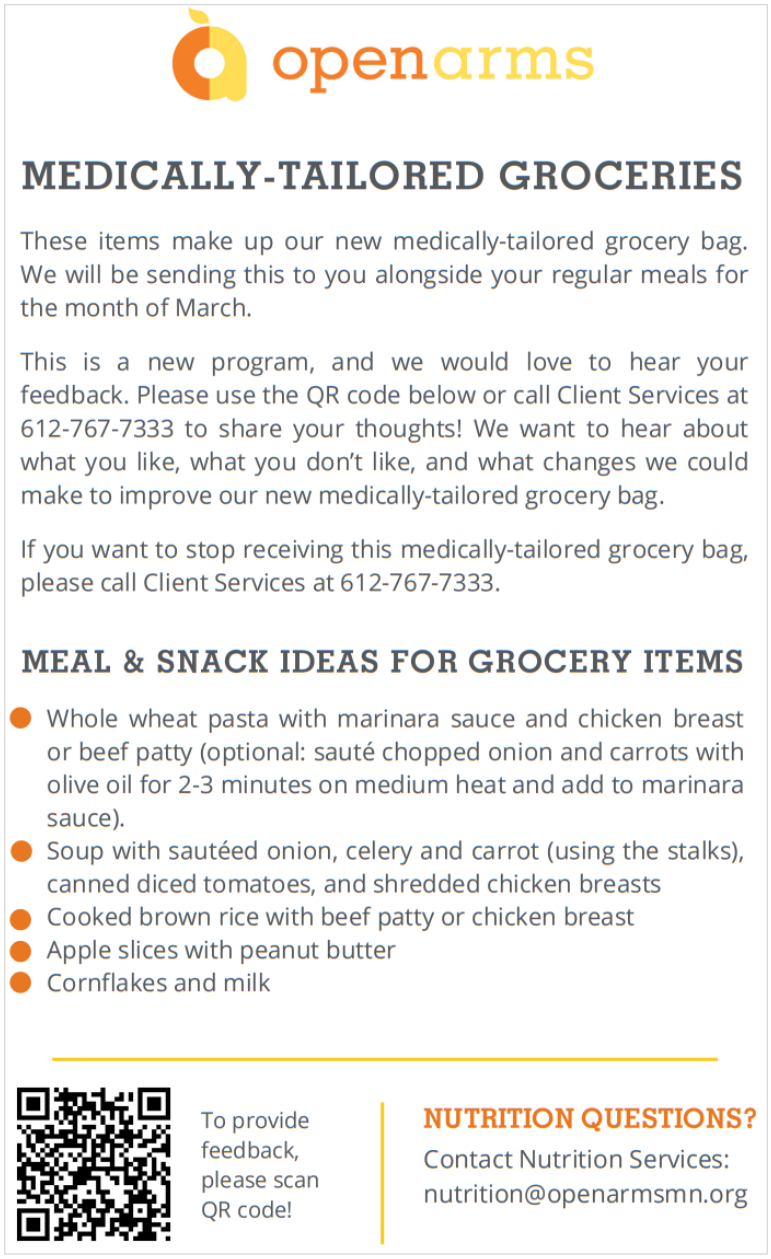
Low in salt and saturated fat and supports a range of health needs. This menu includes a variety of whole grains, vegetables, and protein sources, including poultry, beef, fish and vegetarian.

	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
Lunch *Lunch includes the option of adding 4 servings of dessert, such as chocolate chip cookies.*	**Egg Salad Sandwich** with Baby Carrots and fruit	**Tater Tot Hotdish** with Vegetable Medley and Fresh Fruit Cup	**Beet and Arugula Salad** with fruit	**Lemon Herb Chicken** with Barley Risotto and Peas	**Sesame Edamame Noodles** with Green Beans	**Egg Salad Sandwich** with Baby Carrots and fruit	**Spaghetti with Meat Sauce** and Vegetable Medley
Dinner	**Chickpea Masala** with Brown Rice and Edamame	**Parmesan Fish** with Cranberry Wild Rice Pilaf and Italian Vegetable Medley	**Pot Roast** with Gravy, Mashed Potatoes, Vegetable Medley and Cinnamon Applesauce	**Chicken and Wild Rice Hotdish** with Corn	**Ground Beef Casserole** with Carrots	**Rosemary Chicken** with Cranberry Wild Rice Pilaf, Vegetable Medley and Beets	**Turkey Taco Bowl** with Pico de Gallo and Santa Fe Vegetable Medley

Figure 31 ***Examples of Prepared Meal Items***

Nutrition Education Materials

Figure 32 ***Grocery Bag Insert***



openarms

MEDICALLY-TAILORED GROCERIES

These items make up our new medically-tailored grocery bag. We will be sending this to you alongside your regular meals for the month of March.

This is a new program, and we would love to hear your feedback. Please use the QR code below or call Client Services at 612-767-7333 to share your thoughts! We want to hear about what you like, what you don't like, and what changes we could make to improve our new medically-tailored grocery bag.

If you want to stop receiving this medically-tailored grocery bag, please call Client Services at 612-767-7333.

MEAL & SNACK IDEAS FOR GROCERY ITEMS

- Whole wheat pasta with marinara sauce and chicken breast or beef patty (optional: sauté chopped onion and carrots with olive oil for 2-3 minutes on medium heat and add to marinara sauce).
- Soup with sautéed onion, celery and carrot (using the stalks), canned diced tomatoes, and shredded chicken breasts
- Cooked brown rice with beef patty or chicken breast
- Apple slices with peanut butter
- Cornflakes and milk

To provide feedback, please scan QR code!

NUTRITION QUESTIONS?

Contact Nutrition Services:
nutrition@openarmsmn.org

Figure 33 ***Example of Nutrition Education – Gestational Diabetes***

Academy of Nutrition and Dietetics

Client Name _____ **Date** _____

RDN/NDTR _____

Email _____ **Phone** _____

Gestational Diabetes Nutrition Therapy

- Gestational diabetes (GDM) is a condition that only occurs during pregnancy. GDM leads to blood glucose levels that are above the healthy range.
- Good nutrition is important for a healthy pregnancy and can help manage blood glucose levels during your pregnancy. Over time, high blood glucose levels could hurt you and your baby. Higher blood glucose levels can cause the baby to have a higher risk of:
  - Growing too large and making delivery difficult.
  - Diabetes and obesity in the future as adult.
  - A seriously low blood glucose level after birth
- Eating a healthy diet and gaining the right amount of weight can help manage GDM. Being careful about what kinds of carbohydrate you eat may help control your blood glucose levels so you have a healthy baby.
- You get calories from carbohydrate, protein, and fat in your food. After you eat, your body digests your food, and your blood glucose rises. If your blood glucose goes up too much, it is not healthy. Carbohydrates make your blood glucose levels go up the most. Watching the type and amount of carbohydrate you eat, and when you eat carbohydrate keeps your blood glucose from being too high.
- It's important to still eat some carbohydrates, for a healthy pregnancy and healthy baby.

Foods with Carbohydrate

- Breads, crackers, and cereals
- Pasta, rice, and grains
- Starchy vegetables, such as potatoes, corn, peas, and winter squash
- Beans and legumes
- Milk, some soymilk (check label), and yogurt
- Fruits and fruit juices

- Sweets, such as cakes, cookies, ice cream, jam, and jelly
- Sweet drinks, such as soda, energy drinks, sweet tea and flavored coffee

Foods That Do Not Raise Blood Glucose Levels

These foods contain no carbohydrate or very small amounts carbohydrate:

- Protein foods:
  - Meat (beef, pork, and lamb)
  - Poultry (chicken and turkey)
  - Fish and seafood
  - Eggs
  - Nuts, seeds, and nut butters
  - Cheese and cottage cheese
  - Tofu
- Fats:
  - Oils (olive, peanut, and canola)
  - Butter and margarine
  - Salad dressing and mayonnaise
- Non-starchy vegetables:
  - Asparagus, broccoli, carrots, green beans, leafy greens (kale, lettuce, spinach, swiss chard), onions, peppers, tomatoes, zucchini

Tips

To keep your blood glucose in a healthy range, you will need to carefully plan your meals as well as regularly check your blood glucose levels and change the carbohydrate you eat if necessary. To reach the blood glucose goals your health care provider has set for you, you will need to pay attention to the following:

- How much carbohydrate foods you eat
- The type of carbohydrates you eat
- When you eat carbohydrate foods throughout the day
- Combining protein and fat with carbohydrate

The Right Amount of Carbohydrate and When to Eat Them

- Eating the right amount of carbohydrate at the right time can keep your blood glucose levels in a healthy range. Your registered dietitian nutritionist (RDN) can help you determine the right amount for you.
    - Eating too much carbohydrate at one meal or in one snack can make blood glucose levels rise too high. This can be harmful to your baby.
    - Eat 3 meals per day and up to 3 snacks per day.
    - Aim to eat meals 3 to 5 hours apart. If you tend to go longer than 4 to 5 hours between meals, make sure to eat a snack about halfway between meals. This helps to keep your blood glucose levels stable and helps you be less hungry.

Estimating Your Carbohydrate Intake

- Carbohydrate counting is a meal planning tool to help you eat the right amount of carbohydrate. Count grams of carbohydrate in a specific food or carbohydrate servings to help you figure out how much carbohydrate is in a food. This will help you plan how much to eat at meals and snacks. Ask your RDN how much carbohydrate you should be eating:
    - Check serving sizes with measuring cups and spoons or a food scale.
    - 15 grams of carbohydrate is a common serving size and is often used as a carbohydrate serving in carbohydrate counting.
    - Read the Nutrition Facts on food labels to find out how many grams of carbohydrate are in foods you eat. Note the serving size on a product label may not be the same as a 15-gram carbohydrate serving.
- Checking your blood glucose level before and after meals as advised by your health care provider or RDN is the only way to know if your blood glucose is in a safe range. Your blood glucose readings can help you know when to change the amount, type, or timing of the carbohydrates you eat. By checking your blood glucose, you may also find that some carbohydrate foods cause your blood glucose to go above the healthy range each time you eat them.

Communication & Connection to Resources

Throughout the program, participants were asked about their experiences, as well as their need for additional services and education. The goal of providing care coordination to participants was to ensure access to food support and healthcare resources both during the program and after the program ended. Participants were asked several times about their need and desire for nutrition education and SDOH resources (Table 6).

Table 6 ***Planned Outreach for Resource Connection***

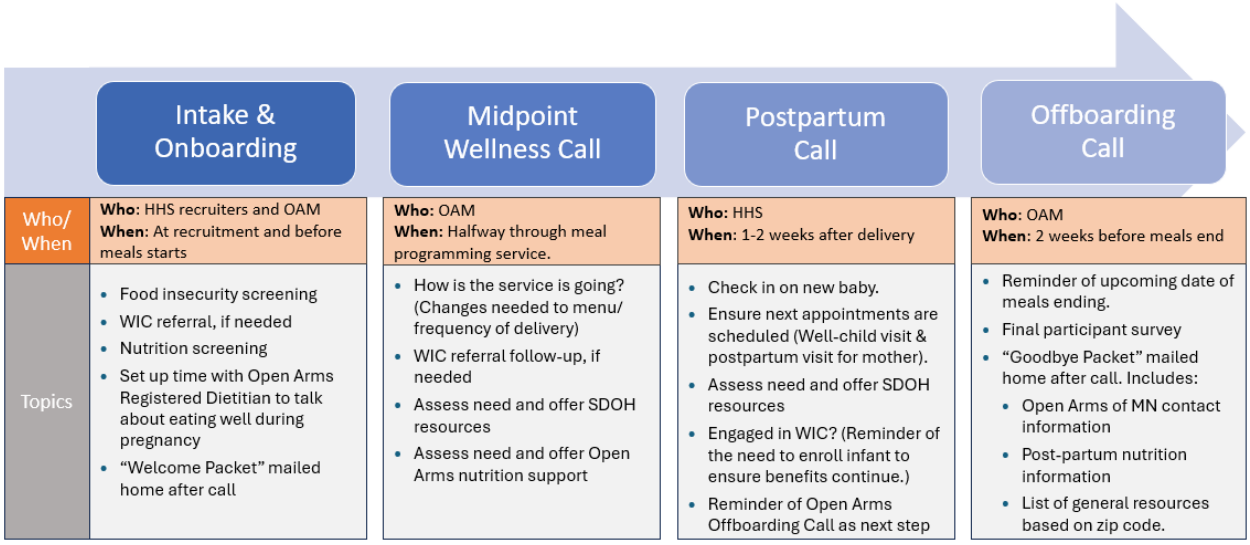


Table 7 ***Outreach Calls***

Process Owner	Open Arms		Hennepin Healthcare
Call Type	**Midpoint/Wellness Calls**	**Offboarding Calls**	**Postpartum Calls**
Calls Attempted	**66**	**59**	**67**
Completed	65	55	65
Unable to Reach	1	4	2
N/A	2	9	1 (Outreach deferred)

Those who cancelled their service prior to their scheduled wellness or offboarding call fell into the non-applicable category. For the postpartum calls, outreach was deferred due to one participant's individual circumstances.

Resource Connection

During the Midpoint Wellness Calls, Open Arms staff offered participants help connecting them to additional resources. Three participants required further assistance from the Hennepin Healthcare registered nurses with WIC enrollment due to long phone wait times at WIC, and six clients requested further Open Arms dietitian contact (five for general counseling, one specifically for anemia recommendations). Additionally, 10 participants requested connection to external community resources (Table 8).

Table 8 ***Community Resources Requested***

Resource Requested	***n*-size**
General Public Assistance Support	1
Housing	2
Baby Supplies	5
Additional Food Resources	1
Baby Nutrition Support	1
Total # of Clients	**10**

Comparison Group Description

Because clinical complexities and comorbidities can vary from individual to individual, the goal was not to match patients based on the exact risk factors that each participant had. Those selected for the comparison group had the same potential to be recruited as the cohort members, but due to financial and time constraints, Hennepin Healthcare registered nurse recruiters had to prioritize patients with the greatest need. This meant screening patients over the phone for food insecurity, and sometimes asking more specific questions beyond the standardized screening questions established in the EHR. Because screening for food insecurity is not routine, consistent practice across the health system (outside of inpatient settings), and staff screen differently across clinics, it is not unusual for patients to have no value entered for food insecurity, or a very outdated screening result. Seven patients in the comparison group had never been screened for food insecurity, and six with a screening result of "No Food Insecurity Present" had other indicators in their chart that they may be at-risk of being or becoming food insecure (e.g., housing instability, high financial resource strain, etc.).

To compare the results of the matching process, two-tailed paired samples t-tests were performed on the background demographics and clinical risk factors of the two groups, using a .05 level of significance. For the analysis of clinical outcome data, patients were given a numerical value ranging from 0 (for those without the condition at all) to 1-3 (based on the severity of the condition), before two-tailed t-tests assuming equal variance were performed on each standalone condition. For example, preeclampsia could either be noted by clinicians as having severe features or not, so patients who experienced PreE with severe features during their birth encounter were assigned a 2, and those who experienced PreE without severe features were assigned a 1.

As shown in Table 2, there were no significant differences between the cohort and comparison groups when it came to age, race, language, or region (country) of origin. However, there were significant differences between them around social risk factors (Table 3). The previously mentioned inconsistencies in Hennepin Healthcare's screening practices provide a potential explanation for the differences in food insecurity rates. The difference in SES can be explained by inconsistency within the EHR, specifically whether or not the attending clinician documented low SES as a risk factor when completing the prenatal risk screening form; both groups are technically low SES due to their members' being enrolled in a Medicaid health plan or uninsured. Lastly, the groups' SVI deciles are significantly different because zip codes were not considered during the matching process. Recruitment was restricted to Open Arms service areas, which was not considered during the selection of the comparison group as to contend with a limited number of eligible patients with similar birth risks.

Birth Risk Factors

Table 9 ***Risk Factors – Clinical & Gestational History***

Clinical & Gx Risk Factors	Cohort (n = 68)	Comparison (n = 68)	p-value	t-stat
Clinical Risk Factors (that patients are either at risk of developing, or that they presented with upon their intake/prenatal risk screening)				
HTN*	36 (52.9%)	22 (32.4%)	.015	2.46
GDM	34 (50%)	33 (48.5%)	.87	.17
Pre-diabetes	7 (10.3%)	8 (11.8%)	.79	-.27
Preeclampsia (PreE)	56 (82.4%)	26 (38.2%)	*p* < .001	5.85
Iron Deficiency Anemia	28 (41.2%)	28 (41.2%)	1.00	0
Large interval pregnancy (>10 yrs.)	3 (4.4%)	4 (5.9%)	.70	-.39
Close interval pregnancy (<12 mo.)	2 (2.9%)	0 (0%)	.16	1.42
BMI <18.5 or >30 (pre-pregnancy)	35 (51.5%)	35 (51.5%)	1.00	0
Primiparity	17 (25%)	9 (13.2%)	.041**	1.75
AMA	17 (25%)	17 (25%)	1.00	0
Low SES	45 (66.2%)	22 (32.4%)	*p* < .001	4.41
Total Risk Factors (average)	**4.19**	**3.16**	***p* < .001**	**3.59**
Gx Risk Factors (that patients experienced during a previous pregnancy/birth)				
Gx Low Birth Weight	2 (2.9%)	7 (10.3%)	.043	-1.73
Gx Premature Birth	12 (17.6%)	22 (32.4%)	.048	-1.99
Gx PreE	8 (11.8%)	12 (17.6%)	.34	-.96
Gx GDM	4 (5.9%)	12 (17.6%)	.033	-2.15
Gx HTN	5 (7.4%)	8 (11.8%)	.39	-.87
Gx Anemia	8 (11.8%)	9 (13.2%)	.80	-.26
Gx Fetal Demise	18 (26.5%)	20 (29.4%)	.46	-.75
Gx Neonatal Death	2 (2.9%)	6 (8.8%)	.15	-1.46
Total Gx Risk Factors (average)	**0.96**	**1.87**	***p* < .001**	**-3.49**

**Includes gHTN, chronic HTN, and unspecified high BP without a formal diagnosis.*

***Only significant in the one-tailed t-test. In the two-tailed test, p = .08.*

In the above table, risk factors with a ***statistically significant difference*** *are in bold. While the cohort was at a slightly greater clinical risk when considering all the risk factors that each patient had, the comparison group had greater risk in their gestational history.*

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