12TH ANNUAL TELEHEALTH SUMMIT OF SOUTH CAROLINA

BREAKOUT SESSION

PALMETTO CARE CONNECTIONS™
technology. broadband. telehealth.

OCTOBER 28-30, 2024

Clinical Track:

The Mothers Project: Maternal Outreach Through Telehealth for Rural Sites

Wednesday, October 30
10:00 AM - 10:45 AM

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East Carolina University

The MOTHeRS Project:

Maternal Outreach through Telehealth for Rural Sites

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ECU Center for Telepsychiatry and e-Behavioral Health

Abstract

Women face significant challenges in accessing comprehensive, affordable, high-quality maternal and mental health care, especially in rural areas that are characterized by high unemployment, poverty, significant minority populations, and geographic barriers that complicate access to care. The COVID-19 pandemic further intensified health disparities, especially in maternal health among expectant mothers in rural Eastern North Carolina. These mothers faced increased risks due to limited access to prenatal care for high-risk pregnancies, maternal-fetal medicine specialists, heightened mental health issues, and the impact of social determinants of health.

The MOTHeRS Project implemented a multidisciplinary telehealth service integrating maternal-fetal medicine specialists, diabetes educators, nutritionists, psychiatrists, and other health care professionals into rural obstetric clinics. This model helped manage patients in clinics closer to their homes, minimized the need for travel, and brought specialized care directly to underserved communities. Implementation of telehealth services in this project reduced travel for high-risk patients by over 396,894 miles and facilitated 2,523 patient visits, including behavioral health interventions. Moreover, the project addressed food insecurity by distributing medically-tailored food bags to high-risk pregnant women. Our experience highlights the importance of strengthening multidisciplinary care coordination, investing in human service programs, and addressing workforce issues to enhance care delivery.

Learning Objectives

1. Describe challenges women face in accessing comprehensive, affordable, high-quality maternal and mental health care, especially in rural areas.
2. Identify multidisciplinary components of the MOTHeRS Project model and how they addressed challenges associated with access to evidence-based care in underserved communities.
3. Describe how use of health technologies and telehealth can help with providing multidisciplinary health care to those who are currently underserved or who lack access to services.
4. Describe how effective telehealth programs require robust multidisciplinary coordination to provide integrated care.
5. List lessons learned from the MOTHeRS' Project, including the challenges faced and how they were overcome.

Sy Atezaz Saeed, MD, MS, FACPsych has no real or apparent conflicts of interest to report

The Challenge

East Carolina University (ECU), the safety net provider for 1.4 million people in Eastern North Carolina, is the only source for high-risk prenatal care in the region.

- Socioeconomic factors limit access due to transportation, adequate nutrition, and basic necessities for the maternal population.
- One in four of our mothers live in poverty; one in eight are uninsured.

The Challenge (continued)

- Poverty rate 17% compared to 14% for the state[1]
- Child poverty rate 25% (over 30% in 8 of the counties in the region)[1]
- 15% of the population is food insecure, and many in the largely rural region have low access to a food store.[2]
- For 18 of the counties in the region, 70% or more of the births were to mothers with Medicaid.[3]

1. U.S. Census, American Community Survey 2016-2020.
2. University of Wisconsin Population Health Institute. County Health Rankings. 2022. https://www.countyhealthrankings.org/explore-health-rankings. Accessed September 23, 2024.
3. North Carolina State Center for Health Statistics. County Health Data Book. Births to Medicaid and WIC Mothers 2015-2019.

The Challenge (continued)

Health care disparities in the 41 North Carolina counties along or east of the I–95 corridor:

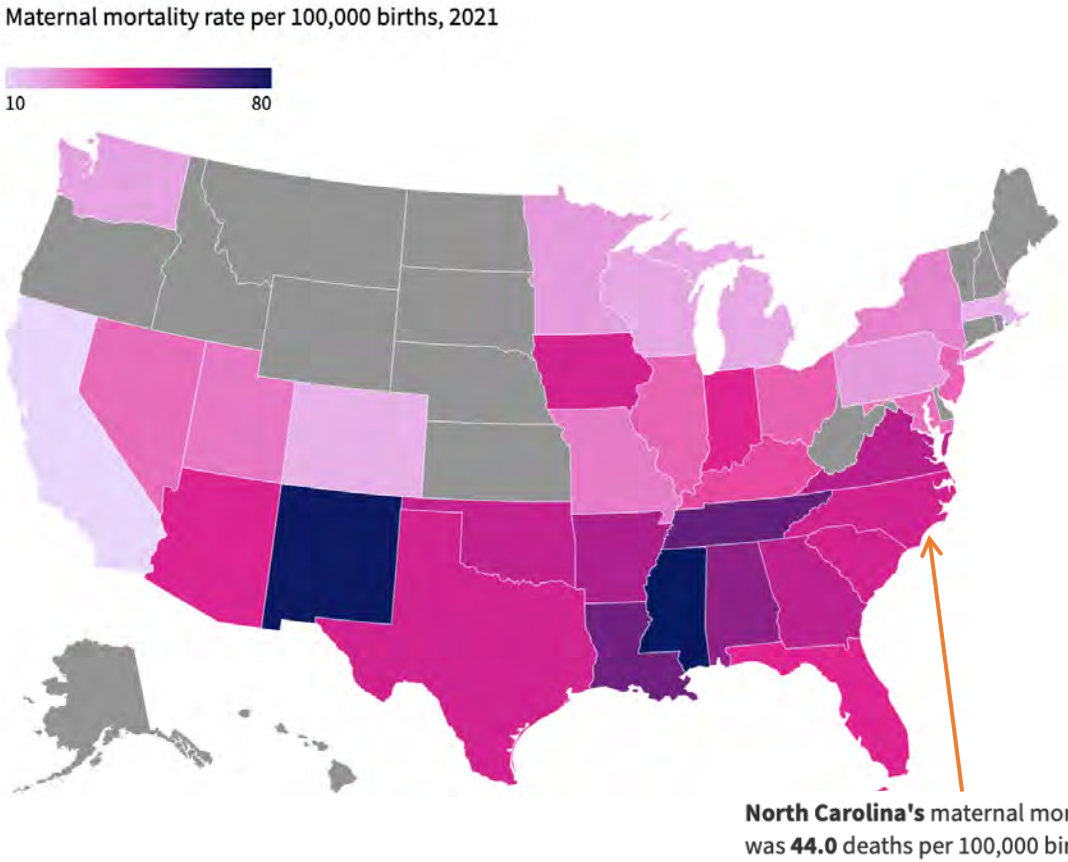
- premature mortality rate for the region is 18% higher than for the state overall[1]
- diabetes mortality is 29% higher, and the diabetes mortality rate for non-White females in the region is more than double the rate for White females in the state overall[1]

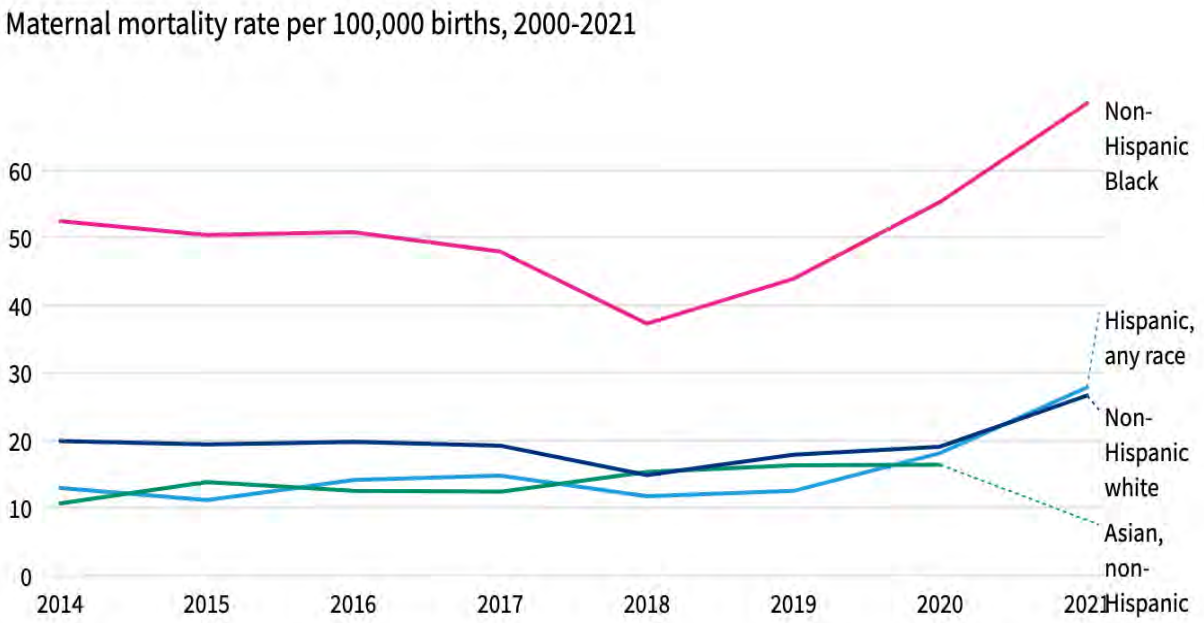
1. Health Systems Research and Development, Department of Public Health, East Carolina University. Trends and disparities in mortality in eastern North Carolina: total deaths, premature mortality and deaths for ten leading causes; 1990-2019. March 2022. https://hsrd.ecu.edu/wp-content/pv-uploads/sites/445/2022/04/ENC41_2019_Health_Indicators_FINAL_4.1.2022.pdf. Accessed September 23, 2024

Background

- 2021 US maternal mortality rate = 32.9 deaths/100,000 live births
  - White women = 26.6 deaths /100,000 live births
  - Black women = 69.9 deaths /100,000 live births
- For North Carolina, the rate was 44.
- According to CDC, over 80% of pregnancy-related deaths were determined to be preventable.

Pregnancy-Related Deaths: Data From Maternal Mortality Review Committees in 36 U.S. States, 2017–2019. Available at: https://www.cdc.gov/maternal-mortality/php/data-research/mmrc-2017-2019.html. Accessed October 10, 2024.

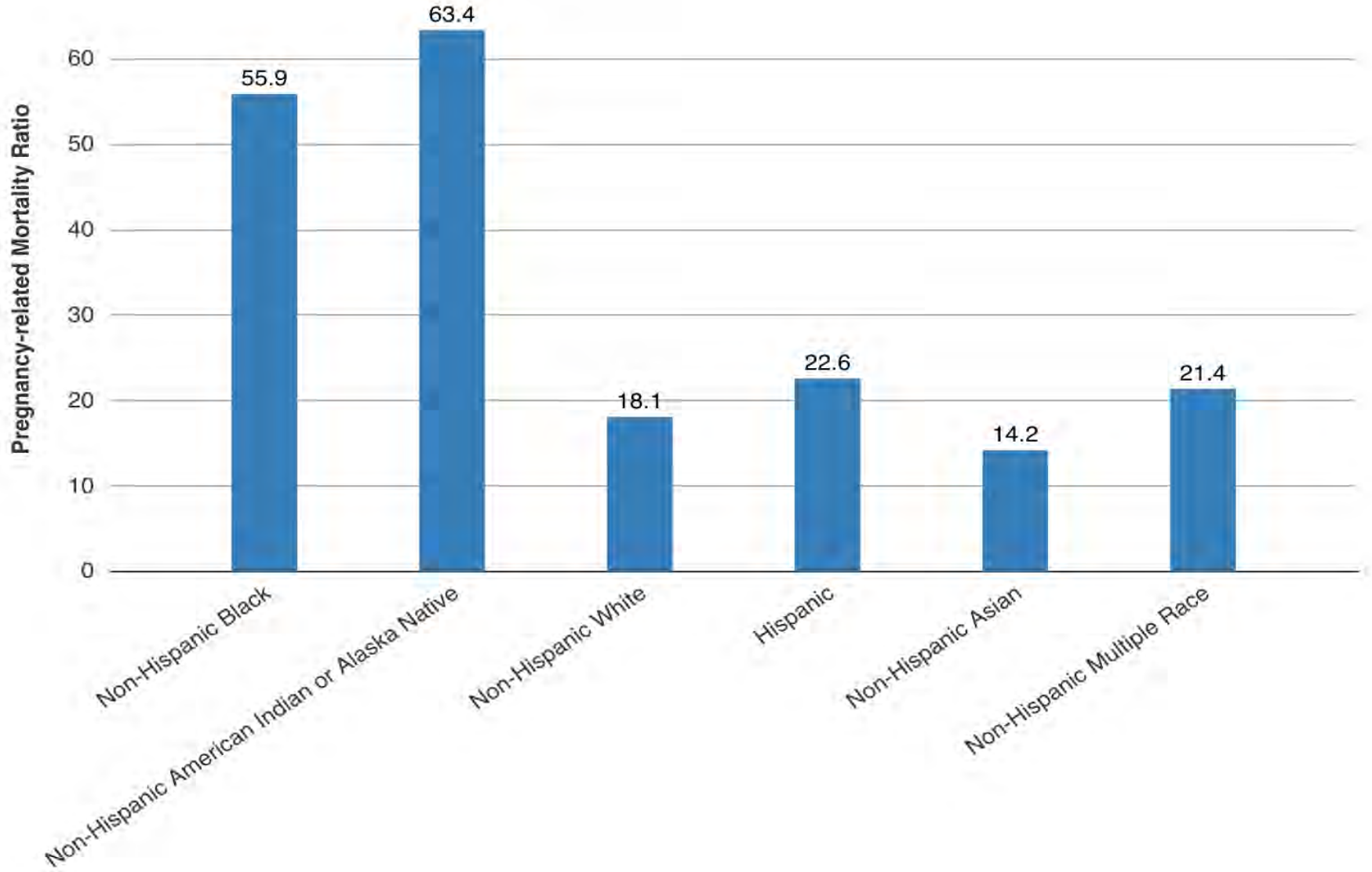




Source: Centers for Disease Control and Prevention

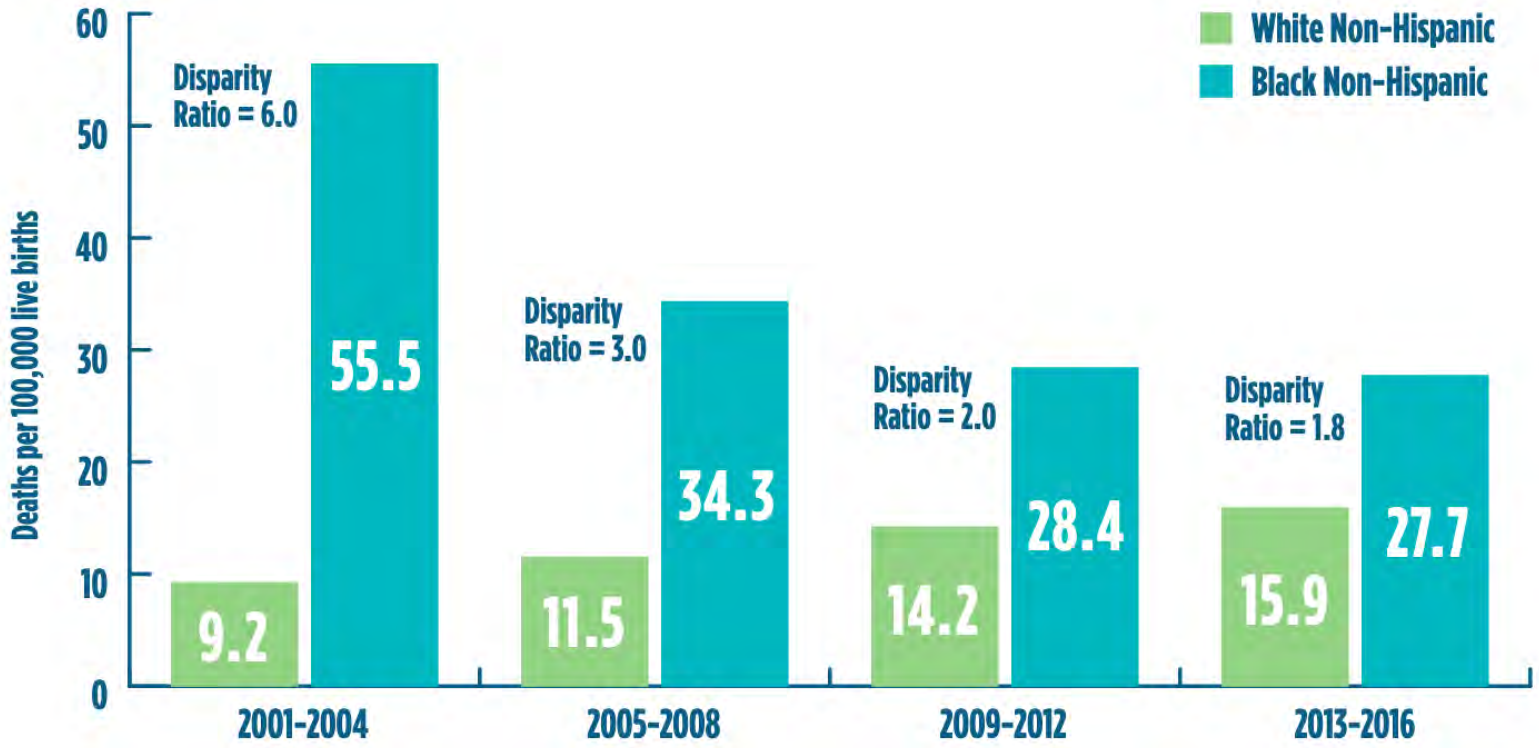
Racial Disparities in Maternal Mortality

Pregnancy-related mortality ratio by race-ethnicity: 2017–2019 and 2020[1]



1. Reproductive Health. Pregnancy Mortality Surveillance System. Centers for Disease Control and Prevention website. Accessed September 27, 2024. https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance/?CDC_AAref_Val=https://www.cdc.gov/reproductivehealth/maternal-mortality/pregnancy-mortality-surveillance-system.htm

Non-Hispanic Black and Non-Hispanic White Pregnancy-Related Mortality Ratios by Year, NC Residents 2001-2016



NORTH CAROLINA Maternal Mortality Review Report. Available at https://wicws.dph.ncdhhs.gov/docs/2014-16-MMRCReport_web.pdf. Accessed September 27, 2024.

Role of Mental Health

- Perinatal mental health conditions, such as anxiety and depression, are very common complications of pregnancy, affecting roughly 8%–11% of all women during pregnancy and 6%–12% in the postpartum period.[1]
- Perinatal mental health conditions are more common for African Americans, and also for low-income women.[1]

1. Gaynes B, et al. Perinatal depression: prevalence, screening accuracy, and screening outcomes. Evid Rep Technol Assess (Summ). 2005;(119):1–8.

Role of Mental Health

- Pregnancy is commonly associated with changes in psychological functioning, often manifested as anxiety, ambivalence, mood changes, tiredness, and sleep difficulties.
- Pregnant women may also have pre-existing mental health conditions, such as depression, bipolar disorder, panic disorder, post-traumatic stress disorder, or a substance use disorder.
- All this can affect mothers' functioning which in turn may negatively affect growth and development of their children.

Food Insecurity (FI)

Food insecurity during pregnancy is related to poor diet quality, excess weight gain, depression, anxiety, and poor infant outcomes. Interprofessional interventions, including addressing FI, are known to relieve stress and depression[1-4].

1. Laurenzi C, Field S, Honikman S. Food insecurity, maternal mental health, and domestic violence: a call for a syndemic approach to research and interventions. Matern Child Health J. 2020;24(4):401–404.
2. Dolatian M, Sharifi N, Mahmoodi Z. Relationship of socioeconomic status, psychosocial factors, and food insecurity with preterm labor: a longitudinal study. Int J Reprod BioMed. 2018;16(9):563–570.
3. Agusto et al. Household food insecurity associated with gestacional and neonatal outcomes: a systematic review. BMC Pregnancy Childbirth. 2020;20(1):229.
4. Modi V, Sastre L, Saeed S, et al. A MOTHeRS Perspective: Satisfaction of Tailored Food Bags for Food Insecure Pregnant Patients. Presented at Society for Public Health Education's 73rd Annual conference (digital experience), March 2022.

One Solution: Outreach through Telehealth

- We started with the belief that where an expectant or new mother lives should not negatively impact her physical or mental wellbeing or that of her child.
- In July 2020, ECU expanded the North Carolina Statewide Telepsychiatry Program (NC-STeP)—a statewide telepsychiatry program, to bring multidisciplinary care to four community-based rural primary care obstetric clinics.

Methods

ECU BRODY SCHOOL OF MEDICINE

MOTHeRS Project

Maternal Outreach Through Telehealth for Rural Sites

We utilized telehealth and the NC-STeP framework to develop and implement a new high-risk obstetric care model for our region.

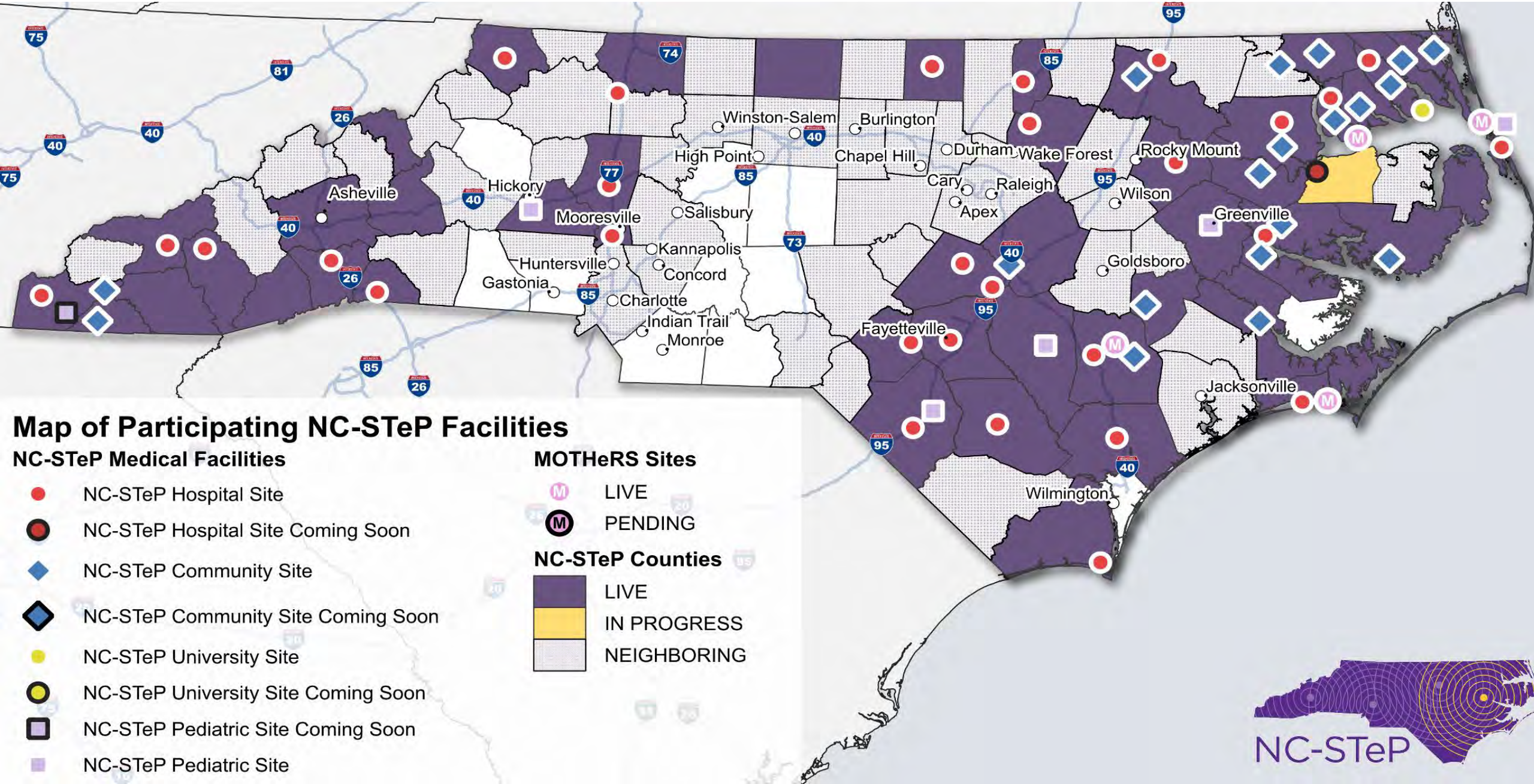
NC-STeP

NORTH CAROLINA
STATEWIDE TELEPSYCHIATRY PROGRAM

Developed in response to Session Law 2013-360.

- G.S. 143B-139, 4B
- Recodified as G.S. 143B-139.4B(a)(1b) by Session Laws 2018-44, s. 15.1, effective July 1, 2018, expanding the scope of NC-STeP to community-based settings.

NC-STeP Status as of June 30, 2024



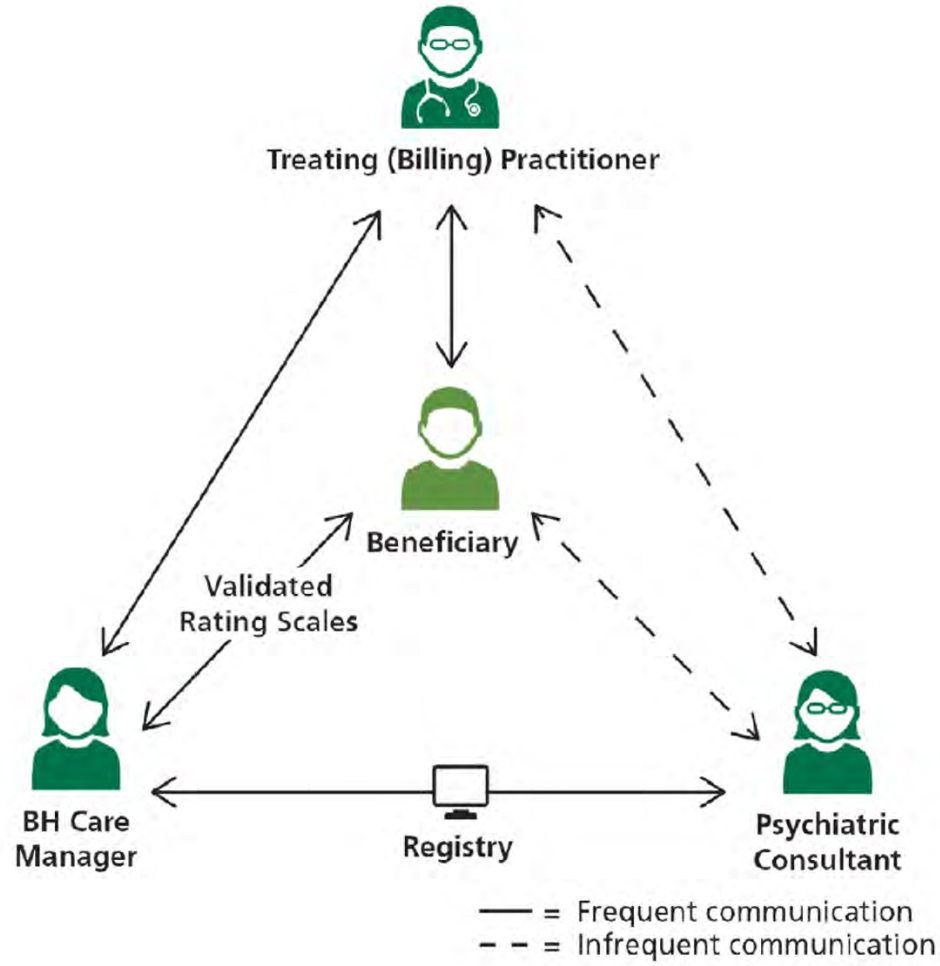
Key Principles

- Team-Based Care
- Primary care provider remains the driver
- Patient-Centered Collaboration
- Measurement-Based Treatment to Target
- Evidence-Based Care

NC-STeP

A team of 3 individuals deliver CoCM:

- Behavioral Health Care Manager
- Psychiatric Consultant
- Treating Practitioner

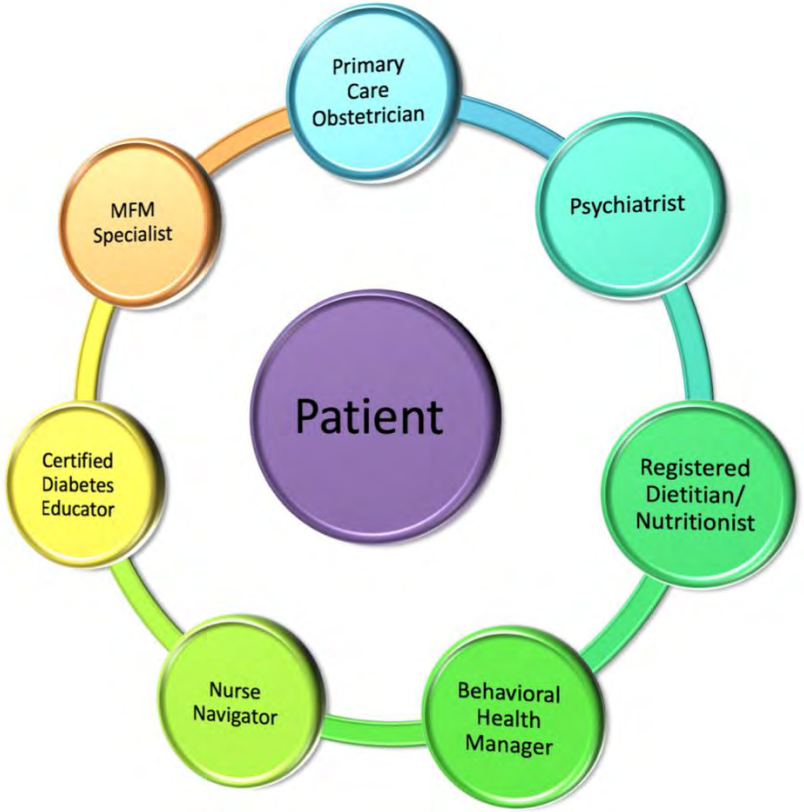


Methods

- Our MFM team covers the 29-county region in rural eastern North Carolina through its Regional Perinatal Clinic (RPC).
- We selected four obstetric practices that refer high-risk patients to the RPC and set up these clinics as our telemedicine sites.
- The sites were selected based on the:
  - number of high-risk patients
  - access to care challenges
  - enthusiasm of the practices to participate in this program

MOTHeRS Team

- Primary obstetrician
- Maternal fetal medicine (MFM) specialist
- Nurse navigator
- Registered dietician/Nutritionist
- Diabetes educator
- Psychiatrist
- Behavioral health manager



The MOTHeRS model helped manage patients in clinics closer to their homes and minimized travel to the remote specialty clinics for high-risk patients:

- enhanced access to services
- helped reduce geographic health disparities
- enhanced patient convenience
- improved patient adherence to treatment

Methods (continued)

- Through a combination of telehealth and in-person visits, patients in the practices were cared for by both an MFM specialist and their local obstetrician.
- All sites were provided equipment for telehealth services.
- Providers and staff were trained in use of the equipment and its integration with the Electronic Health Record (EHR).

MOTHeRS Model of Care

This co-management model helped create a patient-centered team approach to care delivery to improve patient experiences and a positive impact on maternal fetal health.

Ultrasound and Integration with PACS

- The sites' ultrasound machines were integrated with PACS (picture archiving and communication system) to enable the MFM specialist to see images remotely.
- Ultrasounds were conducted at the primary clinic location and transferred electronically along with other electronic health records prior to the MFM specialist visit.
- Where clinically appropriate, the general obstetrician at the rural sites referred high-risk patients to tele-consults with an MFM specialist at ECU.

Screening for Mental Health

- All patients were administered :
  - 9- question Patient Health Questionnaire (PHQ-9)
  - 7- question GAD-7
- Patients who screened positive for a mental health condition were referred for a tele-consult with the BHM
- When clinically indicated, referred for a consult with the telepsychiatrist, within the same clinic location.

Screening for Food Insecurity (FI)

- All patients were screened for FI, using a validated, two-item tool.[1]
- An affirmative response[2] to at least one of two questions, asked in a clinical setting, is 97% sensitive and 83% specific for FI:
  - Within the past 12 months, we worried that our food would run out before we got money to buy more.

    Never Usually Sometimes
  - Within the past 12 months, the food we bought just didn't last and we didn't have money to get more.

    Never Usually Sometimes

1. Hager, E. R. et al. (2010). Development and Validity of a 2-Item Screen to Identify Families at Risk for Food Insecurity. Pediatrics, 126(1), 26-32.
2. An affirmative response is "Usually" or "never"

Nutrition and Diabetes Education/Care

When indicated, patients were also referred for a tele-consult with a registered dietitian and a certified diabetes care and education specialist.

- Those screened as food-insecure were offered a medically tailored food bag, nutrition education handouts, and links to existing community resources for emergency food.
- Essential nutrients contributing to a healthy pregnancy that are often under-consumed and not adequately covered with a prenatal vitamin supplement were identified and included in the food bag. The details are available at: https://thescholarship.ecu.edu/items/a576c263-3a71-4078-bc3d-8e40dae4d6f9.[1-2]

1. Smith B, Kolasa KM, Sastre LR, Craven K. MOTHeRS Project: Acceptability of a medically tailored food bag treating food insecurity in high-risk pregnant patients. Poster presented at: SNEB 2021 Annual Conference; August 9, 2021; Department of Family Medicine, East Carolina University, Greenville, NC. http://hdl.handle.net/10342/9038
2. Smith B, Kolasa KM, Craven K. Emergency Food Bag and Patient Education for the MOTHeRS' Project. Presented at: ECU Family Medicine Research Day; June 10, 2021; Department of Family Medicine, East Carolina University, Greenville, NC. http://hdl.handle.net/10342/9073

Food Insecurity (FI)

- We contracted with a local Medical Food Pantry, experienced in purchasing and packing emergency food bags for a large medical system, to purchase foods, manage food storage, pack bags, and deliver them to the rural practices.
- Handouts depicting healthy eating and food safety (in English and Spanish) along with eating for special diets such as gestational diabetes were designed and included with the bag contents.
- A training module for office staff on screening for food insecurity and basic nutrition messages that should accompany the bags was developed and provided to office staff.

Links to Materials on Food Insecurity (FI)

- Methodology, Technical Report, and Bag Description: http://hdl.handle.net/10342/8942
- Plate and Shopping Guide (English and Spanish): http://hdl.handle.net/10342/8944
- Food Safety (English and Spanish): http://hdl.handle.net/10342/8946
- Recipes (English and Spanish): http://hdl.handle.net/10342/8943
- Gestational Diabetes Pyramid (English and Spanish): http://hdl.handle.net/10342/8941

Navigation and Coordination of Care

- Nurse navigator coordinated the process.
- Behavioral health manager coordinated the mental health care
- Primary obstetrician remained the overall coordinator of care and the prescriber.

MOTHERS Food Bag

Food Category	Food Type	Special Instructions	Quantity
Meat - Seafood	Canned	Salmon (packed in water, with bones) Light tuna (packed in water)	2, each
Meat - Other	Canned	Chicken (packed in water)	2
Nuts/Nut Butters	Jar or Bag	Mixed nuts (<50% peanuts; low sodium preferred) Peanut butter (low sugar and low sodium preferred)	1, each
Cereals	Ready-to-Eat or Cooked	RTE cereal (low sugar, whole grain) Grits (individual packets or canister) Oatmeal (canister or plain/low sugar packets)	1, each
Grains	Dry	Quinoa Egg noodles (fortified)	1, each
Snacks	Dry	Whole Wheat Crackers (reduced sodium preferred) Pretzels, baked (low sodium, if available)	1, each
Non-starchy Vegetables	Canned	Leaf Spinach, asparagus, collard greens (unseasoned), tomatoes, mushrooms, green beans; (low sodium preferred in all types)	1, each OR 6, total
Starchy Vegetables	Canned or Dried	All types; Black beans, kidney beans, chickpeas, white beans, pinto beans, black eyed peas, etc.	2, canned 1, dried
Fruit	Dry or Individual cups	Raisins (seedless, black or golden) Mandarin orange cups (low sugar, or packed in water) Applesauce cups (unsweetened)	1, each
Dairy	Dry or Canned , evaporated	Evaporated milk (low-fat, with Vitamins A and D added) Dry milk (nonfat, with Vitamins A and D added) Carnation Breakfast Essentials, Light Start drink mix (sugar free)	2, canned 1, dry 1, breakfast mix

Created by BS, 09/10/2020

MOTHeRS' Food Guide for Women with Gestational Diabetes

Always follow your doctor's instructions. If you have high blood pressure, high blood sugar or other special medical conditions, ask for a visit with a dietitian

- If you have allergies, do not consume foods containing ingredients to which you are allergic
- Splenda, Equal, and Stevia are okay during pregnancy
- Remember to take your prenatal vitamin daily

FATS

(Limit amount of)

2 tbsp avocado,
1 tsp butter/margarine/mayo,
2 tbsp reduced-fat dressing,
1 tsp cream cheese or salad dressing

Better fat choices are canola or olive oil, or reduced-fat margarine

★ MILK

(2 - 3 servings per day)

1 cup skim or low-fat milk
6 oz skim or low-fat yogurt
(usweetened or artificially sweetened)

MEAT

★ Breaded meats

(4 - 6 oz per day)

3 oz lean meat, poultry or fish,
1 tbsp peanut butter, 1/2 cup tofu,
2 slices reduced-fat cheese, 1 egg,
1/4 cup LIGHT tuna, packed in water,
1/4 cup low-fat or non-fat cottage cheese,
,

NON-STARCHY VEGETABLES

(3 - 5 servings per day)

1/2 cup vegetable juice
1 cup raw leafy vegetables,
1/2 cup cooked vegetables
1/2 cup chopped vegetables

FRUITS ★

(2 - 4 servings per day)

1 small fruit, 1/2 banana,
1 cup raspberries,
10 - 15 grapes, 1 cup melon,
1 1/4 cup whole strawberries
1/2 cup canned fruit (in juice),
1/4 cup dried fruit, 2 tbsp raisins
3/4 cup blueberries or blackberries

CHOOSE A VARIETY OF FRUITS AND VEGETABLES

GRAINS, BEANS, AND STARCHY VEGETABLES

(6 or more servings per day)

★ Grains

1 slice bread, 1/4 bagel, 6-inch tortilla,
1/2 english muffin, pita, or biscuit,
1/2 hamburger or hotdog bun,
1/3 cup cooked rice or pasta
1/2 cup macaroni and cheese,
3/4 cup dry, unsweetened cereal,
1/2 cup cooked cereal (grits/oatmeal),

1 cup soup
4 - 7 crackers
3/4 oz chips, pretzels, or crackers

Starchy Vegetables ★

1 (3 oz) potato, 10-15 fries,
1/2 cup yams or sweet potatoes,
1/2 cup cooked beans, lentils, corn, or peas

★ **Carbohydrates** (approx. 15 grams per serving)

Developed by Janina Dorriety BS, RDN, LDN; ECU Physicians, December 2020

MOTHeRS' Guía de Alimentos para Mujeres con Diabetes Gestacional

Siga siempre las instrucciones de su médico. Si tiene presión arterial alta, azúcar en sangre alta u otras condiciones médicas, pregunte por una visita con un dietista

- Si tiene alergias, no consuma alimentos que contengan ingredientes a los que es alérgica.
- Splenda, Equal y Stevia son seguros durante el embarazo
- Recuerde tomar su vitamina prenatal diariamente

GRASAS

(limitar la cantidad de)

2 cda. aguacate,
1 cdta. mantequilla, margarina, mayonesa,
2 cdta aderezo reducido en grasa,
1 cdta. queso crema o aderezo para ensaladas

Las mejores opciones de grasas son el aceite de canola o de oliva, o la margarina reducida en grasa

★ LECHE

(2 - 3 porciones por día)

1 t. leche desnatada o baja en grasa
6 oz yogur descremado o bajo en grasa
(Endulzada o endulzada artificialmente)

CARNE

★ Carnes empanizadas

(4 - 6 oz por día)

3 oz carnes magras, aves o pescado,
1 cda. mantequilla de maní, 1/2 cup tofu,
2 rebanadas de queso reducido en grasa 1 huevo,
1/4 t. Atún LIGERO, envasado en agua,
1/4 t. requesón bajo en grasa o sin grasa,
,

VERDURAS SIN ALMIDÓN

(3 - 5 porciones por día)

1/2 t. jugo de vegetales
1 t. verduras de hoja cruda,
1/2 t. verduras cocidas
1/2 t. verduras picadas

FRUTAS ★

(2 - 4 porciones por día)

1 fruta pequeña , 1/2 plátano,
1 t. frambuesas,
10 - 15 uvas, 1 t. melón,
1 1/4 t. fresas enteras
1/2 t. fruta enlatada (en jugo),
1/4 t. fruta seca, 2 cda. pasas
3/4 t. arándanos o moras

ELIJA UNA VARIEDAD DE FRUTAS Y VERDURAS

GRANOS, FRIJOLES Y VERDURAS CON ALMIDÓN

(6 o más porciones por día)

★ Granos

1 rebanada de pan, 1/4 rosquilla, de 6 pulgadas tortilla,
1/2 panecillo de pita inglés o galleta,
1/2 panecillo de hamburguesa o perrito calient,
1/3 cup arroz o pasta cocidos,
1/2 cup macarrones con queso,
3/4 cup cereal seco sin azúcar,
1/2 cup cereal cocido (sémola de maíz/harina de avena),

1 cup sopa, 4 - 7 galletas
3/4 oz patatas fritas, pretzels o galletas saladas

Verduras con Almidón ★

1 (3 oz) patata, 10-15 papas fritas,
1/2 cup ñame o batatas
1/2 cup frijoles, lentejas, maíz o guisantes cocidos

★ **Carbohidratos** (aproximadamente 15 grams por porción)

Developed by Janina Dorriety BS, RDN, LDN; ECU Physicians, January 2021
Translated by Rafailia Vogiatzis

MOTHERS' Shopping Guide

Foods to ask for to support both mom and baby's health

Grains & Starchy Vegetables

Look for:
"100% Whole Wheat" or "Whole wheat/grain"

- [ ] Brown rice
- [ ] Egg noodles
- [ ] Whole grain cereal (< 10g sugar)
- [ ] Whole wheat noodles
- [ ] Whole wheat tortillas
- [ ] Whole wheat bread
- [ ] Corn tortillas
- [ ] Grits
- [ ] Oatmeal (low sugar)
- [ ] Whole grain crackers
- [ ] Corn bread
- [ ] Mac & Cheese (low fat)
- [ ] Popcorn

Starchy Vegetables

Canned, frozen or fresh

- [ ] Corn
- [ ] Lima beans
- [ ] Mashed potato flakes
- [ ] Sweet potatoes
- [ ] Sweet green peas
- [ ] Beans, all types

Vegetables

Canned, frozen or fresh
Look for:
"No salt added" or "Low Sodium" or "Unseasoned"

- [ ] Asparagus
- [ ] Green beans
- [ ] Carrots
- [ ] Mixed vegetables
- [ ] Collard greens
- [ ] Spinach
- [ ] Mushrooms
- [ ] Okra
- [ ] Pumpkin
- [ ] Tomatoes
- [ ] Tomato Sauce
- [ ] Salsa
- [ ] Broccoli
- [ ] Brussel Sprouts
- [ ] Squash

Protein

Canned, frozen or fresh
Look for:
"Packed in water" or "No added sugar" or "Low sodium"

- [ ] Lean Poultry
- [ ] Salmon
- [ ] Canned Chunk ***Light*** Tuna
- [ ] Sardines, in water
- [ ] Lean red meat
- [ ] Eggs
- [ ] Peanut Butter
- [ ] Nuts and Seeds

Starchy Protein

Canned, or dried
Look for: "Low Sodium"

- [ ] Beans, all types
- [ ] Lentils
- [ ] Baked beans
- [ ] Hummus/Chickpeas

Fruits

Canned, frozen or fresh
Look for:
"Packed in juice" or "No sugar added" or "Unsweetened"

- [ ] Applesauce
- [ ] Mandarin oranges
- [ ] Peaches
- [ ] Pears
- [ ] Pineapple
- [ ] Mixed fruit
- [ ] Mango
- [ ] Fruit cups
- [ ] Raisins, cranberries, or prunes
- [ ] Any fresh fruit

Dairy

Canned, liquid, or dried
Look for:
"Low/Non-fat" or "Sugar-Free"

- [ ] Skim, 1%, or 2% evaporated milk
- [ ] Nonfat, instant dry milk powder
- [ ] Yogurt, low fat and low sugar
- [ ] Cottage cheese, skim
- [ ] Sugar-free pudding or pudding mixes

Shopping Tips:

- Canned fruits and vegetables are NUTRITIOUS- just look for items that are "low sodium," "low sugar," or "unseasoned"
- Drain and rinse canned vegetables to remove half of the sodium
- Buy in bulk whats on sale and freeze in smaller portions for later

Limit these foods:

- Caffeinated beverages
- Sugar-sweetened drinks
- Candy and chocolates
- Sweet breads/doughnuts
- Sugary cereals or bars
- Chips and fried snacks

Say NO to these foods:

May NOT be safe for mom or baby

- Fish high in mercury:
  Fresh Albacore/White Tuna, Large-Mouth Bass, Wild Catfish, White/Yellow Perch, Crappie, Carp, Grouper, Mackerel, Marlin, Tilefish, Swordfish, Shark, Orange Roughy, Jackfish, Ladyfish, Cobia, Rudderfish, Blackfish
- Soft cheeses:
  Queso fresco, Queso blanco, panela, brie, feta
- Deli meats, hotdogs, and premade meat or seafood salads
- Sushi and smoked seafood from deli section
- Unpasteurized milks, cheeses, juices, or ciders
- Alcohol

Developed by Brittany Smith MS; Kathryn Kolasa PhD, RDN; Kay Craven MPH, RDN, CDCES
ECU Physicians; October, 2020

MOTHERS' Program Plate

**Always follow your doctor's instructions. If you have high blood pressure, high blood sugar or other special medical conditions, ask for a visit with a dietitian

Estimating Portions

- 1/2 c. — Use to estimate grains, fruits and vegetables
- 1 c. — Use to estimate fruits and vegetables
- 3 oz. — Use to estimate lean protein
- 1 tsp. — Use to estimate oil or butter
- 2 Tbsp. — Use to estimate cheese or nut butter
- 1/2 c. — Use to estimate servings of snacks

Choose **daily** from each group:

WATER
8-12 c.

Drinks with sugar
Caffeinated drinks
Fruit juice
Gatorade
Soda

6oz LEAN MEAT/ PROTEIN
1 oz lean meat/fish
1/4 c. cooked beans
1 T nut butter or 1/2 oz nuts
Choose 8-12 oz of fish each week

3 DAIRY
"with added Vitamins A&D"
"low-fat or non-fat"
1 c. milk, prepared

6+ NON-STARCHY VEGGIES
"low-sodium," "no salt added," or "unseasoned"
1/2 c. cooked or canned
1 c. raw or frozen

7 GRAINS/ STARCHY VEGGIES
"whole grain;" "low sugar;" "low sodium"
1/2 c. cooked cereal, pasta, rice
1/2 c. cooked starchy veggies
1 c. ready-to-eat cereal

2 FRUIT
"packed in juice"
1 c. fresh, frozen, canned
1/4 c. dry

Prenatal Vitamin

**Remember to take your prenatal vitamin/mineral daily

1" Help control portions - choose a 9" plate 9"

**If you have allergies, do not consume foods containing ingredients to which you are allergic

MOTHeRS' Project: Acceptability of a Medically Tailored Food Bag Treating Food Insecurity in High-Risk Pregnant Patients

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Summary Statement:

- **Food insecurity (FIS)** during pregnancy is related to poor diet quality and is associated with *increased risk of pregnancy and fetal complications.*
- Current interventions may be missing some women with FIS at critical points during pregnancy
  - Data from FNS suggests less than 50% of all eligible women participate in the WIC program
  - FIS is often cyclical, and women who may be food insecure at one point in their pregnancy may not identify as food insecure at another point

Objective:

To develop a medically tailored, nutritionally-complete emergency food bag with nutrition education handouts to address FIS identified in rural, high-risk pregnant women in the clinical setting

Use of Theory:

- Grounded in the **socio-ecological model**
- Addressing FIS to improve health outcomes in high-risk pregnant women requires a multi-layered approach and should include intervention at:
  - Individual (food behaviors, stigma, knowledge)
  - Community (screening, education, resources)
  - Societal levels (nutrition assistance programs)

Target Audience:

High-risk pregnant women who screen positive for FIS at *any* pre-natal appointment in three counties in rural, Eastern NC selected to pilot The MOTHeRS' Program

- Identified using the **2-Question Hunger Vital Sign Screener**, validated for use in the clinical setting

1. **Within the past 12 months, we worried that our food would run out before we got money to buy more**
   Never *Usually* *Sometimes*
2. **Within the past 12 months, the food we bought just didn't last and we didn't have money to get more**
   Never *Usually* *Sometimes*

SNEB Nutrition Educator Competencies : 2.2; 5.5; 8.1

Program Description:

The **MOTHeRS' Project** is a pilot program, funded by the United Health Foundation

- To provide mental health and maternal-fetal services via telehealth to women with high-risk pregnancies in rural OB-GYN practices
- *AND to address FIS*, as rates in these counties (18-24%) exceed the state average (15%)

Development of an Emergency Food Bag

- Review of literature identified **9 under-consumed, essential nutrients**
- USDA and NIH food lists used to compile lists of foods high in target nutrients
- Reviewed foods/nutrients provided in WIC Food Package V
- Interviewed local nutrition and health professionals to gather information on the characteristics, habits, and preferences of high-risk pregnant women
- Availability and affordability determined using an online local grocery store

Food Bag Characteristics

- 31 shelf-stable food items, weighing ~26 lbs, and costing less than $70
- Contains foods that are good sources of identified target nutrients
- Appropriate regardless of trimester or comorbidities
- Available and acceptable to women in rural, eastern NC
- *Complements* WIC Food Package V
  - Meets target nutrient needs for **2 weeks** *on its own*, & **4 weeks** *combined with WIC*

Nutrient Analysis of MOTHeRS' Food Bag

Nutrient	RDA	Bag Provision[2]	%RDA Covered (over 2 wks)
Calories	2000 kcal	23,658 kcals	85%
Protein	80 gm	1,193 gm	107%
Fiber	28 gm	404 gm	103%
Folate, DFE	600 mcg	14,337 mcg	171%
Iron	27 mg	464 mg	123%
Vitamin D	15 mcg	178 mcg	84%
Calcium	1.0 - 1.3 gm	14,208 mg	88%
Choline	> 450 mg	4,184 mg	66%
Iodine	220 mcg	991 mcg	32%
Total Omega 3's	650 mg	15,510 mg	170%
DHA	300 mg	4,110 mg	98%

1 RDA's based on findings from literature review and Brown J.S. Chapter 1: Nutrition requirements during pregnancy. In: Sharlin J, Edelstein S, eds. Essentials of Lifecycle Nutrition. Jones and Bartlett; 2011:1-24.
2 Nutrient analysis performed using ESHA Nutrient Database

Development of Educational Materials

3 complementary handouts (English and Spanish), evaluated by 18 professionals with expertise serving rural, underserved pregnant women and/or FIS, developed to:

- Provide a guide for healthy eating during pregnancy, tips on food safety, and recipes to utilize food bag items

Implementation

- Clinic office staff trained to receive and distribute emergency food bags, screen for FIS, and counsel recipients using MOTHeRS' Project handouts
- Emergency food bag, education, and community resource list provided *each time* a patient screens positive for FIS

Evaluation Methods:

Process evaluation

- Semi-structured, audio-recorded telephone interviews using validated content - transcribed verbatim
- Deductive content analysis to identify themes
- Independent review of transcripts by the research team (n=4) using codebook, to develop consensus of themes

Results:

Preliminary themes suggest acceptance, high satisfaction, utilization of the emergency food bag and limited access to other food resources

Conclusion:

Our findings align with previous studies demonstrating that **medically-tailored food resources provided in the clinical setting are acceptable** and potentially associated with reduced social stigma

Challenges

- Short supply of providers
  - Challenges with recruiting MFM specialists, diabetes educators, and nurse navigators
- Dealing with turnover
- Scheduling adequate time blocks for both MFM specialists and obstetric nurse navigators
- Dealing with vacation, sick, medical leaves

Lessons Learned

- Telehealth visits with real time sonography may be the future of rural obstetrics but to make it a win/win/win for all stakeholders (patients, practices, and MFM specialists) requires partnering and coordination of resources more effectively.
- Partnering with an MFM group that has both the capacity and expertise to incorporate new methods of providing care is also essential.
- Developing a role for a Nurse Navigator for rural high risk obstetric patients is worth investigating.

Lessons Learned (continued)

- The program was designed to use telehealth to integrate maternal/fetal medicine specialist visits into general OBGYN practices. The behavioral health component was not necessarily the main part of the program, but it proved to be the most utilized.
  - The MFM component of the project was completed on March 31, 2023, and all 4 practices opted to continue the tele-behavioral health component.
  - Our experience suggests that OBGYN clinics may be good places for integrating behavioral health services.

Lessons Learned (continued)

- It is possible to create an emergency food bag that is acceptable to patients in rural eastern North Carolina and can meet the needs of under-consumed nutrients for pregnant women for 2 weeks, if the patient was the only person consuming the foods.
- Food bags were heavy (between 20-30 pounds) and at times needed to be carried to the car for participants or split into two bags.
- Additional space for storage of bags was needed in some practices.

Lessons Learned (continued)

- The pandemic created shortages of some food items.
- We frequently had to adjust the bag contents to utilize available foods with substitutions that would still meet the nutritional needs for this population.
  - This required someone skilled in special nutrition needs of a pregnant woman and food composition to assess the changing landscape of available foods and make changes.
- Working with an established food pantry skilled in working with patients who have medical conditions that require special diets was key to seamless delivery of the program.

Results and Findings

- MOTHeRS Project provided a total of 2,428 patient visits, including:
  - 122 MFM specialist visits
  - 116 visits with a diabetes educator/medical nutrition specialist
  - 2,285 visits with behavioral health visits
- Saved 414,427 driving miles for patients and their families.
- Screened 41,229 patients for FI and distributed 888 food bags to those who screened positive for FI.

MOTHeRS Project Results

As of June 30, 2024

Impact on Patient Access to Care	Number pf perinatal patients who received care (visits with MFM specialist)		122*
	Impact on patient access (calculated as driving miles saved per MFM specialist visit and Diabetes educator/Medical Nutrition Specialist visit: Carteret		36,784 driving miles saved*
	Number of patient visits with Diabetes Educator or Medical Nutrition Therapist		116
	Number of women served for mental health reasons	LCSW visits	1,675
		Psychiatrist visits	610
		Total Mental Health visits	2,285
	Impact on patient access (calculated as driving miles saved per Psychiatrist and LCSW visit		377,643 driving miles saved
Food Security	Number of Food Boxes sent to Clinics		1,195**
	Number of Patients Screened for Food Insecurity		41,229**
	Number of Food Boxes Distributed		888**

Results and Findings (continued)

Our study of the processes utilizing a mixed-methods approach, incorporating both quantitative and qualitative data, uncovered that collaborations that were essential part of the project typically progressed through four distinct phases:

Results and Findings (continued)

Collaborations that were essential part of the project typically progressed through four distinct phases:

(i) an inception phase marked by excitement and commitment, where participants were enthusiastic and dedicated to the collaborative effort;

(ii) a brief downturn phase, often triggered by conflicts related to professional autonomy, ingrained habits, or technical difficulties, leading to challenges in collaboration;

(iii) a reshaping and rejuvenation phase, where participants adjusted and refined their approach to overcome earlier challenges; and

(iv) a final integration phase where the collaborative practices become integrated into routine operations, signifying the successful institutionalization of the collaborative effort.

Results and Findings (continued)

Strategies and tactics, such as the establishment of model site and the cultivation of super users, were identified as key elements in facilitating the transition from the early phase to the final phase of the project.

Creating an Effective Framework for Providing Multidisciplinary Integrated Care in Rural Areas: Insights from a Telehealth Outreach Program for High-Risk Pregnant Women

Yajiong Xue, Sy Atezaz Saeed, Ryan Baker, Huigang Liang, Katherine Jones, Lucia Angela Smith-Martinez

Introduction

The coronavirus pandemic forced health care providers to rethink and quickly reinvent the delivery of care to high-risk pregnant women, particularly in rural settings. In response, ECU expanded the North Carolina Statewide Telepsychiatry Program (NC-STeP)—a program founded over a decade ago—to bring multidisciplinary care to four community-based primary care obstetric clinics in Carteret, Chowan, Dare, and Duplin counties. The initial results of this MOTHeRS (Maternal Outreach through Telehealth for Rural Sites) project suggest improved access to care, decreased health disparities, improved patient experiences, and a positive impact on maternal fetal health.

A tripartite collaborative framework

Method

This study utilized a mixed-methods approach, incorporating both quantitative and qualitative data. We analyzed quarterly service data, along with notes from monthly leadership and weekly discussion meetings and reviewed quarterly reports. In addition, semi-structured interviews were conducted with healthcare and nutrition professionals participating in the project.

Results

We developed a tripartite collaborative framework based on the results of this project that comprised three components: (1) Strategic collaboration among leaders from participating institutions; (2) Internal collaboration within each primary care obstetric clinic; and (3) Patient-focused collaboration, involving a multidisciplinary team of healthcare professionals, including a maternal fetal medicine specialist, a psychiatrist, a diabetes educator, a behavioral health manager, a registered nutritionist, and a nurse navigator, all working in unison to provide comprehensive care to maternal patients.

The study uncovered that these collaborations typically progressed through four distinct phases: (1) an inception phase marked by excitement and commitment, where participants were enthusiastic and dedicated to the collaborative effort; (2) a brief downturn phase, often triggered by conflicts related to professional autonomy, ingrained habits, or technical difficulties, leading to challenges in collaboration; (3) a reshaping and rejuvenation phase, where participants adjusted and refined their approach to overcome earlier challenges; and (4) a final integration phase where the collaborative practices become integrated into routine operations, signifying the successful institutionalization of the collaborative effort. Strategies and tactics, such as the establishment of model site and the cultivation of super users, were identified as key elements in facilitating the transition from the early phase to the final phase of the project.

Conclusion

Despite high health care spending, the United States has some of the worst maternal outcomes in the industrialized world. The integrated multidisciplinary co-management models such as the MOTHeRS Project can create a patient-centered team approach to care delivery that results in both improved patient experiences and a positive impact on maternal fetal health. This project's findings contribute to the literature in three key areas: 1) it presents a collaborative maternal care initiative that addresses the critical needs of an underserved community, 2) it describes a tripartite collaboration framework, illustrating the key components that promote collaborative efforts, and 3) it details the four developmental phases of the project, highlighting successful strategies and tactics for advancing implementation. These insights offer valuable lessons for future telehealth care projects in rural settings and lay the groundwork for future research in the realm of integrated collaborative care.

Implementation stages

NC-STeP

ECU BRODY SCHOOL OF MEDICINE

Next Steps/Follow Up

- MFM part of the project was completed on March 31, 2023.
- Food insecurity part was completed on December 31,2023.
- Mental health part of the project is still ongoing.

Conclusions

- There are significant challenges facing rural women in accessing comprehensive, affordable, high-quality maternal health and mental health care.
- The collaborative co-management models such as the MOTHeRS Project can create a patient-centered team approach to care delivery that results in both improved patient experiences and a positive impact on maternal fetal health.

Thank You

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Questions?


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