Maternal Exercise Program to Coosa County

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Introduction:

In recent years, the maternal mortality rate has increased in the United States. The National Center for Health Statistics (NCHS) reports show that maternal mortality rates in the United States have nearly doubled, from 17.4 in 2018 to 32.9 per 100,000 live births in 2021 (Joseph et al., 2024). Maternal mortality is when an expecting mother dies from complications during or after pregnancy. Some complications that can arise during and after pregnancy include preeclampsia, eclampsia, placental abruption, gestational diabetes, anemia, heart conditions, and stroke. Many of these complications are preventable with proper prenatal and postnatal care that can improve the health of the mother and the baby. Monitoring can help detect early infections and diseases that medicine can treat or have the mother engage in a healthy lifestyle during pregnancy.

A critical medical condition that should be monitored during pregnancy is hypertension. Hypertension is when one has high blood pressure, leading to stress on the heart and other vital organs. Hypertension in pregnancy is one of the top causes of pregnancy-related death and illness. Hypertension is prevalent, affecting 5-10% of women during pregnancy (CDC, 2024). Hypertension increases the risk of many health problems, such as stroke, heart attack, preeclampsia, eclampsia, and premature delivery (Mayo Clinic, 2024).

Historically, black mothers have had worse health outcomes because of the health disparities that exist within our society. More recently, they have experienced higher rates of maternal mortality among other races. Black mothers are at an increased risk of entering pregnancy with chronic hypertension and developing hypertension during pregnancy (Ghosh et al., 2014). The social determinants of health are the conditions that affect where an individual

lives, works, plays, worships, and can affect one's health just based on where one lives (Office of Disease Prevention and Health Promotion, 2024)

Goals and Objectives:

According to Healthy People 2030, the status of reducing maternal deaths is getting worse. The baseline data from 2018 shows that there were 17.4 maternal deaths per 100,000 live births, while the most recent data from 2022 shows that there were 22.3 maternal deaths per 100,000 live births (Office of Disease Prevention and Health Promotion, 2024). Also, the maternal death rate for black women is significantly higher than the average, with there being 49.5 black maternal deaths per 100,000 live births in 2022 (Office of Disease Prevention and Health Promotion, 2024). The goal of Healthy People 2030 is to lower maternal deaths to 15.7 deaths per 100,000 live births. They state that improving medical care quality throughout pregnancies can help reduce death rates to achieve this goal (Office of Disease Prevention and Health Promotion, 2024).

The World Health Organization (WHO) also has goals outlined regarding maternal mortality around the globe. Goal 3 of the WHO's Sustainable Development Goals is focused on good health and well being (United Nations, 2024). This goal includes a target for maternal mortality: "reducing the global MMR to less than 70 per 100 000 births, with no country having a maternal mortality rate of more than twice the global average" (World Health Organization, 2024). The WHO emphasizes that many maternal deaths are preventable, making this issue important to address. *The Strategies toward ending preventable maternal mortality (EPMM)* book released by the WHO outlines how they plan to reach these goals, specifically by using strategies such as addressing inequalities in maternal and infant care, ensuring universal access to

healthcare, strengthening health systems to prioritize women's health in data collection, and more (World Health Organization, 2024).

Determinants:

There are many approaches to reducing maternal mortality that focus on decreasing the various risk factors that contribute to pregnancy related illness and death. As hypertension is one of these leading risk factors, many public health interventions focus on reducing the risk for hypertension in mothers. The risk factors for hypertension during pregnancy include obesity, diabetes, chronic hypertension before pregnancy, advanced age, high cholesterol levels, and more (Yale Medicine, 2024). Many of these risk factors can be exacerbated by physical inactivity (Centers for Disease Control and Prevention, 2024). Physical inactivity and lack of exercise promote the development and worsening of risk factors like obesity, high cholesterol levels, and diabetes, which are all closely related to hypertension in pregnancy. Additionally, physical inactivity can lead to unfavorable metabolic conditions which put women at a greater risk of such pregnancy complications. Incorporating physical activity into one's lifestyle during or even before pregnancy has been proven to minimize these risks (Poniedziałek-Czajkowska et al., 2023).

Social determinants of health can also affect risk levels for hypertension and cardiovascular diseases. These determinants include education, income, food security, home ownership, language, and access to health insurance and medical care (American Heart Association, 2018). Food insecurity is an extremely important determinant linked to these conditions due to the typically high sodium levels present in low-cost, easily accessible foods. Pregnant women living in food insecure areas are also at risk for facing difficulty accessing healthy foods during pregnancy, increasing their risk for hypertension. This specifically affects

black mothers because food insecurity is higher among black women compared to their white counterparts (American Heart Association, 2018).

Intervention:

Physical exercise is an effective approach to improving cardiovascular health and reducing the risk for gestational hypertension. It has been proven that exercise intervention during pregnancy is effective in lowering blood pressure, and in turn lowering hypertension risk (Zhu et. al., 2022).

One intervention that uses exercise to decrease gestational hypertension is an exercise intervention for expectant mothers. In this intervention, pregnant women came together three times a week at a hospital setting to participate in group exercise sessions. These sessions were led by fitness specialists, with support from an obstetrician. The workouts, lasting about 50-55 minutes, were designed by the fitness specialist and included safe and beneficial exercises that strengthened aerobic health, strength, and flexibility. Participants attended exercise sessions for the entire nine months of pregnancy. This exercise program helped lower the risk of pregnancy-related hypertension and excessive weight gain. The results showed that women who participated were significantly less likely to develop hypertension, gain excessive weight, or give birth to a larger-than-average child. This intervention proved that regular, supervised exercise is a simple yet powerful way to support healthier outcomes for mothers during pregnancy (Barakat et.al., 2016).

Program Committee:

To implement the Coosa County exercise program intervention, we will need a committee of individuals and organizations to successfully carry out the program.

-Project coordinator

- 2 assessment staff members

-Coosa County Medical Center

-OBGYN

-A qualified fitness specialist

-3 childcare providers

- Alternative Transportation program

Needs Assessment

Worldwide:

The maternal mortality rate is high among all countries. In 2020, about 287,000 women died during and following pregnancy and childbirth and most of these deaths occurred in low to middle income countries (WHO, 2024). The rates of maternal mortality vary between countries due to the inequalities of health care that exist. The MMR (Maternal Mortality Rate) in low-income countries in 2020 was 430 per 100 000 live births versus 13 per 100 000 live births in high income countries (WHO, 2024). Most of the countries that are experiencing high rates of maternal mortality do not have quality healthcare and are not equipped with health resources to provide for expecting mothers. Ninety-four percent of global maternal deaths occur in low- and middle-income countries (Sharma et al., 2024). There is a health gap that exists between the rich and the poor and the individuals that are living in poverty are experiencing the worst health outcomes.

United States:

The United States has one of the highest maternal mortality rates among developed countries. The United States spends a higher expenditure on healthcare than any other country

but the health outcomes are worse. Health expenditures per person in the U.S. were $12,555 in 2022, which was over $4,000 more than any other high-income nation (McGough et al., 2024) The US has a lower life expectancy among men and women, higher infant mortality rate, and higher maternal mortality rate than any other high income country. For example, life expectancy at birth in the U.S. was 77 years in 2020 — three years lower than the OECD average (Gunja et al. 2023). At the national level, US MMRs (or maternal deaths per 100 000 live births) are 2 to 4 times higher in the non-Hispanic Black (hereafter referred to as Black) population than in the non-Hispanic White (hereafter referred to as White) population (Fleszar et al., 2023). There is a gap between maternal mortality rates between different ethnicities and shows that there is a need to help the racial and ethnic minority groups in the country.

State:

Many southern states experience high maternal mortality rates. In 2020, Alabama had the third-highest Maternal Mortality Rate in the nation, at 36.4 per 100,000 live births (Alabama Department of Public Health, 2022). The maternal mortality rate is increasing and Alabama is slowly becoming the state with the highest maternal mortality rate. Alabama has many rural communities which are more likely to experience maternal mortality and health disparities in several health areas. Overall, 55 out of 67 of Alabama's counties are considered rural (Alabama Department of Public Health, 2024). Alabama has a large population of black women that are giving birth compared to other states nationwide (Rocha, 2023). We have to direct our attention to these women because they are the most at high risk for developing complications during pregnancy.

County:

Coosa County is a county in Alabama facing significant challenges related to maternal health. Coosa County is a maternal desert, meaning that the county does not have an obstetricians or physicians to provide pre and postnatal care to mothers (DeMello, 2017). This indicates a significant need for intervention, as maternal care is highly inaccessible to individuals living in this county due to the lack of providers. Coosa county also faces high risks for conditions that can complicate pregnancy and long-term health outcomes. The low birthweight rate is 13.2% (Alabama Department of Public Health, Center for Health Statistics, Division of Statistical Analysis, 2019). About 8% of babies in the United States are born with a low birth weight (The Children's Hospital of Philadelphia, 2024). Heart disease is the leading cause of death, with rates of ischemic heart disease (often a result of untreated hypertension) at 163.0 per 100,000 population for women. This exceeds the national average, which is 124.9 per 100,000 population for women (Institute for Health Metrics and Evaluation, 2015). Coosa County also faces high obesity rates and lower-than-average physical activity levels among women, both of which are risk factors for hypertension. The obesity rate among women in Coosa County is 48.4%, compared to the national average which is 36.1%. The percent of women participating in physical activity in Coosa County is 38.4%, compared to the national average which is 52.6% (Institute for Health Metrics and Evaluation, 2015).

With 30.2 percent of the county population identifying as black (Data USA, 2024), the lack of access to maternal care impacts a population that historically faces health disparities and limited access to care (National Academies of Sciences, Engineering, and Medicine et al., 2017). All of these factors highlight the critical need for interventions in Coosa County targeting maternal, cardiovascular and overall community health.

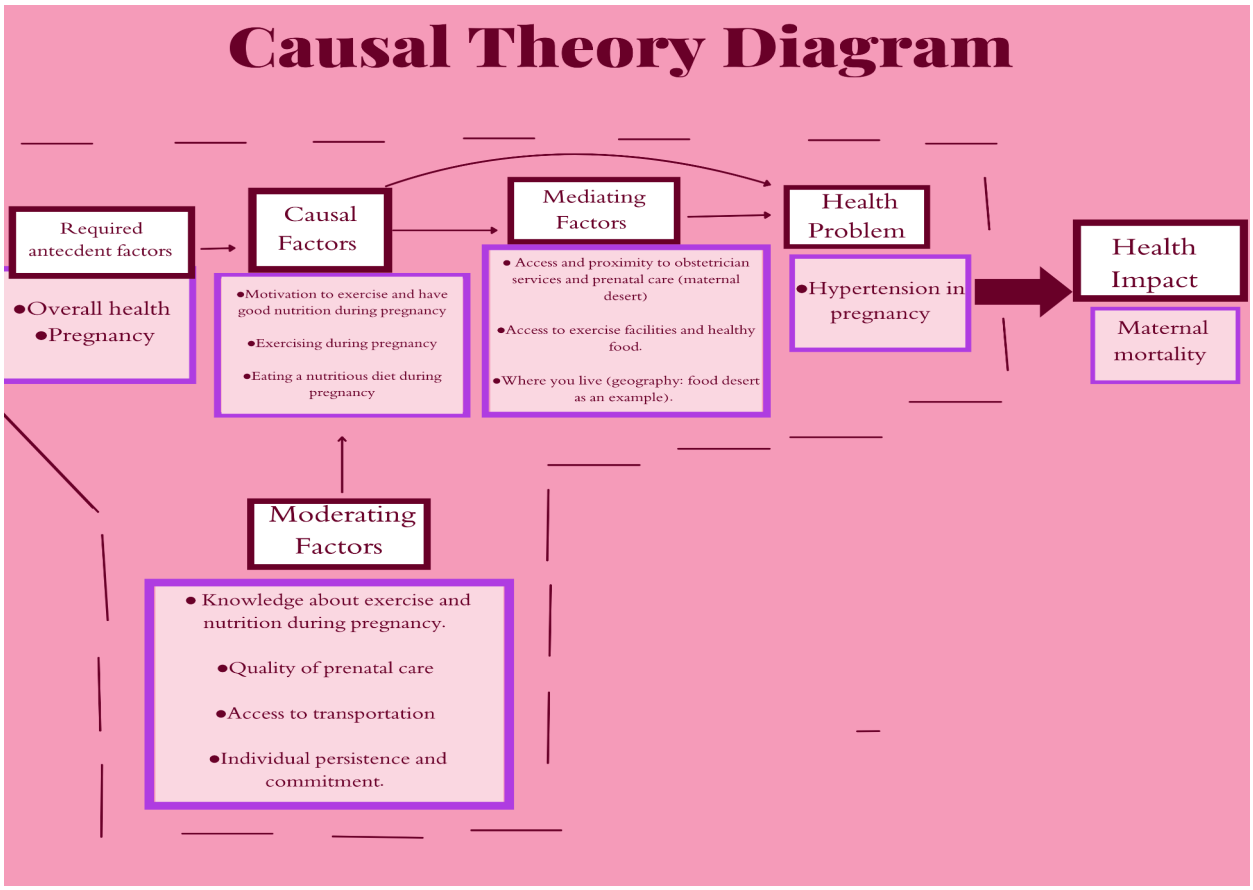
Significance and Program Focus:

With Coosa County having limited access to maternal medical care, and alarming levels of risk factors for maternal mortality such as higher rates of ischemic heart disease then the state and national average (Alabama Department of Public Health, Center for Health Statistics, Division of Statistical Analysis, 2019), there is a clear need for intervention. The purpose of bringing the maternal exercise program to this county specifically is to provide mothers with accessible and effective pregnancy care with a focus on reducing rates of hypertension and improving maternal outcomes. To achieve this goal, creating a buy-in partnership with Coosa Valley Medical Center to implement the program in their facility will be crucial. Additionally, the creation of a childcare program and transportation program will increase the accessibility of the intervention and limit the barriers to participation for mothers. This exercise program implemented in Coosa County will provide much needed support to this county by increasing access to crucial prenatal care and improving maternal outcomes (Barakat et.al., 2016).

Logic Model

Inputs	Activities	Output	Outcomes	Impact
•Coosa Valley Medical Center "buy-in" partnership for hosting the program •Project Coordinator •OBGYN •A qualified fitness specialist •2 assessment staff members •Pregnancy resources from Quality of Life Health Services INC. New Beginnings Maternity Care Program •Funding from Coosa Valley Medical Center for intervention •3 childcare providers •Coosa County Health Department discusses the effect of the maternal desert on maternal health outcomes •Funding from Coosa Valley Medical Center for intervention •Funding from Alternative Transportation program for transportation •Funding from Coosa Valley Medical Center for childcare services	•Recruiting participants through flyers, OBGYN recommendations, and social media •Making flyers •Designing the exercise program •Hold a training session for everyone that's facilitating the program •Hold weekly staff meetings to get staff acquainted and comfortable with each other •Activities around educating the women around prenatal health and health risks around pregnancy •Activités around promoting healthy lifestyle •Activities around breaking the stigma regarding the idea that pregnant women shouldn't exercise •Create a transportation support program to help women get to the facility •Coordinate transportation services •Coordinate a childcare program	•Implement the exercise program in Coosa County to promote exercise during pregnancy •Enrolled women participate in most of the training sessions •All women will be provided with free transportation if they need it •All women will be provided with free childcare services if they need it	• **Short term outcome:** •Increase knowledge about pregnancy health, healthy lifestyle, and exercise during pregnancy •**Long term outcomes:** •Decrease in hypertension risk •Decrease in the likelihood of gaining weight during pregnancy •Decrease in the likelihood of giving birth to a macrosomic infant	• Reduce maternal mortality among black women in Coosa County

Theory of Change



Program Goals and Objectives

Overall goal: Reduce the maternal mortality rate in Coosa County, Alabama

Process Objective: By month 9 of the program, 90% of enrolled women participated in 95% of the 85 exercise training sessions (in the event of no preterm delivery) in Coosa County's exercise intervention.

Effect Objective: After attending 95% of the exercise sessions, 100% of the Coosa County exercise intervention participants will be 2 times less likely to develop hypertension, will be 1.25 times less likely to gain excessive weight during pregnancy, and will be 2 times less likely to give birth to a macrosomic infant.

Implementation Plan

Tasks - Year 1	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Needs assessment (completed before implementing program)												
Program rationale (before implementing program)												
Inputs												
Hold discussions with the Coosa County Health Department and Coosa County Medical Center about the effect of maternal deserts on maternal health outcomes specific to Coosa County	X	X										
Create a relationship with Coosa Valley Medical Center and obtain “buy-in” from them to host the program	X	X	X									
Obtain funding from Coosa Valley Medical Center for the intervention and childcare program			X	X								
Contact and obtain funding from the Transportation Alternatives program for transportation				X	X							
Connect with Quality of Life Health Services INC. and collect resources from the New Beginnings Maternity Care Program					X							

Recruit and hire a project coordinator, an OBGYN, a qualified fitness specialist, 3 childcare providers, and 2 assessment staff members					X	X						
Hold weekly staff meetings to get staff acquainted and comfortable with each other					X	X	X	X	X	X	X	X
Designing the exercise program					X	X						
Create a transportation support program to help women get to the facility						X	X					
Create a childcare program to watch kids while moms are exercising						X	X					
Making flyers								X				
Recruiting participants through flyers, OBGYN recommendations, and social media								X	X	X	X	X
Activities around educating the women around prenatal health and health risks around pregnancy											X	X
Activities around promoting healthy lifestyle											X	X
Activities around breaking the stigma regarding the idea that pregnant women shouldn't exercise											X	X

Tasks - Year 2	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
Implement the exercise program in Coosa County to promote exercise during pregnancy	X	X	X	X	X	X	X	X	X			
Enrolled women participate in most of the training sessions	X	X	X	X	X	X	X	X	X			
Provide participants with free transportation services if needed	X	X	X	X	X	X	X	X	X			
Provide participants with free childcare services if needed	X	X	X	X	X	X	X	X	X			
Collect feedback from participants about the program										X		
Collect feedback from staff about the program										X		
Collect data on maternal mortality rates in the county										X		
Analyze the effect of the exercise program on participants outcomes, including risk for hypertension and macrosomic infants											X	
Use all collected data from program, participants and staff to create a final report											X	
Disseminate final report and findings to appropriate areas such as the health department, Coosa Valley Medical Center, and surrounding counties												X

Budget

Budget Expense	Cost
Part-time salary for 1 project coordinator	$50,000 per year $75,000 total for 1.5 years of work
Part-time salary for 1 OBGYN	$200,000 per year $300,000 total for 1.5 years of work
Part-time salary for 2 assessment staff members	$40,000 per year $60,000 per person for 1.5 years of work $120,000 total for 2 people
Part-time salary for 3 childcare providers	$20,000 per year $30,000 total per person for 1.5 years of work $90,000 total for 3 people
Part-time salary for 1 fitness specialist	$30,000 per year $45,000 total for 1.5 years of work
Funding for intervention (from Coosa Valley Medical Center)	$1,000,000 per year $2,000,000 total for 2 years
Funding for transportation (from Alternative Transportation Program)	$100,000 per year $200,000 total for 2 years
Funding for childcare services (from Coosa Valley Medical Center)	$100,000 per year $200,000 total for 2 years
Making flyers for recruitment	$1,000 total for 1,000 posters
Refreshments for weekly staff meetings	$10,000 total for 80 weeks of staff meetings
Educational activities around prenatal health and pregnancy health risks	$5,000 total for 2 months of activities
Educational activities around promoting healthy lifestyle	$5,000 total for 2 months of activities
Educational activities around breaking the stigma regarding exercise during pregnancy	$5,000 total for 2 months of activities
Total	$3,056,000

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