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Alda Dansou 04/20/2023

An Enhanced Community Health Worker Support Program for Postpartum women with Hypertensive Disorders of Pregnancy at Grady Memorial Hospital, Atlanta, GA: Baseline Survey Results and Preliminary Findings

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An abstract of
A thesis submitted to the Faculty of the
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2023

Abstract

Postpartum women with Hypertensive Disorders of Pregnancy at
Grady Memorial Hospital, Atlanta, GA:
Baseline Survey Results and Preliminary Findings
By Alda Dansou

Background: Women with Hypertensive Disorders of Pregnancy (HDP) are at greater short and long-term risk for developing cardiovascular diseases. Although there is emerging research investigating management of HDP throughout postpartum, there is a lack of exploration of Community Health Worker (CHW) models that can help reduce HDP burden and bridge disparities for minority populations. This study aims to evaluate the associations between social determinants of health and HDP, as well as to contribute preliminary findings towards the feasibility of utilizing CHWs in helping to manage the burden of HDP.

Methods: 30 participants were enrolled in the first phase of an enhanced CHW demonstration project taking place at Grady Memorial Hospital in Atlanta, GA. As part of the project, all 30 participants were given a blood pressure device to self-measure blood pressure (SMBP). Medical chart reviews were conducted on all 30 participants for demographic and obstetric history, and 25 participants took a baseline survey. Descriptive statistics were used to summarize baseline and Epic data. Change in Blood pressure was calculated using a paired t-test comparing averaged enrollment readings to 6-week follow-up, ± 2 weeks. ANOVA and linear regressions were used to test for associations between Blood pressure and sample characteristics.

Results: Overall 53.3% of participants are Black or African American and 46.7% are Hispanic or Latino. There is significant difference between blood pressure at enrollment and at 6-week follow-up ± 2 weeks ($p=0.0029$). The t-test revealed a mean difference of 13.13 ± 15.33 mmHg of systolic blood pressure and 8.1 ± 6.9 mmHg for diastolic blood pressure. Furthermore, participant's decreased no-show rate of 28%, relative to Grady's approximate 70% is a main unintended result from this program.

Conclusions: Overall, this study has provided preliminary evidence for the efficacy of utilizing CHWs to help bridge healthcare gaps. As there are various limits to non-randomized studies, we call for heightened prioritization and investigation of postpartum HDP interventions that center the use of CHWs, SMBP, and lifestyle education, especially randomized controlled trials that center minority populations.

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Chapter I: Introduction

Introduction and Rationale

Rates of maternal mortality in the US have been steadily increasing over the past decade, while other high-income nations are observing a steady decline. Hypertensive disorders of pregnancy (HDP), including preeclampsia-eclampsia, chronic hypertension, preeclampsia superimposed on chronic hypertension, and gestational hypertension, are one of the leading causes of maternal and fetal morbidity and mortality, globally.[1] According to the CDC, during 2017-2019, HDP prevalence among delivery hospitalizations increased from 13.3% to 15.9%.[2] These disorders, including chronic or pregnancy-induced hypertension, are leading causes of pregnancy related morbidity and death nationally. HDP's also still pose a risk to mothers during the postpartum period and can cause short- or long-term health consequences. Social determinants of health such as race and socioeconomic status, pose as systemic barriers that exacerbate the disparate maternal outcomes in the US. The association between severe maternal morbidity and hypertensive complications and solutions are underexplored amongst underserved populations.[3] In attempts to address this public health crisis, a patient-centered care model utilizing community health workers (CHWs) has been initiated at Grady Memorial Hospital (GMH), a safety net hospital for underserved populations of Fulton and Dekalb counties in Atlanta.

Problem Statement

The state of Georgia has one of the highest maternal mortality rates in the US, furthermore, the rate is steadily increasing. There is a need to investigate and expand understanding of the burden of HDP in Georgia, and the varying social factors that may exacerbate the state's increasing maternal mortality rate.[4] This research aims to identify the underlying causes, risk factors, and consequences of HDP. It also seeks to explore the feasibility and effectiveness of a CHW centered intervention to improve management of HDP in postpartum women to reduce the burden of HDP on maternal and fetal health outcomes. This research seeks to do so while applying a health equity lens to focus on SDoH and to counter ethnic and racial disparities in maternal health in Georgia.

Purpose Statement

In efforts to help patients properly manage hypertension, a multidisciplinary approach is ideal. Although CHWs are known as a culturally sensitive approach to building trust and bridging gaps between communities and health care professionals, they are not consistently integrated into healthcare settings.[5] Furthermore, literature remains inadequate surrounding their role in postpartum management. To explore this gap, the Emory School of Medicine, in collaboration with the American College of Preventive Medicine (ACPM) and the CDC, have created a demonstration project that will focus on postpartum management and enhanced CHW support for women with HDP at GMH. This project aims to empower mothers and strengthen their agency to manage hypertension in their daily lives.

The findings of this research will contribute to the existing knowledge on HDP, and in particular, bridge the gap of HDP interventions tailored for populations of lower socioeconomic status. Through bridging this gap in existing literature, this research aims to promote equitable maternal health outcomes, particularly among marginalized populations in Georgia.

Research Questions

This thesis aims to answer the follow question:

1. What sociodemographic and lifestyle factors are associated with the blood pressure levels of postpartum women with Hypertensive Disorders of Pregnancy at Grady Memorial Hospital in Atlanta?

Through answering the above question, this thesis aims to accomplish the following objectives:

1. To describe the population of participants and their current health and social determinants outcomes
2. To assess associations between outcomes of interest and social determinants
3. To identify priority areas in the health and social needs of patients to better tailor programming

Student's Contributions

The author of this thesis, Alda Dansou is a graduate research assistant who has been a part of this project since its design phase. Since then, she has contributed to this project in the following various ways:

1. Supported participant enrollment
2. Developed participant education materials
3. Developed CHW training materials and assisted with CHW training
4. Assisted with design of evaluation surveys
5. Administered baseline surveys to participants
6. Managed data entry
7. Conducted data cleaning and quality assurance
8. Analyzed data and prepared final report

Chapter II: Literature Review

I. Introduction

Global and National Burden of HDP:

Hypertensive disorders of pregnancy (HDP), including preeclampsia-eclampsia, chronic hypertension, preeclampsia superimposed on chronic hypertension, and gestational hypertension, are one of the leading causes of maternal and fetal morbidity and mortality, globally. HDP contribute to over nine million deaths of pregnant women, annually, and lead to a mortality rate of one death every three minutes.[1] Between 2003 and 2009, The Lancet Global Health found that hemorrhage, hypertensive disorders, and sepsis were responsible for over half of global maternal deaths. Hypertensive disorders were classified as the second most common direct cause of global maternal mortality, contributing to 14% (approximately 343,000) of maternal deaths worldwide. Within this period, the global distribution of hypertensive disorders resulting in maternal deaths was dominated by the following top five regions, including (1) Latin America and the Caribbean, (2) North Africa, (3) Sub-Saharan Africa, (4) Oceania, (5) and developed nations.[6]

Since then, there has been a global trend in the decrease of maternal mortality ratio (MMR), however, in contrast to this trend, maternal mortality has been increasing in the United States for decades. From 1990 to 2015, the global MMR decreased by 44% going from 385 maternal deaths per 100,000 live births to 216 maternal deaths per 100,000 live births. Furthermore, a majority of developed, high-income countries (HICs) have had steadily low maternal death rates, with a range of 3 to 12 maternal deaths per 100,000 live births over the past 25 years. The United States, on the other hand, has deviated from this downward trend and has experienced a 16.7% increase in MMR since 1990, holding at an MMR of 14 maternal deaths per 100,000.[7] HDP are amongst the most common cause of pregnancy-related deaths in the United States. More recently, from 2017-2019 alone, the prevalence of HDP cases among delivery hospitalizations in the United States increased by 2.6%. Furthermore, 31.6% of reported deaths that occurred during delivery hospitalizations contained an HDP documentation.[2]

Burden of HDP in Georgia:

The state of Georgia has one of the highest maternal mortality rates in the US, furthermore, the rate is steadily increasing. In 2016, Georgia had a mortality rate of 37.2 maternal deaths per 100,000 births. non-Hispanic Black (NHB) women are more than 3.3 times more likely to die from pregnancy-related complications in Georgia.[4] According to the American Health Rankings, 2018 Health of Women and Children Report, Georgia

has a pronounced mortality rate compared to the other US states, having the highest rate of maternal mortality at 46.2 deaths per 100,000.[8] Furthermore, according to the Georgia Maternal Mortality Review Committee (MMRC), in 2014, 60% of all pregnancy-related deaths that occurred in Georgia were all caused by preventable conditions.[9] More recently, between 2018-2020, cardiovascular and coronary conditions were named the 4th leading cause of pregnancy-related maternal deaths, with an average occurrence rate of 12%. Meanwhile, preeclampsia and eclampsia were determined as the 6th leading cause of pregnancy-related maternal deaths, with an average occurrence rate of 10%.[10] Furthermore, ethnic and racial disparities exacerbate MMR in HDP. Compared to white women, NHB have a 60% increased risk of preeclampsia, and are 3xs more likely to die, which remains regardless of socioeconomic status.[4]

HDP Classifications and Diagnostic:

HDP are diseases that cause high blood pressure during pregnancy. The National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy (NHBPEP) classifies HDP into 4 different categories including (1) chronic hypertension, (2) gestational hypertension, preeclampsia-eclampsia, and (3) preeclampsia superimposed on chronic hypertension.[11]

Chronic hypertension in pregnancy is a form of HDP that complicates approximately 5% of all pregnancies. It is marked by high blood pressure that occurs prior to pregnancy and is diagnosed within the first 20 weeks of pregnancy or high blood pressure that does not resolve itself by the 12-week postpartum checkup visit. The diagnosis of chronic hypertension in pregnancy is categorized under two levels of severity. Mild chronic hypertension is characterized by a high blood pressure reading of up to 179 mm Hg systolic and 109 mm Hg, whereas severe chronic hypertension is deemed by a high blood pressure reading (equal to or greater than ≥) 180 systolic or 110 diastolic.[11]

Gestational hypertension is characterized by a new onset of hypertension after 20 weeks of gestation, the period between conception and birth. Diagnosis of this classification of HDP, has four main requirements. The first requirement is an elevated blood pressure of a systolic blood pressure ≥ 140 or diastolic ≥ 90 mm Hg. The second requirement is that the patient had normal blood pressure readings prior to pregnancy. The third requirement is that the patient has no protein in the urine, and the fourth is that the patient shows no signs of preeclampsia-eclampsia.[11]

Similar to gestational hypertension, *preeclampsia-eclampsia* is defined as new-onset hypertension that develops after 20 weeks of gestation, however, it is also accompanied by either proteinuria or evidence of end-organ dysfunction. Proteinuria is when there is 300 mg or more protein present in a 24-hour urine collection. The presence of proteinuria was once a requirement for a preeclampsia diagnosis, that is until 2013 when it was found that some patients had advanced pre-eclampsia, however, protein was not yet detectable in their urine. Upon this discovery, the requirements for diagnosis were extended. Pre-eclampsia is also classified by the presence or absence of various severe conditions. These conditions include but are not limited to high blood pressure over 160 mm Hg systolic or 100 mm Hg diastolic, acute kidney injury with creatinine over 1.1, severe or persistent central nervous conditions, and pulmonary edema.[12]

Superimposed pre-eclampsia on chronic hypertension is when preeclampsia occurs in a pregnant patient who with chronic hypertension after 20 weeks of gestation. This classification of HDP has the highest rate of maternal and fetal complications. Unlike the three classifications of HDP, diagnosis of pre-eclampsia in a pregnant patient who also has chronic hypertension poses its difficulties. This is due to the fact that a patient with this condition already has elevated high blood pressure. Furthermore, chronic hypertension itself can also cause proteinuria, which is one of the main requirements used to diagnose the onset of pre-eclampsia. Still, a patient may be suspected to have chronic hypertension with superimposed preeclampsia if their already elevated blood pressure or proteinuria further increases, as well as if their blood pressure becomes resistant to medication and other forms of treatment.[12]

HDP Risk Factors

Numerous research on hypertensive disorders of pregnancy have uncovered potential risk factors associated with HDP and its specific classifications. Risk factors for chronic hypertension in pregnancy, for instance, include advanced maternal age (over 40 years), obesity, (body mass and index (BMI) of over 30kg/m), along with comorbidities such as type 2 diabetes mellitus, renal disease and gestational diabetes mellitus.[13] Gestational Hypertension and pre-eclampsia have been found to share similar risk factors. In a study conducted in Canada, researchers found that gestational hypertension and pre-eclampsia shared risk factors such as obesity, nulliparity, history of pre-eclampsia in pregnancies, type 1 and 2 diabetes mellitus, along with twin birth. Risk factors can vary, however, depending on the setting and cultural context.[14] In a retrospective case-control study conducted in Ethiopia from 2015 to 2017, researchers identified various modifiable and unmodifiable risk factors associated with HDP. Some risk factors coincided with findings from the Canadian study, such as old age, nulliparity, twin birth, and preexisting hypertension. Still, researchers also uncovered other varying risk factors, including living in a rural area, being single, having a positive history of abortion, family history of hypertension and diabetes mellitus, and women who did not have antenatal care (ANC) follow-ups.[15]

More recently, research worldwide has explored the relationship between health behaviors and the risk of developing HDP, however, outcomes have varied by study. For instance, in a prospective cohort study conducted in Poland, researchers found that smoking in the first trimester increased the risk of developing isolated gestational hypertension and preeclampsia in comparison to women who never smoked.[16] This finding was consistent with the results of another retrospective cohort study conducted in the United States from 2010 that discovered an increased risk of preeclampsia-eclampsia for smoking during pregnancy.[17] In the contrary, an epidemiological study conducted in Sweden found that smoking during pregnancy was associated with lower preeclampsia risk compared to nonsmoking, another study in accordance, found that smoking during pregnancy was associated with a decreased risk of developing HDP by 56% with statistical significance. [18] Various studies have also assessed the relationship between alcohol consumption and risk of developing HDP. One prospective cohort study conducted in the UK and another case control study conducted in the US both found inverse relationships between alcohol intake during pregnancy and risk of HDP.[19] [20] Still, other studies found conflicting results. For instance, one nationwide cohort study in Japan found that women who consumed alcohol were more likely to develop HDP compared to women who never drank alcohol.[21] Yet another systemic review conducted on available epidemiological studies on the association between alcohol consumption during pregnancy with PE or HDP, found that there was no apparent association between the two variables upon reviewing the studies and their varying conclusions.[22] These varying findings insinuate that said health behaviors, although they have been known to cause other birth and fetal complications, cannot conclusively be called risk factors of HDP and suggest a need for further investigation into the relationship between HDP and risky behaviors such as smoking and alcohol.

Numerous research has also indicated a relationship between nutritional/dietary patterns and HDP development. In a narrative scoping review conducted of various observational studies on maternal dietary factors, researchers uncovered a substantial body of literature that outlined an association between nutritional inadequacies and heightened risk of pre-eclampsia. Maternal nutritional inadequacies that posed as the strongest risk factors in this review included deficiency of Vitamin C, iron, Vitamin D (alone and combined with calcium and magnesium). Consumption of foods high in added sugar such as sugary drinks were also associated with increased risk of pre-eclampsia risk. Diets with high consumption of fruits, vegetables, whole grains, fish and seafood high in omega-3 fatty acids, mono-unsaturated vegetable oils were deemed as protective factors against HDP.[23] [24]

Social Determinants & Health Disparities:

According to a cross sectional study conducted using data from 2013-2017, researchers found that >50% of pregnant women with the highest social determinants of health (SDoH) burden had suboptimal cardiovascular health. Determinants such as income, education, occupational status, neighborhood, food insecurity, and health-system related factors, are some of the main social determinants of health that have been researched in relation to maternal outcomes. Thus far, racial and ethnic disparities in maternal outcomes have been commonly investigated. For instance, non-Hispanic Black women have been found to be 4 times more likely to

die from pregnancy related outcomes compared to white women. Furthermore, the pregnancy related mortality rate amongst non-Hispanic Black women in 42.8 deaths per 100,000 live births.[25]

The burden of HDP impacts women in the US at inequitable rates dependent on various influencing SDOH. Using data from the US's National Inpatient Sample to calculate HDP prevalence among delivery hospitalizations, the CDC found that from 2017 to 2019, HDP prevalence was highest among non-Hispanic Black or African American women, non-Hispanic American Indian and Alaska Native (AI/AN) women, and women over ≥35 years, residing in zip codes in the lowest median household income quartile, or delivering in hospitals in the South or Midwest census regions. HDP prevalence varied across these differing characteristics. For those 35-44 years old, prevalence of HDP among delivery hospitalizations was 18% higher, while it was 31% higher for women aged 45-55 years. Prevalence of HDP was also 21% higher amongst black women and 16% higher amongst AI/AN women compared to other racial and ethnic counterparts. HDP prevalence was also 16% higher for women of lowest median household level income quartile, 16% higher for those in metropolitan counties or in the South, and finally 15% higher for those in Midwest US Census regions .[2]

Short term and Long-term Consequences of HDP:

HDP can lead to complications of pregnancies and increase women's susceptibility to cardiometabolic-related morbidity and mortality. During pregnancy and within the postpartum period, HDP can cause a multitude of short-term consequences. In a cross-sectional analysis conducted using maternal data in the US from 2007 to 2019, researchers found that rates of pre-term deliveries and low birth weight increased significantly amongst women with HDP diagnosis across all age, racial, and ethnic groups.[26] In correspondence, a prospective cohort study conducted in Japan from 2002 to 2013, investigating the association between HDP and birth outcomes, found that there was a significant association between HDP (pre-term birth) PTB, low-birth-weight (LBW), and babies small for gestational age (SGA). These conditions induced by placental dysfunction can be caused by maternal complications triggered by HDP, such as liver and kidney failure, placental abruption, cardiovascular diseases, disseminated intravascular coagulation; which causes abnormal blood clotting, and hemolysis elevated liver enzyme low platelet count (HELLP) syndrome.[27]

There are also potential consequences of HDP that manifest during the postpartum period. In a prospective cohort study conducted at Yale New Haven Health from December 2017 to March 2020, researchers investigated the cardiovascular risk amongst patients with HDP compared with normotensive patients 6 to 12 months postpartum. In their investigation, they found that HDP was significantly associated with new chronic hypertension at 6 to 12 months postpartum. They also found that participants with HDP were more likely to have elevated fasting blood glucose levels, metabolic syndrome, and hyperlipidemia.[28] There have also been other research studies conducted that derived similar findings. For instance, a Canadian cohort study found that patients with preeclampsia experienced increased blood pressure, total cholesterol, and BMI at 12 months postpartum.[29]

There are also various long-term consequences caused by HDP. Early research in the field has shown that women with HDP are at higher cardiovascular risk and are more likely to experience chronic conditions. In a study prospective cohort study that followed women who delivered babies in Minnesota between 1976 and 1982, researchers found that during the 6-year period, women with HDP were more likely to experience conditions such as stroke, coronary artery disease (CAD), heart failure, cardiac arrhythmias (CKD), hypertension, and diabetes compared to women without any HDP.[30] Numerous recent research aligns with said findings. In a prospective study conducted from 2005 to 2007 following patients with and without an HDP diagnosis, researchers found that women had a 2.4 times increased risk of developing hypertension 10 years after receiving an HDP diagnosis.[31] Another study conducted at Yale New Haven Health from 2017 to 2020 found that participants with HDP had increased estimated 30-year CVD risk scores compared to participants without an HDP diagnosis.[28]

II. Existing Models & Interventions

In efforts to address the high global burden of HDP, various models and interventions have been applied across settings. Several themes emerged upon reviewal of said interventions, including (1) CVD-risk-reducing

specific strategies, (2) Investigating the use of Self-Measured Blood Pressure (SMBP) or similarly, Home Blood Pressure Management (HBPM), (3) Assessing the use of CHWs or Village Health Workers.

Theme 1: CVD Risk Through Lifestyle Changes

There were two studies identified that focused on assessing the relationship between HDP interventions and CVD risk. One study was a randomized controlled clinical trial, the other was a follow up questionnaire conducted with participants in an open-label randomized controlled trial. Both studies investigated interventions that incorporated lifestyle changes including diet and exercise.

Study 1: Heart Health 4 Moms (HH4M) was a randomized controlled 9-month clinical trial that studied 151 US women in Boston, with preeclampsia for 5 years. Participants were on average 31.1 years old, predominately white non-Hispanic, with a college degree or higher, and with an annual household income of 75,000+. The study's inclusion criteria was women with preeclampsia history validated by medical records, women with chronic hypertension, however, were excluded. Participants placed in the intervention group received online educational modules which included 12 modules centered on the Dietary Approaches to Stop Hypertension (DASH) diet, learning nutrition labels, and being active. They also received access to a community forum and a lifestyle coach. The control group, on the other hand, received links to CVD risk reduction information only. In this study, researchers found that in the intervention group, 84% of participants accessed at least one educational module, and 89% completed at least three scheduled calls with a lifestyle coach. At 9 months of follow-up, participants in the intervention group reported significantly higher knowledge of CVD risk factors, increased self-efficacy for healthy eating, and reported less physical in-activity than the control group. However, the groups did not differ in the other study outcomes assessed such as sense of personal control of CVD risk factors, adherence to the DASH diet, self-efficacy for physical activity, and weight nor blood pressure.[32]

Study 2: The Postpartum Preeclampsia Clinic at the Royal Alexandra Hosptial in Edmonton, Alberta conducted a retrospective chart review of women with pregnancy complicated by preeclampsia during September 2010 to March 2013. Patients seen at this clinic, received access to education about future health implications of preeclampsia, the risk of premature CVD, assessment of modifiable CVD risk factors, and counseling on weight management and lifestyle modification through diet and exercise. The inclusion criteria for chart review of this study included women aged 18 years or older, women with a diagnosis of preeclampsia in their recent pregnancy, and who attended the PPPEC for at least six months during the study period. Participants were on average 29.6 years old and 76.2% were married, however, no other SDOH were reported apart from age and marital status. The study found that over the study period, 21 patients were seen for a minimum of 6 months. Results showed an improvement in weight loss and BMI, however, not significant. Physical activity, however, increased significantly from 14% of patients engaging in physical activity before pregnancy, to 76% at an approximate average of 4 months postpartum. [33]

Theme 2: Telemonitoring Health

There were eight studies identified with a focus on home-based blood pressure measurements. Two investigated the accuracy of home blood pressure readings compared to clinic measurements. Six studies highlighted interventions investigating the use of telemonitoring health and blood pressure measured at home to help women with HDP manage their blood pressure during postpartum. The key search words derived from the article titles of this literature review include but are not limited to m-health, remote monitoring, telemonitoring, self-management/monitoring of hypertension, home blood pressure monitoring, etc. Three out of six studies were clinical studies, two were retrospective cohort studies, and one was a pilot study. Although all six studies were investigating telemonitoring of blood pressure, researchers investigated different outcomes of interest. For instance, two studies examined change in mean blood pressure. Another two investigated various maternal outcomes. One study investigated telemonitoring's effect on addressing racial disparities in postpartum hypertensive care, while the last study investigated patients' perceptions of technology and overall satisfaction. [34-41]

Accuracy of HBPM: Two studies investigated the accuracy of home blood pressure readings compared to clinic measurements amongst cohorts of women with HDP. The studies aimed to test the feasibility of using home-based blood pressure management (HBPM) as an intervention tool to manage blood pressure in pregnant and postpartum women. One study was conducted between 2014 to 2015 at Royal Prince Alfred Hospital, in Australia. Participants included patients who were scheduled to return to the clinic within 2 weeks of their initial patient visit. Patients were trained on how to perform BP measurements at home, as well as given BP devices to use each morning and evening to record their BP readings, patients were expected to use a BP diary provided to them at their clinic visit. In result, this study found that HBPM was comparable to clinic measurements, with a mean home reading of 123.4 mmHg and a mean clinic reading of 123.9 mmHg.[36] The latter study was conducted between 2016 to 2017 at St George's Hospital at the University of London. Eligible patients were given an automated BP machine and were trained by a specialist midwife in proper use. Unlike the previous study, this study found that the median systolic HBPM measurements were significantly lower than clinic measurements, including both systolic and diastolic blood pressure measurements. Furthermore, the incidence of clinically significant systolic and diastolic hypertension based on clinic BP measurements were four to five times higher than HBPM measurements.[36 37]

Blood Pressure Control: Both studies investigating the effect of self-management/monitoring of blood pressure on blood pressure were randomized clinical trials. The SNAP-HT (Self-Management of Postnatal Hypertension) Trial was a prospective unmasked trial conducted between 2015 to 2016 using participants recruited from five National Health Service hospitals in England. Women over aged over 18 with gestational hypertension or preeclampsia requiring treatment were eligible for recruitment, however, those prescribed over three antihypertensive medications, self-reported hypertension diagnosed outside of pregnancy, and who could not speak English were excluded from the study. Women were randomized to self-management or usual postnatal care. Participants receiving usual care had their blood pressure monitored by a community midwife and medication adjusted by their general practitioner. Participants allocated to self-management were expected to perform daily home BP monitoring using a distributed validated BP device, and to receive automated medication reduction via telemonitoring. They were instructed to take reading at the same time every morning and to record their readings into their mobile phones and then transmitted to the study via text or a smartphone app. A telemonitoring service was used to remind patients to record readings, it also notified them when reading were overdue. Women from both study arms had 5 follow up home visits during 6 months. In result, researchers found that after randomization, the intervention arm had lower BP at 6 weeks, (adjusted difference of systolic –5.2 and diastolic –5.8 mmHg). At 6 months, diastolic BP remained significantly lower with an adjusted difference of –4.5 mmHg.[34] The BUMP2 Randomized Clinical Trial was a more recent study conducted between 2018 to 2019 in 15 hospital maternity units in England. Participants recruited were pregnant individuals diagnosed with either chronic or gestational hypertension.[33] Similarly to the SNAP-HT trial, participants were randomized to BP self-monitoring using a validated monitor and telemonitoring along with their usual care system or to usual care alone. After randomization, however, unlike SNAP-HT, this study found no significant difference in mean systolic blood pressure in the chronic hypertension cohort nor the gestational hypertension cohort. [34 35]

Maternal Outcomes: In this review, there were two studies identified that investigated pregnancy outcomes following remote / at-home monitoring of gestational hypertension. One study was a cohort conducted also at St. George's Hospital at the University of London, however, between 2013 to 2018. Furthermore, instead of investigating HBPM's accuracy, their focus was to assess pregnancy outcomes including adverse fetal neonatal and maternal outcomes, as well as the number of antenatal hospital visits. These outcomes were compared between a group of women who engaged in HBPM vs a group of women for followed a traditional pathway of care. The study found that there was no significant difference between the two groups in birth weight, fetal growth restriction, neonatal intensive care unit admissions, and fetal adverse outcomes, or outpatient nor triage visits. They did, however, find a difference in the number of Day Assessment Unit (DAU) visits, which was significantly lower in the HBPM group than in the traditional care group. They also found that HBPM in women resulted in significantly fewer antenatal visits.[37] Between 2015 to 2016, another cohort was conducted with all women diagnosed with gestational hypertensive disorders who had a prenatal follow-up at any outpatient prenatal clinic at Ziekenhuis Oost-Limburg in Genk, Belgium. Women who were deemed high risk by the obstetrician received remote monitoring, which included surveillance via a wireless blood pressure

monitor, a weight scale, and an activity tracker. They were instructed to take blood pressure readings once in the morning and once in the evening, and instructed to wear the activity tracker day and night until the delivery of their child or hospital admission. To respond to readings, one midwife was put in charge of conducting remote follow-up when the mobile health unit where the BP readings were transferred to, made note of an alarming event, which was denoted as (> 140 mmHg, diastolic blood pressure > 90 mmHg, and weight gain > 1 kg/day). [39]

Racial Disparities: The Heart Safe Motherhood Program is a retrospective study launched in 2018 in Pennsylvania. It focused on investigating whether text-based blood pressure monitoring was effective in meeting clinical guidelines and reducing racial disparities in hypertensive care. Women eligible for the trial were those diagnosed with HDP at the time of their delivery admission. They also had to be older than 18 years, speak and read English, and have access to a cell phone with unlimited text messaging. Participating women received a validated BP cuff at hospital discharge and were trained on its proper use by postpartum obstetric nurses. The study compared a cohort of women randomized to text-based BP monitoring from 2016-2017 (the trial arm) to a cohort of women enrolled in the Heart Safe Motherhood from 2018-2019 (the implementation arm). Patients were also enrolled in an electronic medical record called The Way to Health, where blood pressure data was recorded and stored. To remind participants to take their BP readings, they would receive text messages twice a day. Automated messages were also sent to patients when an elevated BP reading got picked up on in the Way to Health platform, and they weren't told to repeat their reading and then contacted for follow-up. The main outcomes measured include BP ascertainment which was defined as at least 1 BP sent via text during the 10 days of monitoring. The study found that there was no difference in BP ascertainment amongst Black and non-Black women in the trial and implementation arm suggesting the scalability of text-based BP monitoring to manage postpartum hypertension and reduce racial disparities.[40]

Another study conducted with patients who delivered at the University of Arkansas for Medical Sciences, investigated remote patient monitoring using mobile health (m-health) technologies for women with pre-eclampsia during the postpartum period. Qualifying participants were women who had delivered at the university hospital with preeclampsia. They were given the option to choose to be a m-health user, and upon consent were given m-health devices to monitor blood pressure, weight, pulse, and oxygen saturation during a 2-week period. A nurse call center helped to monitor device readings and contact participants who displayed elevated blood pressures. The study intended to assess participants perceptions and experience using m-health. Researchers found that women who used m-health technology on average had lower perceived technology barriers, and higher levels of perceived benefits of technology than non-users. There was no statistical difference in treatment adherence nor health outcomes between users and nonusers.[41]

Theme 3: Village Health Care Worker

One study identified in this review utilized village health workers (aka CHWs) in a community-level intervention in attempts to control the burden of HDP in their local, rural communities. The study was conducted in Gombe state, Northeast Nigeria with approximately 9 thousand pregnant women in efforts to assess the effectiveness of the VHW program in improving the maternal outcomes of those who have HDP. The study used mixed methods comprised of routine BP measurement and focus group discussions with VHWs. The study aimed to assess potential improvements in the prevalence of hypertension in the community, VHWs competence, as well as to gather the community's response to the program. As part of the program, VHWs were trained in how to utilize BP measuring devices so to help monitor pregnant women's BP in their homes upon request. They were also trained to deliver community-level maternal and newborn health promotion services, offer medication, make health referrals, and accompany clients with emergencies to health facilities. In result, the study observed a significant decrease in the prevalence of hypertension, (defined as systolic blood pressure equal to or higher than 140/90 mmHG) between the 1st and 2nd home visits, which took place 4 weeks after the first. Researchers also found through qualitative data that VHWs were able to efficiently assess pregnant women's BP using semi-automatic BP devices and that the intervention was deemed acceptable and appropriate in the study setting. It is important to note that this study was not a randomized-clinical trial. Instead, all pregnant women were approached for routine blood pressure measurement using snowballing and door-to-door outreach by VHWs. Those who consented were included in

the sample. Therefore, a key limitation to note with this study is its inability to draw a causal relationship between the VHW intervention and the observed decreased hypertension prevalence. Without a control group and randomization of samples, there is also the potential for confounding variables to impact study outcomes.[42]

Notable Mentions: *CHWs & Chronic Hypertension Control*

During the search for interventions that addressed HDP using a CHW framework, various studies were identified that focused more broadly on addressing hypertension. Although these studies did not investigate management of blood pressure in patients specifically diagnosed with HDP, these studies may provide insight into potential benefits of incorporating CHWs into alternative solutions towards other hypertensive disorders. There was a total of five articles identified, reporting a total of six interventions conducted in various communities in the US.[43-48]

CHW Perspectives: One study investigating approximately 265 CHWs affiliated with American Public Health Association and their perspectives on their roles in hypertension self-management and medication adherence, found that they perceived their role as beneficial. Via surveys and telephone interviews, CHWs described using various delivery methods such as home visits and clinic sessions to assist patients in overcoming barriers to medication adherence. CHWs in the study also often helped patients make medicating refills and enhanced patient-provider communications.[47]

Racial Disparities: Five out of six studies investigated the effectiveness of CHW-led interventions in helping better manage hypertension amongst minority communities. All five articles reported coinciding findings of significant benefits of a CHW centered approach at addressing hypertension.

Earlier studies such as the Seattle Hypertension Intervention Project, conducted as early as 1994 to 1996, compared the effects of a tracking and outreach intervention delivered by CHWs to standard of care. Participants were all Black or White, over 18 years, with a BP equal to or greater than 140/90 mmHG, and with an income less than or equal to 200% of poverty of the 1995 federal poverty level. After randomization, they found that being in the intervention group increased medical follow-up of persons with elevated blood pressure by 39.4%. Additionally, after 4.4 months postpartum, there was a reduction in average blood pressure of participants, although non-significant. They also found that the scheduled follow-up visits were completed by 65.1% of participants in the intervention, while only 46.7% in the standard of care group. Furthermore, the intervention was equally as effective across ages, sex, and race.[43]

Another study conducted in the early 2000s investigated CHWs role in helping to reduce disparities in hypertension control. The study recruited West Coast inner-city Black and Hispanic adult patients with hypertension to follow for 4 years. Patients were randomized to usual standard of care, or one of the following 3 intervention arms: (1) individual patient counseling sessions led with a CHW, (2) appointment tracking, (3) Home visit opportunities and discussion groups on lifestyle behaviors and medication adherence. After follow-up, researchers found that participants in the patient tracking arm demonstrated the most significant improvement in appointment keeping and blood pressure control status at 6 months. At 12-month follow-up assessments, researchers found that the individual counseling and home visit arms resulted in significant, sustained improvements in appointment keeping and blood pressure control status.[44]

Another study conducted in Baltimore assessing the impact of a community-based risk factor intervention on CVD risk in Black families demonstrated similar findings. Researchers found that participants with a family history of premature coronary heart disease (CHD) randomized to the community-based care (CBC) group which received care by a nurse practitioner and a CHW, was twice as likely to achieve goal levels of LDL cholesterol and BP compared to the enhanced primary care (EPC) group. The CBC group also had a significant reduction in global coronary heart disease risk whereas the EPC group did not demonstrate a reduced risk.[45]

One article, reported on two CHW-led patient-centered lifestyle interventions conducted in South Asian communities in New York City from 2011 to 2019. Both studies recruited participants with comorbid hypertension and diabetes and randomized participants into treatment and control groups. Researchers found significant reductions in blood pressure amongst participants in both intervention groups.[46]

Conclusion:

Results from various studies with mixed evaluation designs have contributed insightful information in finding innovative solutions towards reducing the global and national burden of HDP. It's important to note that out of all the studies covered, 7 out of 9 centered on HDP were conducted outside of the U.S. However, 6 out of 7 were also high-income countries such as the US. Furthermore, only 3 out of 9 studies would be considered high-quality studies, with a prospective randomized-control trial study design. These studies are deemed the gold standard in that they are generalizable and reduce the impact of confounders. In addition, only 2 out of 9 examined impacts in minority populations. Relatively few studies on self-management of HDP have been conducted in the US, suggesting a need for further investigation of remote monitoring of HDP and its effects on the short- and long-term consequences of women diagnosed with HDP. Furthermore, much of the research identified covered the use of lifestyle interventions, telemonitoring (eg.text or app-based response systems), and self-monitored BP through home blood pressure devices. However, none of the studies incorporate a combination of lifestyle and telemonitoring interventions. This literature review also revealed a gap in interventions centered on the use of CHWs to help serve as a liaison and to help patients better manage their blood pressures after receiving an HDP diagnosis. While there was a multitude of studies that investigated the implementation of CHWs as a solution for chronic hypertension management, only one study targeted patients diagnosed with HDP. Yet researchers have been investigating CHWs' potential role in chronic hypertension control as early as the 1990's and have demonstrated that CHWs are an effective contributor to reducing the burden of hypertension. Hence, there is a need for increased efforts in applying CHW-centered frameworks towards HDP control to offset this research gap.

III. Project Background

HDP burden in Atlanta

First opened in 1892, Grady Memorial Hospital (GMH) is a safety net hospital that strives to meet the health needs of its region, which are mainly in the Fulton and Dekalb Counties of Georgia. GMH is a southeastern located hospital wherein there exist some of the worst health outcomes in all of the US when compared to other US states. This includes, but is not limited to, cardiovascular health, maternal and child health, and mental health. This also includes poor socioeconomic factors, including but not limited to, insurance, income, education, racial and ethnic disparities. Respectively, many of GMHs primary patients experience barriers related to SDOH which in turn impact their health outcomes. These barriers vary from economic insecurity, housing barriers, limited English speaking skills, low education status, unemployment, etc. In Grady's Community Needs Health of 2022, Black and Latina women, including women in single-head households, were found to experience the greatest barriers to reaching optimal health and held a higher disease burden. Poverty rates were also high for this group and even exceeded Georgia's state poverty rates. 25.3% of single female head of household families lived at poverty levels below 100% the federal poverty level compared to 5.5% of married couple families living below the federal poverty level. Due to this, GMH calls for the prioritization of further study and investment in this community so to address existing health disparities that challenge their well-being.[48]

In Grady's Community Needs Health Assessment of 2022, they also found that trends for hypertensive heart disease, stroke, obesity, and diabetes morbidly and mortality have increased. Furthermore, one of the highest health concerns at Grady includes high blood pressure. 38% of deliveries at Grady memorial hospital, in Atlanta, GA were complicated with HDP from 2016-2018. Out of the deliveries complicated by HDP, 81% were to women with non-Hispanic Black, 50% were aged 20-29 years old, 89% had Medicaid/Medicare, and 41% had reported using prenatal care inadequately. Only 13.7% of women with HDP had returned for a blood pressure check in the first 10 days after delivery. At GMH, a diagnosis of hypertension was coded in 43.3% and 40.4% of deliveries; in comparison, Georgia Regional Perinatal centers coded hypertension in 28.5% of deliveries while the national perinatal information center database coded hypertension in 19.9% of deliveries [49] [50]

HDP have the potential to carry into the postpartum period. Yet, at Grady, there have been various barriers in the effective management of chronic diseases. As standard, patients in need of longitudinal primary

care or specialized management of uncontrolled hypertension are often asked to attend different appointments between various healthcare providers, including a primary care provider (PCP), cardiologist, pharmacist, and nutritionist. These visits may often require scheduling on different days of the week and at various times of the day, requiring patients to remember multiple appointments, manipulate their schedules accordingly, and secure transportation. In addition, communication between various disciplines (e.g. pharmacist, dietician, and physician) is primarily non-verbal, existing mainly through electronic provider notes. This information can be overlooked in the medical record, and many times, this does not give insight into the patient's social situation or personal values as it relates to management of their disease. Additionally, there is minimal focus on improving patient activation or problem-solving skills, and methods for empowering patients to self-manage their disease are only implemented based on each provider's comfort level with providing such education.

CHW Demonstration Project Background

The association between severe maternal morbidity and hypertensive complications and solutions are underexplored amongst underserved populations. In attempt to address this gap in care, a patient-centered care model that utilizes a comprehensive and a multidisciplinary approach was launched at Grady Memorial Hospital. This project aims to empower mothers with HDP and strengthen their agency to manage hypertension in their daily lives. Patients are supported by CHWs in Self Measurement Blood Pressure (SMBP). Patients are also given personal blood pressure monitors to use at home, logs to keep track of their daily readings, and will be encouraged to seek help from their care team when values are high. There are various other resources that patients receive or referred to through this project, including patient education materials on lifestyle changes in diet and exercise, as well as community resources for food security, mental health, childcare, transportation resources, etc. Prior to introducing the programming to patients, however, baseline data will be collected including blood pressure post-delivery and sociodemographic characteristics.

This demonstration project was funded by CDC in collaboration with American College of Preventive Medicine (ACPM) and Emory University School of Medicine at Grady Memorial Hospital. The set timeline for this project is January 2022 to December of 2023, however, with expected long-term follow up with participants throughout 2024.

Disclaimer provided by the ACPM:

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Chapter III: Methods

Study Design:

In September 2022, the Enhanced Community Health Worker Postpartum Project, a CDC-sponsored demonstration project, was initiated at Grady Memorial Hospital (GMH). This is an ongoing prospective demonstration pilot seeking to assess how participants' sociodemographic and lifestyle factors are associated with blood pressure levels of postpartum women with Hypertensive Disorders of Pregnancy (HDP). Although this study is ongoing, this thesis seeks to cover data captured for the first 30 participants enrolled in the program.

Study Setting:

This project takes place at Grady Memorial Hospital, a safety net hospital for residents of Fulton and Dekalb counties, serving metro-Atlanta, GA. GMH serves in partnership with Emory and Morehouse Schools of Medicine. GMH is also known for providing care to underserved populations at Grady and via its 6 affiliated neighborhood health centers. Participants of this program may have varying primary care clinic locations wherein they received their prenatal care, however, their recent delivery must have taken place at the main Grady hospital.

Participants:

Women are considered eligible to participate in this program if they received a diagnosis of HDP during their most recent pregnancy and delivered their child at Grady. Patients are considered enrolled after delivery. The study team also checks the patient's medication history to see if they have been prescribed at least one form of hypertensive treatment medication to take post-delivery. However, this is not a requirement, and not being prescribed hypertensive treatment medication is not an exclusion criterion.

The team's Community Health Workers (CHWs) and Graduate Research Assistants are responsible for enrolling participants using EPIC. Potential participants were screened using Emory and Morehouse OBGYN schedules, for high-risk patients. Patients approaching their delivery dates were approached by a CHW who then utilized a Social Determinants Screening Wheel on EPIC to also assess the social needs of patients. Some patients were also referred to CHWs by Mobile Integrated Health (MIH) physicians and clinic nurses. Participants of this study are enrolled on a rolling basis until both CHWs enroll 60 participants, 30 each. However, this study will be assessing the demographics and sample characteristics of the first 30 participants, as the full second wave of 30 participants had not been enrolled at time of writing. The first 30 participants of this program were enrolled between September 22nd 2022 and January 25th 2023. To reach this target number for the first phase of the program, 74 women were screened by CHWs and graduate research assistants using EPIC registry and OBGYN clinic schedules from Mobile Integrated Health (MIH). Out of the 74 screened, 37 were approached by a CHW to gauge their interest in the program, 7 were not interested in partaking in the program.

Intervention:

This project consists of 6 main team members.

1. A Project Manager (PM) to help organize, plan, and manage the various project components. The PM also serves as a liaison between the Grady team, stakeholders, and sponsors.
2. Two CHWs to serve as a liaison between the health care system and the patient
3. A cardio-Obstetrics team (consistent of Obstetrics/Gynecology, Primary Care and Cardiology),
4. The Mobile Integrated Health (MIH) team to conduct a physical exam, identify potential risk factors and gaps in care, provide health education and medication reconciliation. A MIH team member is also to accompany CHWs on some home visits.
5. A population health team responsible for CHW supervision and coordination of data collection on SDoH
6. An evaluation team comprised of an Emory, Rollins School of Public Health (RSPH) faculty member and two research assistants for data collection and management.

Two CHWs were hired to provide support to participants. To ensure that we could expand our population and reach patients whose primary language is not English, a Spanish speaking CHW was recruited. Upon hire, CHWs received extensive onboarding and training in nutrition, motivational interviewing, and mental health first aid. To provide the necessary training, a CHW training was developed by the evaluation team from the Rollins School of Public Health at Emory University.

The training, found in *Appendix I,* consists of information on the following modules

I. Module 1: Shopping Healthy on a budget
    a. Meal Planning
    b. Creating a grocery list
    c. Price Comparisons
    d. Bonus Tips
II. Module 2: Healthy Alternatives
    a. Fast-Food Inspired cooking
    b. Packaged Foods Makeovers
    c. Beverage Preparation
III. Module 3: Lactation Highlights
    a. Lactation and Breastfeeding
    b. Importance of Hydration

This project consists of four main phases: (1) Pre-intervention, (2) phase 1, (3) Phase 2, and (4) Phase 3.

During the Pre-intervention period, the project team identifies and screens qualifying patients through reviewing screened patients on EPIC Emory and Morehouse OBGYN high-risk clinic schedules, which is listed on a spreadsheet on the Office Teams site. CHWs also check the MIH work queue for referrals. During this period, CHWs also connect with eligible patients in their 3rd or 4th trimester of pregnancy to inform them of the project and establish a relationship with them. Enrollment does not occur until after delivery.

Phase 1 is defined as the first 12 weeks of a participant's enrollment in the project. During this phase, CHWs conduct weekly telephone calls. They also conduct their first home visit, which takes place 3-7 days postpartum. During this first visit, the CHW is accompanied by an MIH where they deliver a patient education booklet, a pill box for hypertensive treatment medication, a validated BP monitor device (Omron 3 Series BP7100), and an American Heart Association (AHA) BP log. CHWs can utilize this home visit to document enrollment, provide the participant with education on how to properly utilize the BP monitor, and to ensure the BP cuff is working. CHWs also use this time to provide mothers with additional information such as breastfeeding education. They can also confirm whether they are taking medication for hypertension management and if they require a prescription refill. If a participants BP levels are still elevated in this phase, either the MIH team will follow up with them 10-14 days postpartum, or the patient will be referred to OBGYN for triage. During this phase, participants are also scheduled for an OBGYN postpartum checkup at week 6. During phase 1, there can be up to 6 total home visits during this period, varied by a participant's availability and request. Throughout the remaining 5 visits, CHWs reinforce proper Self-measurement BP tips, educate mothers on complications from high blood pressure such as pre-eclampsia, and chronic conditions such as heart disease. CHWs help to monitor the participants blood pressure and check their BP log to see if they have been logging their BP readings. Education is also provided on how to manage stress in a distributed patient education booklet (Appendix II). During the remaining home visits CHWs also help participants set goals. During the last home visit of phase 1, CHWs reassess goals with participants to review their strengths and weaknesses and to plan for improvement.

During phase 2, defined as week 13-24, CHWs conduct bi-weekly telephone calls and home visits where they continue to monitor participant's BP. During this phase, CHWs also provide more extensive education on diet and exercise and how it related to BP. Participants are also given a list of resources that meet their social and health needs. At phase 2, participants are scheduled for an appointment with a primary care provider at 3 months postpartum. CHWs also help refer participants to a Cardiologist for a cardiovascular risk assessment at

6 months. A midline survey, along with qualitative in depth interviews are conducted to monitor the program' processes and short term outcomes and to identify targets for quality improvement.

At phase 3, which is week 25-52, CHWs conduct monthly telephone calls to check in on participants. The endline survey is conducted towards the end of this period, along with other process evaluation to assess project impact.

Materials & Resources:

In efforts to promote positive lifestyle behavioral changes, there are various additional resources offered to participants throughout the project including a patient facing booklet, a cooking recipe book, and pill boxes to promote medication adherence, and other external resources.

1. Patient education Booklet: The patient education booklet, found in *Appendix II*, was created as a reference guide for participants as well as a supplemental resource as they receive one-on-one HTN management by their assigned CHW. The booklet along with all other patient facing materials were also translated in Spanish for Spanish-speaking participants.

   The booklet includes the following Modules:

   I. Important Information
   II. Managing Blood Pressure
      a. What is high BP, risk factors and potential signs/symptoms
      b. Common Causes of High Blood Pressure
      c. Common Symptoms of High Blood Pressure
      d. Blood Pressure Monitoring
      e. Measuring Blood Pressure at Home
      f. Understanding Blood Pressure Readings
      g. Healthy Choices for a healthy life
   III. Nutrition:
      h. Grady Food as Medicine (FAM)
      i. Other Nutritional Support Resources
      j. DASH Diet
      k. Learning the Label How to read nutrition labels)
      l. Seasoning your Food
   IV. Postpartum Resources
      m. Lactation Guide
      n. Postpartum Emotions and Moods (Education on Postpartum Baby blues and Postpartum depression)
      o. Postpartum pre-eclampsia
      p. Postpartum birth control
   V. Other Resources
      q. YMCA Membership:
      r. Walk with a Doc - Emory Walking Group
      s. Marta transportation
   VI. Glossary

Evaluation & Data Collection:

The evaluation of this program uses a nonrandomized, prospective, mixed methods approach with data collected using quantitative surveys, routine monitoring, and qualitative interviewing. This thesis seeks to highlight data derived from quantitative methods and routine monitoring. Demographic and obstetric data are extracted for each participant through EPIC medical charts with additional data collected via a baseline survey. *Table A* breaks down the various demographic data that collected throughout this project along with the method of data collection and the project staff responsible.

Obstetric history is also collected on each participant through EPIC medical charts. This history includes gravidity, parity, terms or preterm, as well as type of delivery.

Table A.

Demographics	Data Collection Method	Party Responsible
Sex at birth	EPIC extraction	Extracted by PM or RA
Age	EPIC extraction	Extracted by PM or RA
Race and ethnicity	EPIC extraction	Extracted by PM or RA
Zip Code	EPIC extraction and confirmed at enrollment	CHW
Highest level of schooling	Baseline Survey	CHWs and RA
Marital or partnership status	Baseline Survey	CHWs and RA
Employment status prior to delivery	Baseline Survey	CHWs and RA
Housing stability	Baseline Survey	CHWs and RA
Household size	Baseline Survey	CHWs and RA
Enrolled in Government Programs	Baseline Survey	CHWs and RA
Primary method of Transportation	Baseline Survey	CHWs and RA

An interviewer-administered baseline survey was utilized to gather sample characteristics including self-efficacy for HTN management, food security, self-reported stress, self-reported diet patterns, and self-reported physical activity, medication adherence, and breastfeeding method. The survey questionnaire, found in *Appendix III*, was not built from scratch, but instead incorporates applicable questions from various existing validated questionnaires and refined to fit our study's outcomes of interest. At enrollment, CHWs informed participants of the survey and let participants know that a research assistant would be in contact to schedule an

over the phone survey. *Appendix IV* outlines the protocol and text script research assistants follow to schedule the survey with participants. The surveys were administered by CHWs (One Spanish-speaking to engage Spanish-speaking participants) and two research assistants (one also Spanish speaking) on a rolling basis. Research assistants administered surveys via a scheduled phone call, with the help of CHWs who would administer surveys during home visits when the GRAs faced challenges contacting participants.

Although the baseline survey was intended to capture data from participants prior to their exposure to the program's services, for many, the baseline survey was not completed until several weeks after their date of enrollment. Data collection was delayed as the surveys were being translated and final edits were made. Furthermore, once GRAs began actively contacting participants to schedule phone calls, GRAs faced challenges getting replies from participants and sought out help from CHWs to contact participants with reminders. Due to this challenge, the program's team decided to incentivize the completion of the survey to participants, a step that resulted in a heightened rate of response. Participants were granted a $50 gift card after completion of the survey. This thesis seeks to report on baseline data of the project's first 30 enrolled participants, which took place between September 22nd, 2022, and January 25th, 2023 on a rolling basis. **Table 1** depicts a list of participants dates of enrollment, the time span between enrollment and the administered baseline survey, along with their duration of engagement in the program in weeks. On average, participants have been enrolled in the program for approximately 19 weeks. In addition, roughly 10 weeks on average passed before the baseline survey was conducted, after enrollment.

This study's primary outcome is improved blood pressure measured as the decrease in proportion of participants with stage 1, stage 2 or prehypertension from enrollment. To monitor blood pressure over time, blood pressure readings are collected by a provider or CHW during clinic visits or hospital admissions, and via SMBP by the participant at home or work. Blood pressure readings taken during clinic visits or admissions are noted onto EPIC. These readings are later entered into a OneDrive spreadsheet on a monthly basis by the project manager and/or a research assistant. On the other hand, participants are advised to take self-measured BP readings twice a day, once in the morning and in the evening. However, participants are expected to report their BP readings at least once a week. Participants are to log their BP readings on an AHA blood pressure log that they receive at enrollment. CHWs are tasked with the role of sending participants text reminders to measure and log their BP. At each home visit a CHW conduct, they are to take pictures of the AHA log to capture all of the participant's BP readings and upload them onto the project's Teams Drive. These uploads are later transferred to a spreadsheet by the project manager and/ or a research assistant.

The study's secondary outcomes of interest include engagement with health care provider (as evidenced by a decrease in the no-show rate of the 6-week postpartum check-up compared to GMH's standard no-show rates). This outcome will be reported by CHWs as they are responsible for accompanying the participant, unless declined. Attendance will also be verified by reviewing participants' EPIC charts.

Analysis:

Responses from each survey were extracted and entered into the project's Research Electronic Data Capture (REDCap). To consolidate data from REDCap, Excel was used to clean data and SAS, a programming language for statistical computing, was used for further cleaning, analysis, and data visualization. Excel and SAS were also utilized to create the map depicting the distribution of participants by Zipcode. Descriptive analysis, such as measures of frequency were used to analyze and derive conclusions. Bivariate analysis was utilized in SAS to examine the relationship between variables of interest. Out of the 30 enrolled participants, 25 out of 30 consented and completed their surveys. 9 out 30 surveys were completed by CHWs during a home visit, while the remaining 21 out of 30 were conducted via phone call by the project's Graduate Research Assistants. As the sample size from respondents of the baseline survey was small, (n=25), Fisher's Exact tests were run, as opposed to Chi-Square tests, to determine the independence between race and various categorical variables. To determine the independence between race and numerical variables, however, one-way Analysis of variance (ANOVA) tests were run, with race coded as the class variable.

Paired t-tests were utilized to compare averaged pre-and post-systolic blood pressure readings as well as averaged pre-and post-diastolic blood pressure readings. The paired t-test was also used to test if there was a

statistical difference between pre-and post-readings. Self-measured blood pressure readings were collected from participants on a rolling basis and the earliest logs date back from October 23, 2022, and the most recent readings took place on March 31st, 2023. "Pre" blood pressure readings considered for analysis were defined as "any blood pressure readings taken on the participant's date of enrollment, give or take 2 weeks.

Out of the first 30 participants enrolled in the study asked to keep log of their SMBP, 3 participants were lost to follow up in the program, meaning after over 2 months of attempted contact and engaged from the CHWs, there was no response. Out of the remaining 27, 22 participants submitted self-measured readings. A total of 762 blood pressure measurements were collected from the 22 participants reporting BP with an average of 34, readings per participant, including readings taken on the same day. Out of all blood pressure readings received from participants, 144 met this "pre" criteria. Post" blood pressure readings were defined as any blood pressure readings taken 6 weeks after enrollment, give or take 2 weeks. Out of all received blood pressure readings, 315 readings met this "post" criteria (**Table 12**).

To investigate relationships between blood pressure and baseline characteristics, linear Regressions were used to model the relationship between mean Blood Pressure and demographic variables, eating, shopping, and exercise habits, along with hypertensive management and confidence.

Chapter IV: Results

EPIC Medical Chart Review:

Demographic Characteristics

Table 2 depicts participants' demographic characteristics extracted from EPIC upon enrollment in the program. Nearly 53% of participants are Black or African American and 47% are Hispanic or Latino. At enrollment, 20% of participants were aged 18-24, 43.3% aged 25-34, and 36.7% were between ages 35-44. A majority of patients spoke English as their primary language (56.7%). 43.3% of participants were insured with Medicaid, however, 36.7% were uninsured. The remaining 20% of participants were insured under private companies including CareSource and Oscar Health Insurance. Primary language was significantly different by race ($p=<0.0001$), however, there were no significant differences in health insurance or age range by race.

Participant's Zip codes were collected using Epic and at enrollment. **Figure 1** depicts the distribution of our first 30 enrolled participants across Metropolitan Atlanta. The map shows that a cluster of the program's participants reside Southwest of Atlanta in Fulton County.

Obstetric Outcomes

Table 3 depicts participants' medical history and obstetrics at the point of enrollment, extracted from EPIC for all 30 participants. All participants were diagnosed with a class of HDP. A diagnosis of pre-eclampsia was most common amongst participants (43.3%), followed by gestational hypertension (26.7%), chronic hypertension (20%), and then chronic hypertension with superimposed pre-eclampsia (13.3%). One participant also had a diagnosis of eclampsia in their medical files. Participants also had a variety of comorbidities, however, the most common include diabetes mellitus, obesity, and anemia.

Information on patients' obstetrics were also extracted from EPIC. 17 out of 30 participants had their most recent delivery via Cesarian section (56.7%), however only 23.3% of the 30 gave birth preterm, prior to their 37th week of gestational age. It was also more common for patient's babies to be of normal birth weight at birth compared to low birth weight and high birth weight (60% vs. 30% vs. 10%). The mean gravidity of participants is a rounded 3 while the mean parity is a rounded 2. 14 out of 30 (46.7%) participants have never had a spontaneous abortion, while 11 participants experienced at least one spontaneous abortion. 17 out of 30 (56.7%) never had an spontaneous abortion. 8 out of 30 (26.7%) had at least one induced abortion. Participants

have an average number of deliveries via cesarian section, for their current and previous births, of 1.0 **(Table 3).**

Baseline Survey Results

Out of the 25 surveyed participants, 56% of respondents were Hispanic or Latino while 44% of respondents were Black or African American. **Tables 4 –11** depict data from the baseline survey. All tables depict frequency distributions for categorical variables or mean and standard deviation for continuous variables. To test for significant difference of each baseline variable across race, a Fishers Exact test was used for categorical data while ANOVA was utilized for continuous variables.

Demographics from Baseline Survey

To start, 52% of participants had a high school diploma or a GED certificate. A majority of Black participants (45.5%) were single but not partnered, while a majority of Hispanic participants were unmarried but partnered. Prior to their most recent delivery, a majority of participants were working full-time (44%) and 32% were unemployed. 88% of participants had housing while 12% were unhoused and staying with others. The approximate average household size was 5 people. Monthly total household income was variable; however, a majority of participants reported a combined monthly household income between $1,001 to $3,400 (36%). 12% reported a combined monthly income above $3,401. 24% of participants reported household income less than $1,001, while 16% did not know their monthly household income. Participants were also asked to select all of the federal programs that they or someone else in their household was enrolled in. 92% of participants were enrolled in WIC. 28% were enrolled in Food Stamps or SNAP. 12% of participants had someone in their household enrolled in free or reduced school meals, 20% attended or had someone in their household attend food banks or food pantries. 56% of participants were insured under Medicaid, 4% were enrolled in government housing. None of the 30 participants were enrolled in TANF nor Head Start. When asked if a lack of transportation has ever kept them from medical appointments or other non-medical meetings/commitments, a majority of participants answered no (80%), while 12% said it kept them from non-medical meetings alone and 8% said it has kept them from both non-medical and medical appointments. A majority of participants utilize their own car as a primary method of transportation (56%). 32% utilize MARTA or other public transit while 20% of participant's primary method of transportation are their friends, neighbors, or family **(Table 4)**.

Food Situation:

Various questions around food eaten in their household and its affordability were asked to gauge participant's food situation and security. When asked if in the past 30 days, the food they bought didn't last, 16 out of 25 participants responded never (64%) while 32% reported this being sometimes the case. 6 out of the 2 who responded sometimes were Hispanic, however, this finding was not statistically significant. When asked how often participant's couldn't afford to eat a balanced meal, a majority reported never (72%). A majority of participants also responded no, when they were asked if they ever the cut the size of meals within the past 30 days because there was not enough money for food (80%). 5 out of 25 participants, however, reported yes, one being Black or African American and the remaining 4 Hispanic or Latina. Out of the 30 days, the Black responded said this occurred 8 out of 30 days, while the average of days reported for the 4 Hispanic respondents was approximately 4 out of 8 days. 32% of participants reported yes to eating less food than they felt they should because there wasn't enough money for food and 84% of participants reported no to being hungry but not eating because there wasn't enough money for food (**Table 5)**.

Obstetric and Medical History

Table 5 depicts responses to questions on participant's obstetrics and general health collected from the baseline survey. When asked how they perceived their own general health, a majority of participants said their general health was "Very Good". 8 out of the 10 participants who selected this rating, however, were Hispanic participants. Out of all Black participants, a majority rated their general health to be "Good". (4 out of 11, 36.36%). When participants were asked specifically about their physical health over the past 30 days, 18 out of 25 stated that there were zero days where they felt as if their physical health was not good (72%). As for mental health, 17 out of 25 participants that there were zero days where they felt as if their mental health was not good (68%). 80% of participants stated that during the past 30 days, there were zero days when poor physical or mental health kept them from doing usual activities, such as self-care, work, or recreation. Participants were also asked to reflect on their overall health and to name a major health problem that limits their activities their most. 32% of participants responded saying that there was no health problem that limited their activities. 20% listed hypertension as their major health while 16% named an issue related to their labor/delivery (**Table 6**).

Breastfeeding

Table 7 depicts frequency distributions of breastfeeding variables across race and fisher's exact test result to test for any association. Current methods for breastfeeding was fairly evenly split, with 40% of participants using a combination of breastmilk and formula, and 44% feeding using formula only. A majority of Hispanic participants were currently using a combination of breastmilk and formula (7 out of 14, 50%), while the majority of Black participants were feeding their newborn using formula only (7 out of 11, 63.64%).When asked, how they were planning to feed their baby for their first 4-6 months of life, 44% of all participants stated using a combination, 28% using formula only, and another 28% using breastmilk only.

Hypertension Management

Table 8 depicts descriptive summaries for all variables applying to hypertension management from the baseline survey. 14 out of 25 of participants were prescribed blood pressure medication when they were diagnosed (56%). Out of those prescribed, 10 out of 14 reported currently taking the medication (71.43%). Out of the 10, when asked in the past 7 days, how many days did they take the medicine, the average was 4.64 days. The average number of days they had taken the medication at the same time in the past week was 4.35 days. Participants also reported having taken the recommended dose an average of 4.64 days during the past week.

The average ranking for participants confidence in doing whatever necessary to manage their blood pressure on a regular basis from 1 to 10 was 8.63. The average ranking for participants' confidence in judging when changes in their high blood pressure means they should visit a doctor was 8.88. Similarly, average ranking for participants' confidence doing the different tasks and activities needed to manage their high blood pressure so as to reduce their need to see a doctor was 8.96. As for confidence in reducing the emotional distress caused by their blood pressure so that it does not affect everyday life, the average ranking was 8.29. The average ranking for participants confidence in doing things other than just taking medication to reduce how much high blood pressure affects everyday life was 8.92.

Participants were also asked whether they currently had a primary care provider, other than an OB, 56% of participants reported not having a provider. Out of the program's Hispanic participants, a majority however, reported having a provider, (8 out of 14, 57.14%), while a majority of Black participants reported NOT having a provider, (8 out of 11, 72.73%). Participants were also asked whether they had received a Cardiology referral yet, to which a 22 out of 25 participants responded no to, 88%). All 3 participants who had received a referral were Black participants who also all had their Cardiology appointments scheduled.

Physical Activity

When asked how many days per week they typically engage in low intensity or light exercise, the average number of days for Black or African American participants was 1.63 days per week, while the average for Hispanic or Latina participants was 3.641 days per week. The overall average for all participants was 2.76 days per week. Participants were also asked how many minutes they exercised for when they engage in light or low intensity exercise. The average amount of time for Black participants was 50.36 minutes, while the average for Hispanic participants was 42.14 minutes. Overall, the combined average was 45.76 minutes. There was no reported engagement in moderate to intense exercise by Black or African American participants, while Hispanic or Latina participants reported an average of 0.71 days per week. Although no Black participants reported engagement in moderate to intense exercise in a typical week, two participants reported that when they have engaged in moderate exercise, they did so for an average of 10.82 minutes. There was no reported engagement in weight training by Black or African American participants, while Hispanic or Latina participants reported a mean of 0.57 days per week (**Table 9**).

Eating Habits:

This baseline survey also captured information about the eating habits among participants. The frequency of a variety of food consumption was categorized as more than once a day, once a day, more than once a week, once a week or less, and not at all. The majority of Hispanic or Latina participants reported eating fresh fruit more than once a day (64.29%), while the majority of Black or African American participants reported eating fresh fruit more than once a week (23.27%). Overall, 48% of all participants reported eating fresh fruit more than once a day. For green salad consumption, the most common frequency was more than once a week (40%). No participant ate dark greens more than once a day, however, 92% of participants ate dark greens at least once a week or less and no more than once a day. A higher percentage of Black or African American individuals reported eating French fries more than once a week (81.82%) compared to Hispanic or Latina individuals (28.57%). A total 60% of participants reported eating non fried white potatoes once a week or less or more than once a week, however, 24% reported not eating white potatoes at all. A higher percentage of Hispanic or Latina individuals reported eating refried beans more than once a week (57.14%) compared to Black or African American individuals (36.36%). A majority of all participants reported eating non-fried vegetables once a day (40%). Fast food was not consumed by any participant once a day or more. A majority of participants, however, ate fast foods either once a week or less, another 40% of participants reported not eating from fast food or sit down restaurants at all. Packaged foods were consumed once a week or less by 56% of participants, while 60% reported not consuming any canned foods. As for beverages, a majority of participants reported drink soda not at all (40%), however, in contrast reported drinking water more than once a day (88%). 84% of participants reported not drinking reduced sugar drinks at all (**Table 10**).

Shopping Habits:

Participants were also asked to report their shopping and food preparation habits. When asked how often they buy whole wheat products when shopping for grains (eg. Rice, pasta, bread), a majority of Black participants reported never doing so (36.36%), while a majority of Hispanic or Latina participants reported doing so often. The same held true about purchasing low-sodium products. A minority of Black participants reported always purchasing low fat and lean protein items (36.36%), meanwhile a majority of Hispanic and Latina participants reported doing so often (57.14%). When it came to considering nutrition facts while grocery shopping, 28% of participants often did so, while 24% rarely did and another 24% sometimes did. Adjustments made to meals were mostly done by Hispanic or Latina individuals, with 57.14% always doing so and 21.43% often doing so.

A large minority of Black and African American participants reported adjusting meals sometimes (45.45%) (**Table 11**).

Primary Outcome: Blood Pressure

Blood Pressure & Demographics

Table 20 depicts ANOVA results examining the relationship between averaged pre blood pressure and participant's reports and various demographic variables. Averaged pre-systolic and diastolic BP were not significantly different by participant's ability to afford food, nor based on how often participants reported not being able to afford food. There was an observed significant difference in pre-systolic BP dependent on whether participants reported using food stamps (SNAP) (p=0.0269), however, no difference in pre-diastolic BP. The relationship between being insured under Medicaid and pre-blood pressure was also assessed, however, results proved to be non-significant for both pre-systolic and diastolic BP. An ANOVA test was also run to examine the association between race and blood pressure ascertainment. The test revealed a significant difference in blood pressure ascertainment between Black and Hispanic participants (p=0.0050, **Figure 2**) Furthermore as Figure depicts, Hispanic Participants have a higher total and average submission of combined pre and post-BP readings, with African American participants having an average BP submission of 7.45 ± 8 while Hispanic participants had an average of 61.73 ± 56.6 BP submissions (**Table 15**).

Blood Pressure Measurements

The mean SBP measurement for participants at enrollment was approximately 135.7 ± 12.1 mm HG, while the mean post SBP measurement was approximately 125 ± 9.41 mmHg. Meanwhile, the mean DBP measurement for participants at enrollment was approximately 90 ± 9.4 mm Hg and the mean post DBP measurement was approximately 82.6 ± 8.1 mmHg (**Table 13**).

A paired t-test was run to test the null hypothesis that there is no difference between participants' pre and post-systolic blood pressure (SBP) readings. The t-test showed a mean difference of 13.13 ± 15.33 mmHg between pre-SBP readings and post-SBP readings. With a p-value of 0.0176, less than alpha (0.05), we reject the null hypothesis and conclude there is a significant difference between pre and post-SBP readings (**Table 16 & Figures 3-4**). Another paired t-test was run to the null hypothesis that there is no difference between participants' pre and post-diastolic blood pressure (DBP) readings. The t-test showed a means difference of 8.1 ± 6.9 mmHg between pre-DBP readings and post-DBP readings. With a p-value of 0.0029, less than alpha (0.05), we reject the null hypothesis. There is a significant difference between pre and post-DBP readings (**Table 17 & Figures 5-6**). Correspondently, there is also an observed improvement in participants stage of hypertension, as defined by the American Heart Association. At enrollment 50% of participants were at stage 2 of hypertension (140 or higher mmHg systolic OR 90 or higher mmHg diastolic), however, only 21% of participants were stage 2 of hypertension after 6-week follow up (**Table 14**). T-test results also showed a significant difference in percent change in pre and post systolic BP across race (p=0.0327). No significant difference was observed for diastolic BP by race (**Table 19**).

Blood Pressure & Lifestyle Behaviors

ANOVA tests were used to examine the relationship between averaged pre blood pressure and participants' reports of select eating and shopping habits (**Table 21**). There was no significant association between how often participant eat greens in a week, how often they ate fresh fruit, nor how often they drank soda. There was also no significant associations between BP and shopping habits, including using nutrition labels, adjusting meals to be healthier, and purchasing whole grain products.

The relationship between participants' reported frequency of days per week spent engaging in low-intensity exercise was examined using linear regression. Parameter estimates showed that each day engaged in low-intensity exercise was associated with lower blood pressure (- 0.87 ± 2.11 mm Hg SBP and -0.42 ± 1.66 mm Hg DBP). However, these parameter estimates were not statistically significant (**Table 22**).

Blood Pressure & Self Efficacy

A one-point increase in a participant's self-reported confidence in managing blood pressure, there was associated with an estimated 6.5 mmHg in increase in systolic blood pressure and an estimated 0.51mmHg increase in diastolic BP, however, this parameter estimate was not statistically significant (**Table 23**).

Participants perception and report of their mental health was also examined in relationship to average post systolic and diastolic blood pressure. Analysis shows that every 1 day that participants reported as "no good" mental health days is associated with an estimated 0.73 mmHg decrease in averaged systolic blood pressure at enrollment, and a 0.59 mmHg decrease in diastolic blood pressure. Neither parameter estimates were not statistically significant (**Table 24).**

Secondary Outcome: Postpartum Check-up No-Show Rate

Out of 29 6-week postpartum check-up appointments scheduled with OBGYN during the first phase of programming, there were 8 no shows (~28%). This no-show rate is lower than Grady's which currently stands at over 70%. This rate is also lower than national average, as according to the American College of Obstetricians and Gynecologists, as many as 40% of women do not attend a postpartum visit.[51]

Chapter V: Discussion

In this study, we gained valuable insight into the sample characteristics of participants from Epic medical review and the administered baseline survey. Participants of this study were either Black /African American or Hispanic /Latina. Demographic characteristics did not differ by race/ethnicity with the exception of public transit (MARTA) usage, being insured by Medicaid, and using SNAP, all of which were significantly higher in Black participants. The distribution of HDP diagnosis at enrollment in our study coincided with various existing literature which observed preeclampsia and gestational hypertension to be the most prevalent HDP diagnoses amongst their participants. [35] [40] Distribution of HDP did not appear to differ by race/ethnicity. Significant change was observed in this study's primary clinical outcome, change in blood pressure over time. Both average systolic and diastolic blood pressure significantly reduced between enrollment and 6 weeks post-enrollment, give or take 2 weeks. The percent change of systolic blood pressure was significantly different by race/ethnicity, while percent change of diastolic blood pressure was not.

This study's observed significant decrease in blood pressure (BP) after a 6-week follow-up is consistent with findings reported in the SNAP-HT intervention conducted in London, where researchers found that the intervention arm that received reminders to measure and record their blood pressure also had significantly lower systolic and diastolic blood pressures after 6-weeks follow-up. Investigators attributed this reduction to improved adherence to medication in participants as well as early onset of antihypertensive medication paired with self-monitoring of BP. Although SNAP-HT did not use CHWs, active communication between a health liaison and patients may serve as an effective way to promote Self-measured blood pressure (SMBP) and to encourage postpartum mothers with HDP to claim agency over their high blood pressure.[34] While SMBP alone is not enough to reduce BP, CHWs efforts likely contributed to the significant decline observed in our study. At baseline, nearly half of our participants reported not having been prescribed antihypertensive medication, however, CHWs worked to connect participants to primary care providers to address this gap. CHWs also connected participants to various social resources to address food insecurity including Food Stamps (SNAP),

WIC, and Grady's Food as Medicine program. In doing so, participants had increased access to more nutritious foods that align with the Dietary Approaches to Stop Hypertension (DASH) diet promoted in our program.

A second notable finding from our study was that Black participants had a significantly lower rate of BP submissions compared to Hispanic participants. This finding did not coincide with previous literature. For example, the Heart Safe Motherhood program for postpartum women found that there was no racial disparity in BP ascertainment amongst Black and non-black participants, thereby concluding the effectiveness of such programming in helping to curve disparities in BP monitoring and management.[40] It is unclear why Black participants reported BP measures less frequently but ongoing analysis of qualitative process data will hopefully shed light on the reasons underlying this finding. Regardless, heightened efforts should be made in problem solving to try to bridge this gap and address potential additional barriers that Black or African American participants in our program may be facing when it comes to recording and submit their BP readings.

Research has shown that lifestyle behaviors including diet and exercise are important protective factors of cardiovascular outcomes.[23 24] In our study, we did not observe significant associations between BP at enrollment and eating/shopping habits. There was also no significant association between the number of days spent doing light exercise and pre BP in our study. To examine change in eating and shopping habits over time, a follow-up quantitative analysis using midline and endline surveys should be conducted to examine potential changes. Quantitative analysis should also assess the efficacy of lifestyle education that will be promoted during the 2nd phase of programming.

Strengths:

Findings from the literature review suggest an underrepresentation of minorities in clinical trial and cohort interventions that address management of HDP. Out of the 9 studies that covered management of HDP in pregnancy and postpartum, only 2 were centered on examining the impacts of race and SDOH in their study.[40 41] A majority of participants enrolled in studies were of non-Hispanic White backgrounds, received higher than high school education, and came from two head middle-income households.[32-35 38 39 41] In comparison, this study captures patients with lower socioeconomic status including lower household income and education level. As such, this study population most closely resembles those at highest risk of maternal mortality from HDP. Language can pose a significant barrier in health care communication and health literacy and perpetuate disparities in access to care. A strength of our program is that we did not exclude non-English speaking participants; indeed, Spanish was the primary language for nearly 50% of participants in our program. Investing in multilingual staff and/or translators should be a priority for researchers examining the racial/ethnic disparities as it relates to SDOH as well as for clinics providing care to diverse populations.[52 53]

Another observed finding resulting from this study is an approximate 2.5 times decrease in the 6-week postpartum visit no-show rate, relative to the larger no-show rate for this postpartum visit in the general Grady population. The Grady no-show rate for the 6 weeks postpartum visit is 70%. In this study, only 28% failed to attend their 6-week postpartum visit. Although this finding was not originally identified as an outcome of interest while designing the study, we observed it to be a positive unintended consequence of the program. This may be due to the various initiatives CHWs in our program take in helping participants navigate their health care, including scheduling appointments, calling and texting appointment reminders, and offering transportation resources. Postpartum is a critical period for a mother's health. During this period mothers are recovering from childbirth as well as adapting to its accompanied physical, social, and psychological changes. Postpartum checkups are crucial for assessing recovery, detecting any complications, and providing appropriate treatments. More than half of pregnancy-related deaths occur after the birth of an infant globally.[51]

Findings from this study suggest the feasibility of a CHW-integrated model of care for increasing the attendance rate of postpartum visits and thereby decreasing pregnancy related morbidity and mortality.

Limitations:

There are also various limitations of this study and its analysis. With a small sample size of 25 respondents to the baseline survey, there was limited data to work with. The small sample size also restricted the various types of analysis possible to assess for association amongst sample characteristics and blood pressure. In addition, our small sample size may also have limited power to detect statistical significance. Therefore, there is a possibility that certain associations that had larger effect sizes that were also more consistently seen in previous literature as significant may not have reached significance in our study due to type 2 error. Another main limitation of this study was that baseline surveys were conducted with participants at varying timepoints. While some participant's responses are representative of their baseline survey, as they were administered at or within 1 or 2 weeks of enrollment, other participants had their baseline survey administered several weeks after having already received various components of the program's interventions, including but not limited to the blood pressure device, engagement with CHWs through phone calls, text messages and home visits, access to patient educational materials, transportation services, etc. It's to be noted, however, that all 25 patients had not yet received lifestyle education on diet and exercise since education was scheduled to occur during the program's 2nd phase. One way this limitation could have been addressed was by having baseline surveys conducted at the first visit by CHW or the mobile integrated health team This could have prevented challenges experienced with contacting patients to coordinate phone calls and therefore would have reduced the time gap between enrollment and baseline survey administration. Any follow-up studies conducted on this program's outcomes should keep this in mind when evaluating data from midline surveys as many baseline surveys would serve best be better represented as midline data.

Another limitation of this study is its reliance on self-reporting from participants. Self-report can lead to potential response biases such as social desirability where participants are inclined to provide answers that they think are more socially acceptable and/or to gain approval. This can pose an impact on the validity of data. A majority of the surveys were completed by GRAs, while a few were conducted by the participants CHWs which they more actively engage and communicate with, so this bias may have held more of an impact on surveys conducted by CHWs.

Social Desirability also has the potential to impact BP readings. As participants are tasked with the role to self-report their blood pressure, there is the potential for participants logging inaccurate BP readings to present to CHWs. This limitation has been slightly mitigated by CHWs checking the BP history on participants logs, however, the history does not present the dates of readings. Furthermore, submission of blood pressure readings varied greatly per participant. Due to this, numerous participants did not have percent change as some of their readings were appropriate for post blood pressure but not pre and vice versa. Observations with missing data were not used for certain analysis. This challenge could have been prevented by the utilization of Bluetooth blood pressure devices, however, there is not currently a system in place that GMH uses that would allow the BP readings to sync into EPIC.

Lastly since this program is a demonstration pilot it did not have a control group and so it is not clear if the changes seen in BP are secular trends or the result of study participation. However, the study population is similar to the broader Grady population on many demographic characteristics including ethnicity, education and insurance status [46] thus it may be possible to retrospectively identify a control population from the larger Grady postpartum population to compare BP trends over the postpartum period.

Public Health Implications:

This study's findings suggest that SMBP and enhanced CHW support is associated with reductions in systolic and diastolic blood pressure amongst postpartum women diagnosed with HDP. Addressing the short- and long-term impacts of HDP on postpartum women can help reduce Georgia's MMR, which currently stands as one of the highest in the US. By further exploring the usage of CHW interventions that bridge health care gaps, including addressing patients' social needs and promoting healthy lifestyle behaviors, researchers can further contribute to evidence based models for improving maternal health outcomes and reducing maternal mortality. There are also long-term public health implications of this study that can serve beyond Georgia. HDP can lead to heightened risk of cardiovascular disease and is a leading cause of maternal and fetal morbidity and mortality worldwide. However, although low- and middle-income countries have heavily adapted CHWs into their health care systems, CHWs are not as integrated into the US healthcare system.[54 55] By identifying effective interventions like SMBP and enhanced CHW support in the US, researchers can help to inform public health policies and programs aimed at reducing the global burden of HDP. Policies can also help to increase funding for CHWs so to support the expansion of CHW networks and to help sustain CHWs collaboration with health care providers. This form of collaboration can help minority populations better navigate the complex health care system so to achieve optimal health.

Recommendations:

Short Term:

1. Findings from this study support the prioritization of increasing engagement with African American participants in attempts to bridge significant gaps observed in BP ascertainment. To problem solve, outreach and qualitative data collection to Black or African American participants can be used to inquire about potential barriers in place that might make it difficult for them to record their BPs. Potential solutions could be re-educating participants on the importance of tracking their BP and making efforts to build participants' internal motivation to track BP. Incentives may also help to curb the gap, however, there are potential limitations to relying on incentives as they may not produce sustainable results nor upkeep of lifestyle habits after the end of programming.

2. There was a significant difference in varying eating and shopping habits by race. To examine differences in these behaviors over time, a follow-up quantitative analysis using midline and end-line surveys should be conducted to examine potential changes. Analysis should also assess the efficacy of lifestyle education that will be promoted during the 2nd phase of programming.

3. The baseline rate of participants who reported not being prescribed antihypertensive medication was nearly 50%. Furthermore, those who had been prescribed medication, on average reported taking their medication 4 days out of a typical week. Increased efforts should be made in connecting participants to primary care to ensure they get prescribed antihypertensive medication. CHWs should also incorporate education on the importance of medication adherence to participants and helping them set up reminders to take the prescribed dose of medication at the appropriate hour.

4. Although the program has succeeded in achieving a relatively low no-show rate compared to the Grady population, efforts can be made to further increase attendance. For instance, by involving participant's family / or loved ones in goal setting, participants can gain the advantage of having close social support play the role of an accountability partner to further empower them and motivate them to attend their appointments. Furthermore, reducing follow-up time for participant's who have missed appointments can help ensure they are rescheduled during an appropriate timeframe.

Long Term:

5. Further research should be conducted on HDP management that utilize a randomized-controlled design so to help explore causality between the integration of CHW and improved health outcomes.

7. System funding sources for CHWs should be established to sustain their role in health care. Value based payment systems that reward health care providers for providing care such as Medicaid reimbursement, may be a viable strategy to increase funding opportunities for CHWs.[57] However, more strategies need to be explored for finding ways to incentivize CHWs who serve uninsured patients.

6. There is also a need to advocate for CHWs integration into healthcare. This can be done through advocating for policy changes with the use of evidence-based research to raise awareness on the vital role that CHWs can play in helping to improve maternal health outcomes and to bridge disparities.

Conclusion:

Although the literature review uncovered the existence of various programs centered on blood pressure improvement amongst patients with HDP, there were none that included all of the same components of our program (a blood pressure device, CHW support, home visits, and lifestyle and behavior education). This study has provided preliminary data on the SDOH characteristics of postpartum program's participants at GMH and their associations with HDP burden. Findings from this study's results provide insight on the effectiveness of SMBP and CHW engagement as a tool to decrease blood pressures of postpartum women with HDP. It has also provided preliminary evidence in utilizing this design of programming and patient engagement to reduce no-show rates of the postpartum check-up visit which enable providers to catch potentially life-threatening complications. However, there are limits to the extent to which findings can be attributed to the interventions given it is not a randomized-control trial. Overall, this study has provided preliminary evidence for the efficacy of utilizing CHWs to bridge healthcare gaps. It also calls for heightened prioritization and investigation of postpartum HDP interventions that center the use of CHWs, SMBP, and lifestyle education, especially randomized controlled trials with minority populations.

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Appendix I: Data Visualization

TABLE 1PARTICIPANT ENROLLMENT LOG AND TIMEFRAME

Participant ID	**Enrollment Date**	**Weeks past from enrollment to baseline completion**	**Total Weeks in the Program** **(by the end of data collection period: 3-23-23)**
HDP-001	9/22/2022	19.14	26
HDP-002	9/22/2022	19.14	26
HDP-003	9/26/2022	16.57	25.4
HDP-004	9/28/2022	16.29	25.1
HDP-005	10/4/2022	15.43	24.3
HDP-006	10/14/2022	15.71	22.9
HDP-007	10/17/2022	13.57	22.4
HDP-008	10/19/2022	14.00	22.1
HDP-009	10/27/2022	12.14	21
HDP-010	10/28/2022	2.57	20.9
HDP-014	11/3/2022	13.00	20
HDP-015	11/3/2022	0.86	20

HDP-016	11/8/2022	11.14	19.3
HDP-017	11/17/2022	10.86	18
HDP-018	11/17/2022	9.57	18
HDP-019	11/17/2022	9.14	18
HDP-021	11/17/2022	8.86	18
HDP-022	11/22/2022	8.86	17.3
HDP-024	12/6/2022	6.14	15.3
HDP-025	12/12/2022	6.00	14.4
HDP-026	12/15/2022	4.86	14
HDP-027	12/16/2022	4.71	13.9
HDP-029	1/24/2023	5.71	8.3
HDP-030	1/25/2023	5.29	8.1
Total (mean ± SD)		10.4 ± 5.19	19.1 ± 5.00

TABLE 2 DEMOGRAPHIC SAMPLE CHARACTERISTICS

			Total N = 30	
Race/Ethnicity n (%) Black or African American Hispanic or Latino			16 (53.3%) 14 (46.7%)	
Variable	**Black or African American** n = 16	**Hispanic or Latina** n = 14	Total (N=30)	P value
Age Range n (%) Under 18 18-24 25-34	 0 (0%) 3 (18.75%) 8 (50%) 5 (31.25%)	 0 (0%) 3 (43.33%) 5 (35.71%) 6 (42.86%)	 0 (0%) 6 (20.0%) 13 (43.3%)	0.8910

35-44 45-54 55-64	0 (0%)	0 (0%)	11 (36.7%) 0 (0%) 0 (0%)	
Primary Language n (%) English Spanish Other Amharic	15 (93.75%) 0 (0%) 1 (6.25%)	2 (14.29%) 0 (0%) 12 (85.71%)	17 (56.7%) 12 (40.0%) 1 (3.3%)	<0.0001
Primary Insurance Coverage n (%) None Medicaid Other CareSource Oscar Health Insurance	3 (18.75%) 8 (50%) 5 (31.35%)	5 (35.71%) 8 (57.14%) 1 (7.14%)	11 (36.7%) 13 (43.3%) 6 (20.0%)	0.0682

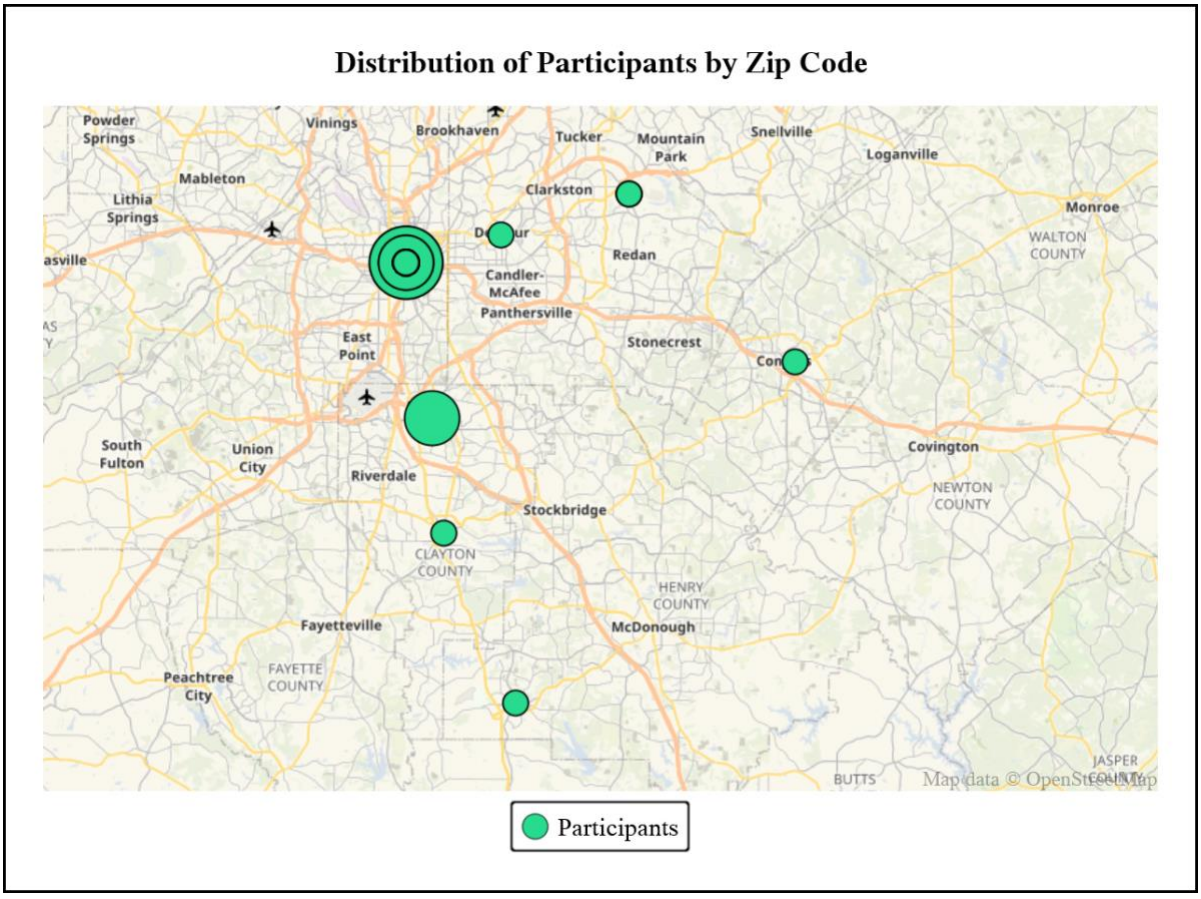


FIGURE 1 DISTRIBUTION OF PARTICIPANTS BY ATLANTA ZIP CODE

TABLE 3 MEDICAL HISTORY AND OBSTETRICS

Variable	Black or African American N = 16	Hispanic or Latina n = 14	N = 30	P =Value
Comorbidities (*n=41) N (%)				
Diabetes Mellitus	3	5	8 (19.5%)	0.0532
Obesity	3	3	6 (14.6%)	
Asthma	2	0	2 (4.9%)	
Anemia	2	3	5 (12.2%)	
None	6	0	6 (14.6%)	
Other	8	6	14 (34.1%)	

• Depression • Anxiety • GERD • PCOS • Right ovarian cyst • Uterine fibroid • History of seizure • Thyroid disease • Disorder of ligament at birth • Cystitis during pregnancy • Cholestasis of pregnancy * Select all that apply, percentage may not equal 100	0 1 2 1 1 1 1 1 1 0 0 0	2 1 0 0 0 0 0 0 1 1 1	2 (4.9%) 2 (4.9%) 2 (4.9%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%) 1 (2.4%)	
HDP Diagnosis for Recent Delivery (*n=32) N (%) Chronic Hypertension Pre-eclampsia Chronic Hypertension with superimposed preeclampsia Gestational Hypertension Other • Eclampsia * Select all that apply, percentage may not equal 100	 3 (18.75%) 8 (50%) 2 (12.50%) 3 (18.75%) 0 (0%)	 1 (7.14%) 5 (35.7%) 2 (14.29%) 5 (35.71%) 1 (7.14%)	 6 (20.0%) 13 (43.3%) 4 (13.3%) 8 (26.7%) 1 (6.7%)	 0.4578
Type of delivery n (%) Vaginal Cesarian Section	 7 (43.75%) 9 (56.25%)	 6 (42.86%) 8 (57.14%)	 13 (43.3%) 17 (56.7%)	 1.0

Preterm birth n (%)				
Yes	4 (25%)	3 (21.43%)	7 (23.3%)	0.3254
No	12 (75%)	11 (78.57%)	23 (76.7%)	
Baby's Birth Weight n (%)				
Normal Birth Weight	10 (62.5%)	8 (57.14%)	18 (60.0%)	
Low Birth Weight	5 (31.25%)	4 (28.57%)	9 (30.0%)	0.8736
High Birth Weight	1 (5.25%)	2 (14.29%)	3 (10.0%)	
Previous HDP diagnosis n (%)				
No	7 (43.75%)	9 (64.29%)	16 (53.3%)	
Yes	5 (31.25%)	2 (14.29%)	7 (23.3%)	0.5013
Does not apply (this is the patient's first pregnancy)	4 (25.00%)	3 (21.43%)	7 (23.3%)	
Gravidity, mean ± SD	3.75 ±2.05	2.5 ± 1.09	3.2 ± 1.8	0.050
Parity, mean± SD	2.31 ± 1.08	2.29 ± 0.91	2.3 ± 1	0.942
Spontaneous abortions n (%)				
0			14 (46.7%)	
1			9 (30%)	
2			1 (3.3%)	
3			1 (3.3%)	0.1496
4			0 (0%)	
Does not apply (this is the patient's first pregnancy)			5 (16.7%)	
Induced abortions n (%)				
0			17 (56.7%)	0.2080

1 2 3 Does not apply (this is the patient's first pregnancy)			6 (20%) 1 (3.3%) 1 (3.3%) 5 (16.7%)	
Cesarian Delivery (current + prior), mean ± SD 0 1 2 3 4	1.13 ± 1.31	0.93 ± 0.92	1.0 ± 1.3 12 (40%) 10 (33.3%) 4 13.3%) 3 (10%) 1 (3.3%)	0.6427

TABLE 4 BASELINE SURVEY DEMOGRAPHICS

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P Value
Education Level n (%)				**0.4702**
Four-year college or technical school degree	2 (18.8%)	1 (7.14%)	3 (12%)	
Some college/ technical school, but have not graduated	2 (18.8%)	3 (21.43%)	5 (20%)	
Two-year college or technical school degree	1 (9.09%)	0 (0%)	1 (4%)	
High school or GED certificate	6 (54.55%)	7 (50%)	13 (52%)	
Less than a high school degree	0 (0%)	3 (21.43%)	3 (12%)	
Marital Status n (%)				0.1860
Married	3 (27.27%)	3 (21.43%)	6 (24%)	
Unmarried but partnered	2 (18.18%)	8 (57.14%)	10 (40%)	
Single/not partnered	5 (45.45%)	3(21.43%)	8 (32%)	
Divorced	1 (9.09%)	0 (0%)	1 (4%)	
Widowed	0 (0%)	0 (0%)	0 (0%)	
Prefer not to say	0 (0%)	0 (0%)	0 (0%)	
Other	0 (0%)	0 (0%)	0 (0%)	
Prior Employment Status n (%)				0.1997
Working full-time	7 (28%)	4 (28.57%)	11 (44%)	
Working part-time	2 (18.18%)	6 (42.86%)	6 (24%)	
Student	0 (0%)	0 (0%)	0 (0%)	
Not employed	2 (18.18%)	6 (42.86%)	8 (32%)	
On disability	0 (0%)	0 (0%)	0 (0%)	
Housing Situation n (%)				0.2300

I do not have housing (I am staying with others, in a hotel, shelter, on the street, in a car, abandoned building, bus or train station, or park)	0 (0%)	3 (23.43%)	3 (12%)	
I have housing today, but I am worried about losing housing in the future	0 (0%)	0 (0%)	0 (0%)	
I have housing	11 (100%)	11 (78.57%)	22 (88%)	
Other (please specify)	0 (0%)	0 (0%)	0 (0%)	
Household Size (mean ± SD)	4 ± 1.18	5 ± 1.41	4.56 ± 1.39	0.9529
Monthly Household Income				0.4600
Less than $1, 001	3 (27.27%)	3 (21.43%)	6 (24%)	
$1,001 - $1,300	2 (18.18%)	2 (14.29%)	4 (16%)	
$1,301 - $1,700				
$1,701 - $2,000	1 (9.09%)	2 (14.29%)	3 (12%)	
$2,001 - $2,400				
$2,401 - $2,700	1 (9.09%)	0 (0%)	1 (4%)	
$2,701 - $3,000				
$3,001 - $3,400				
More than $3,401	1 (9.09%)	2 (14.29%)	3 (12%)	
Don’t know	3 (27.27%)	1 (7.14%)	4 (16%)	
Federal Programs *				
WIC	11 (100%)	14 (56%)	23 (92%)	0.4867
Food Stamps	6 (54.55%)	1 (14.29%)	7 (28%)	0.0213
Free reduced School meals	2 (18.18%)	1 (7.14%)	3 (12%)	0.5648

Head Start	0 (0%)	0 (0%)	0 (0%)	-
Food Bank	1 (9.09%)	14 (56%)	5 (20%)	0.3406
Medicaid	9 (81.82%)	5 (35.71%)	14 (56%)	0.0419
TANF	0 (0%)	0 (0%)	0 (0%)	-
Government Housing	1 (9.09%)	0 (0%)	1 (4%)	0.440
Lack of Transportation				0.1993
Yes, it has kept me from medical appointments or getting medication	0 (0%)	0 (0%)	0 (0%)	
Yes, it has kept me from non-medical meetings, appointments, work, or getting things that I need.	2 (18.18%)	1 (7.14%)	3 (12%)	
Both	2 (18.18%)	0 (0%)	2 (8%)	
No	7 (63.64%)	13 (92.86%)	20 (80%)	
Primary Method of Transportation *				
Own car	7 (63.64%)	7 (50 %)	14 (56%)	0.6887
MARTA (or other public transit such as Gwinnet Transit)	1 (9.09%)	7 (50%)	8 (32%)	0.0421
Uber / Lyft / Taxi or Rideshare	0 (0%)	0 (0%)	0 (0%)	-
Friends/neighbors	1 (9.09%)	0 (0%)	1 (4%)	0.440
Other (specify)	2 (18.18%)	2 (14.29%)	4 (16%)	1

* Select All that applies, total percentage may be higher than 100%

TABLE 5 BASELINE SURVEY FOOD SITUATION

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value

Food not last n (%)				0.2077
Often	0	1 (7.14%)	1 (4%)	
Sometimes	2 (18.18%)	6 (42.86%)	8 (32%)	
Never	9 (81.82%)	7 (50%)	16 (64%)	
Food not affordable n (%)				0.0900
Often	0	0	0	
Sometimes	1 (9.09%)	6 (42.86%)	7 (28%)	
Never	10 (90.91%)	8 (57.14%)	18 (72%)	
Meals Cut n (%)				0. 3406
No	10 (90.91%)	10 (71.43%)	20 (80%)	
Yes	1 (9.09%)	4 (28.57%)	5 (20%)	
Number of days cut meals in the past 30 days mean ± SD	8 (n=1)	4.33 ± 1.15 (n=3)	5.25 ± 2.06 (N=4)	0.1107
Ate less n (%)				0. 2337
No	9 (81.82%)	8 (57.14%)	17 (68%)	
Yes	2 (18.18%)	4 (2.86%)	8 (32%)	
Hungry but not eat n (%)				0.2878
No	8 (72.73%)	13 (92.86%)	21 (84%)	
Yes	3 (12%)	1 (7.14%)	4 (16%)	

TABLE 6 OBSTETRIC AND MEDICAL HISTORY

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value
Self-Efficacy of General Health				0.2305

Excellent	3 (27.27%)	2 (14.29%)	5 (20%)	
Very Good	2 (18.18%)	8 (57.14%)	10 (40%)	
Good	4 (36.36%)	2 (14.29%)	6 (24%)	
Fair	1 (9.09%)	2 (14.29%)	3 (12%)	
Poor	1 (9.09%)	0 (0%)	1 (4%)	
For how many days during the past 30 days was your physical health not good? (median)	0	0	0	*0.1707
0 days	9 (81.82%)	9 (64.29%)	18 (72%)	
2 days	0 (0%)	2 (14.29%)	2 (8%)	
5 days	0 (0%)	2 (14.29%)	2 (8%)	
20 days	0 (0%)	1 (7.14%)	1 (4%)	
No good days	2 (18.18%)	0 (0%)	2 (8%)	
For how many days during the past 30 days was your mental health not good?	0	0	0	*0.1948
0 days	7 (63.64%)	10 (71.43%)	17 (68%)	
5 das	0 (0%)	2 (14.29%)	2 (8%)	
14 days	1 (9.09%)	0 (0%)	1 (4%)	
15 days	0 (0%)	0 (0%)	1 (4%)	
No good days	3 (27.27%)	1 (7.14%)	4 (16%)	
During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?	0	0	0	*0.0561
0 days	8 (72.73%)	12 (85.71)	20 (80%)	

5 days	0 (0%)	1 (7.14%)	1 (4%)	
20 days	0 (0%)	1 (7.14%)	1 (4%)	
No good days	3 (27.27%)	0 (0%)	3 (12%)	
Major Health Problem				0.8109
None	5 (45.45%)	3 (21.43%)	8 (32%)	
Hypertension	2 (18.18%)	3 (21.43%)	5 (20%)	
Diabetes	0 (0%)	2 (14.29%)	2 (8%)	
Depression/anxiety/emotional problem	0 (0%)	1 (7.14%)	1 (4%)	
Pain or other issues related to labor Delivery	2 (18.18%)	2 (7.14%)	4 (16%)	
Don't Know/ Not Sure	1 (9.09%)	2 (14.29%)	3 (12%)	
Other (Specify)	1 (9.09%)	1 (14.29%)	2 (8%)	
Mental derangement				
Throat pain				

* ANOVA utilized to test for association with continuous variables

Breastfeeding

TABLE 7 CURRENT & FUTURE BREASTFEEDING

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value
Current feeding n (%)				0.2332
Breastmilk only	1 (9.09%)	3 (21.43%)	4 (16%)	
Combination of breastmilk and formula	3 (27.27%)	7 (50%)	10 (40%)	
Formula Only	7 (63.64%)	4 (28.57%)	11 (44%)	
Future Feeding n (%)				0.3416
Breastmilk only	2 (18.18%)	5 (35.71%)	7 (28%)	

Combination of breastmilk and formula	4 (36.36%)	7 (50%)	11 (44%)	
Formula Only	5 (45.45%)	2 (14.29%)	7 (28%)	

TABLE 8 HYPERTENSION MANAGEMENT

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value
Prescribed blood pressure medication n (%)				**0.6887**
Yes	7 (63.64%)	7 (50%)	14 (56%)	
No	4 (36.36%)	7 (50%)	11 (44%)	
Currently taking medication (n =14)	**n= 7**	**n= 7**	**N= 14**	**1.0**
Yes	5 (71.43%)	5 (71.43%)	10 (71.43%)	
No	1 (14.29%)	1 (14.29)	2 (14.29%)	
DK	1 (14.29%)	1 (14.29%)	2 (14.29%)	
	n= 5	**n= 5**	**n= 11**	
Days medication taken out of a week (mean ± SD)	4 ± 3.46	5.4 ± 2.61	4.64 ± 3.04	0.4766
Days medication taken at same time out of a week	3.5 ± 3.83	5.4 ± 2.61	4.36 ± 3.32	0.3727
Days taken recommended dose out of a week	4 ± 3.46	5.4 ± 2.61	4.64 ± 3.04	0.4766
Confidence Managing Hypertension (From 1- 10)	**n =11**	**n =13**	**N=24**	
Do all the things necessary to manage your high blood pressure on a regular basis	8.82±1.54	8.46±2.47	8.63 ±2.06	0.6822

Judge when changes in your high blood pressure mean you should visit a doctor (mean ± SD)	9.36±1.12	8.46±1.26	8.88 ±1.26	0.0805
Do the different tasks and activities needed to manage your high blood pressure so as to reduce your need to see a doctor (mean ± SD)	9.55±1.04	8.46±1.98	8.96±1.26	0.1173
Can reduce the emotional distress caused by your high blood pressure so that it does not affect everyday life (mean ± SD)	8.27±2.7	8.31±2.5	8.29±2.54	0.9741
Do things other than just taking medication to reduce how much your high blood pressure affects your everyday life (mean ± SD)	9.09±1.58	8.77±2.52	8.92±2.10	0.7178
Do you currently have a primary care provider, other than your OB?				0.2272
No	8(72.73%)	6 (42.86%)	14 (56%)	
Yes	3 (27.27%)	8 (57.14%)	11 (44%)	
PCP Visit				
Received a Cardiology Referral	**n= 11**	**n = 14**	**N = 25**	0.0717
No	8 (72.73%)	14 (63.64%)	22 (88%)	
Yes	3 (27.27%)	0 (0%)	3 (12%)	
Appointment made	n =3	n =0		NA
No	NA	NA		
Yes	Yes (100%)	NA		

TABLE 9 PHYSICAL ACTIVITY

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value
In a typical week, on how many days do you engage in low intensity / light exercise (mean ± SD)	1.63 ± 1.74 days	3.641 ± 1.91 days	2.76 ± 2.07 days	0.0125
When you engage in light or low intensity exercise, for about how long do you exercise? (mean ± SD)	50.36 ± 70.72 min	42.14 ± 22.08 min	45.76 ± 48.64 min	0.6840
In a typical week, on how many days do you engage in moderate to intense exercise? (mean ± SD)	0 ± 0 days	0.71 ± 1.49 days	0.4 ± 1.15 days	0.1271
When you engage in moderate to intense exercise, for about how long do you exercise? (mean ± SD)	10.82 ± 29.86 min	7.5 ± 15.03 min	8.96 ± 22.2 min	0.7201
In a typical week, how often do you do weight training or exercise with weights? (mean ± SD)	0 ± 0 days	0.57 ± 1.5 days	0.32 ± 1.14 days	0.225

TABLE 10 PARTICIPANT'S EATING HABITS

	Black or African American n = 11	Hispanic or Latina n = 14	Total N = 25	P value
Fresh Fruit n (%)				0.1906
More than once a day	3 (27.27%)	9 (64.29%)	12 (48%)	

Once a day	2 (18.18%)	3 (21.43%)	5 (20%)	
More than once a week	3 (23.27%)	1 (7.14%)	4 (16%)	
Once a week or less	2 (18.18%)	0 (0%)	2 (8%)	
Not at all	1 (9.09%)	1 (7.14%)	2 (8%)	
Green Salad n (%)				0.0747
More than once a day	0 (0%)	1 (7.14%)	1 (4%)	
Once a day	1 (9.09%)	7 (50%)	8 (32%)	
More than once a week	6 (54.55%)	4 (28.57%)	10 (40%)	
Once a week or less	2(18.18%)	0 (0%)	2 (8%)	
Not at all	2(18.18%)	2 (14.29%)	4 (16%)	
Dark Greens n (%)				0.0827
More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	1 (9.09%)	7 (50%)	8 (32%)	
More than once a week	4 (36.36%)	4 (28.57%)	8 (32%)	
Once a week or less	4 (36.36%)	3 (21.43%)	7 (28%)	
Not at all	2 (18.18%)	0 (0%)	2 (8%)	
French Fries n (%)				0.0253
More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	0 (0%)	4 (28.57%)	4 (16%)	
More than once a week	9 (81.82%)	4 (28.57%)	13 (52%)	
Once a week or less	1 (9.09%)	5 (35.71%)	6 (24%)	
Not at all	1 (9.09%)	1 (7.14%)	2 (8%)	
White potatoes				0.5742
More than once a day	0 (0%)	1 (7.14%)	1 (4%)	
Once a day	1 (9.09%)	2 (14.29%)	3 (12%)	
More than once a week	3 (27.27%)	5 (35.71%)	8 (32%)	
Once a week or less	5 (45.45)	2 (14.29%)	7 (28%)	

Not at all	2 (18.18)	4 (28.57%)	6 (24%)	
Refried Beans				0.0019
More than once a day	0 (0%)	2 (14.29%)	2 (8%)	
Once a day	0 (0%)	4 (28.57%)	4 (16%)	
More than once a week	4 (36.36%)	8 (57.14%)	12 (48%)	
Once a week or less	4 (36.36%)	0 (0%)	4 (16%)	
Not at all	3 (27.27%)	0 (0%)	3 (12%)	
Non-Fried Vegetables n(%)				0.4710
More than once a day	1 (9.09%)	3 (21.43%)	4 (16%)	
Once a day	4 (36.36%)	6 (42.86%)	10 (40%)	
More than once a week	3 (27.27%)	2 (14.29%)	5 (20%)	
Once a week or less	2 (18.18%)	0 (0%)	2 (8%)	
Not at all	1 (9.09%)	3 (21.43%)	4 (16%)	
Fast Food n (%)				0.5924
More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	0 (0%)	0 (0%)	0 (0%)	
More than once a week	3 (27.27%)	2 (14.29%)	5 (20%)	
Once a week or less	5 (45.45%)	5 (35.71%)	10 (40%)	
Not at all	3 (27.27%)	7 (50%)	10 (40%)	
Packaged Food n (%)				0.3483
More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	1 (9.09%)	0 (0%)	1 (4%)	
More than once a week	1 (9.09%)	3 (21.43%)	4 (16%)	
Once a week or less	5 (45.45%)	9 (64.29%)	14 (56%)	
Not at all	4 (36.36%)	2 (14.29%)	6 (24%)	
Canned Foods n (%)				0.8181

More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	0 (0%)	0 (0%)	0 (0%)	
More than once a week	1 (9.09%)	0 (0%)	1 (4%)	
Once a week or less	4 (36.36%)	5 (35.71%)	9 (36%)	
Not at all	6 (54.55%)	9 (64.29%)	15 (60%)	
Soda n (%)				0.0722
More than once a day	1 (9.09%)	0 (0%)	1 (4%)	
Once a day	3 (27.27%)	0 (0%)	3 12%)	
More than once a week	1 (9.09%)	5 (35.71%)	6 (24%)	
Once a week or less	3 (27.27%)	2 (14.29%)	5 (20%)	
Not at all	3 (27.27%)	7 (50%)	10 (40%)	
Water n (%)				0.4065
More than once a day	9 (81.82%)	13 (92.86%)	22 (88%)	
Once a day	1 (9.09%)	0 (0%)	1 (4%)	
More than once a week	1 (9.09%)	0 (0%)	1 (4%)	
Once a week or less	0 (0%)	1 (7.14%)	1 (4%)	
Not at all	0 (0%)	0 (0%)	0 (0%)	
Reduced Sugar Drinks				0.8417
More than once a day	0 (0%)	0 (0%)	0 (0%)	
Once a day	1 (9.09%)	1 (7.14%)	2 (8%)	
More than once a week	0 (0%)	1 (7.14%)	1 (4%)	
Once a week or less	1 (9.09%)	0 (0%)	1 (4%)	
Not at all	9 (81.82%)	12 (85.71%)	21 (84%)	

Shopping Habits

TABLE 11 PARTICIPANT'S SHOPPING HABITS

	Black or African American	Hispanic or Latina	Total N = 25	P-value

Shopping Habits	n = 11	n = 14		
Purchase Whole Wheat Grain Products n (%)				0.0109
Always	1 (9.09%)	1 (7.14%)	2 (8%)	
Often	2 (18.18%)	5 (35.71%)	7 (28%)	
Sometimes	2 (18.18%)	3 (21.43%)	5 (20%)	
Rarely	1 (9.09%)	3 (21.43%)	4 (16%)	
Never	4 (36.36%)	2 (14.29%)	6 (24%)	
Does not apply	1 (9.09%)	1 (7.14%)	2 (8%)	
Purchase Low Sodium n (%)				0.6587
Always	1 (9.09%)	1 (7.14%)	2 (8%)	
Often	2 (18.18%)	5 (35.71%)	7 (28%)	
Sometimes	2 (18.18%)	3 (21.43%)	5 (20%)	
Rarely	1 (9.09%)	3 (21.43%)	4 (16%)	
Never	4 (36.36%)	2 (14.29%)	6 (24%)	
Does not apply	0%	0 (0%)	0 (0%)	
Meat protein Foods n (%)				0.2124
Always	4 (36.36%)	1 (7.14%)	5 (20%)	
Often	3 (27.27%)	8 (57.14%)	11 (44%)	
Sometimes	2 (18.18%)	4 (28.57%)	6 (24%)	
Rarely	1 (9.09%)	1 (7.14%)	2 (8%)	
Never	0 (0%)	0 (0%)	0 (0%)	
Does not apply	1 (9.09%)	0 (0%)	1 (4%)	
Nutrition Facts n (%)				0.0378
Always	1 (9.09%)	0 (0%)	1 (4%)	
Often	4 (36.36%)	3 (21.43%)	7 (28%)	
Sometimes	0 (0%)	6 (42.86%)	6 (24%)	
Rarely	2 (18.18%)	4 (28.57%)	6 (24%)	

Never	4 (36.36%)	1 (7.14%)	5 (20%)	
Does not apply	0%	0%	0%	
Adjust Meals n (%)				0.1054
Always	2 (18.18%)	8 (57.14%)	10 (40%)	
Often	3 (27.27%)	3 (21.43%)	6 (24%)	
Sometimes	5 (45.45%)	2 (14.29%)	7 (28%)	
Rarely	0 (0%)	1 (7.14%)	1 (4%)	
Never	1 (9.09%)	0 (0%)	1 (4%)	

TABLE 12 PRE & POST BP READING TRACK LIST

Participant ID	Total SMBP readings submitted	Number of Pre BP readings Submitted	Post BP readings Submitted
HDP-001	15	0	15
HDP-002	105	14	31
HDP-003	53	9	4
HDP-004	150	6	8
HDP-005	151	8	85
HDP-006	22	0	22
HDP-007	112	25	71
HDP-008	1	0	1
HDP-009	22	8	4
HDP-010	2	0	2
HDP-014	27	26	0
HDP-015	3	0	3
HDP-016	5	0	5
HDP-017	18	2	15
HDP-018	20	7	6

HDP-020	21	17	0
HDP-023	2	2	0
HDP-024	3	1	2
HDP-025	6	2	1
HDP-026	17	3	9
HDP-027	1	*0	*0
HDP-029	5	14	31
Total: Sum, (mean ± SD)	761 (34.60 ± 48.23)	144 (6.55 ± 8)	315 (15 ± 22.52)
*Not included in pre and post calculations since both values were missing			

TABLE 2 PRE & POST BP AVERAGES & PERCENT CHANGE

Participant ID	Pre SBP mmHG Mean ± SD	Post SBP mmHG Mean ± SD	SBP % Change	Pre DBP mmHG mean ± SD	Post DBP mmHg mean ±SD	DBP % Change
HDP-001	*	135.87	N/A	*	96	N/A
HDP-002	140.71	112.81	-20%	82.79	72.35	-13%
HDP-003	140.67	117.75	-16%	81.5	78.5	-4%
HDP-004	138.5	114.125	-18%	96	81.125	-15%
HDP-005	133.25	121.4	-9%	95.75	88.02	-8%
HDP-006	*	114.86	N/A	*	73.86	N/A

HDP-007	107.4	125.13	17%	74.12	74.15	0%
HDP-008	*	110	N/A	*	77	N/A
HDP-009	136.13	119.5	-12%	95.63	85.75	-10%
HDP-010	*	139	N/A	*	96	N/A
HDP-014	128	*	N/A	83.15	*	N/A
HDP-015	*	131	N/A	*	90.33	N/A
HDP-016	*	128	N/A	*	79.8	N/A
HDP-017	158	133.73	-15%	111.5	88.07	-21%
HDP-018	141.43	129.63	-8%	81.67	77.63	-5%
HDP-020	125.94	*	NA	85.53	*	NA
HDP-023	130	*	NA	81.5	*	NA
HDP-024	150	128.5	-14%	90	88.5	-2%
HDP-025	143	128	-10%	94	83	-12%
HDP-026	127.3	141.44	11%	92	88.56	-4%
HDP-029	*	116.8	N/A	*	67.4	N/A
Total (mean ± SD)	135.74 ± 12.12	124.86 ± 9.41		88.94 ± 9.41	82.56 ± 8.14	

Key:

*: no entry in this cell because the participant did not have any BP readings that fit in the pre and post criterium.

Pre: any blood pressure readings taken on the participant's date of enrollment ± 2 weeks

Post: any blood pressure readings taken 6 weeks after the participant's date of enrollment ± 2 weeks

TABLE 14 PRE & POST BP AVERAGES & PERCENT CHANGE

Participant ID	Pre SBP mmHG Mean ± SD	Post DBP mmHG Mean ± SD	Stage of Hypertension	Pre SBP mmHg mean ± SD	Post DBP mmHg mean ±SD	Stage of Hypertension
HDP-001	*	*	NA	135.87	96	Stage 2
HDP-002	140.71	82.79	Stage 2	112.81	72.35	Normal
HDP-003	140.67	81.5	Stage 2	117.75	78.5	Normal
HDP-004	138.5	96	Stage 1	114.125	81.125	Stage 1
HDP-005	133.25	95.75	Stage 1	121.4	88.02	Stage 1
HDP-006	*	*		114.86	73.86	Normal
HDP-007	107.4	74.12	Normal	125.13	74.15	Elevated
HDP-008	*	*		110	77	Normal
HDP-009	136.13	95.63	Stage 2	119.5	85.75	Stage 1
HDP-010	*	*		139	96	Stage 2
HDP-014	128	83.15	Stage 1	*	*	
HDP-015	*	*	NA	131	90.33	Stage 2

HDP-016	*	*	NA	128	79.8	Elevated
HDP-017	158	111.5	Stage 2	133.73	88.07	Stage 1
HDP-018	141.43	81.67	Stage 2	129.63	77.63	Elevated
HDP-020	125.94	85.53	Stage 1	*	*	
HDP-023	130	81.5	Stage 1	*	*	
HDP-024	150	90	Stage 2	128.5	88.5	Stage 1
HDP-025	143	94	Stage 2	128	83	Stage 1
HDP-026	127.3	92	Stage 2	141.44	88.56	Stage 2
HDP-029	*	*	NA	116.8	67.4	Normal
Total (mean ± SD)	135.74 ± 12.12	88.94 ± 9.41	Stage 1	124.86 ± 9.41	82.56 ± 8.14	Stage 1

Key:

*: no entry in this cell because the participant did not have any BP readings that fit in the pre and post criterium.

Pre: any blood pressure readings taken on the participant's date of enrollment ± 2 weeks

Post: any blood pressure readings taken 6 weeks after the participant's date of enrollment ± 2 weeks

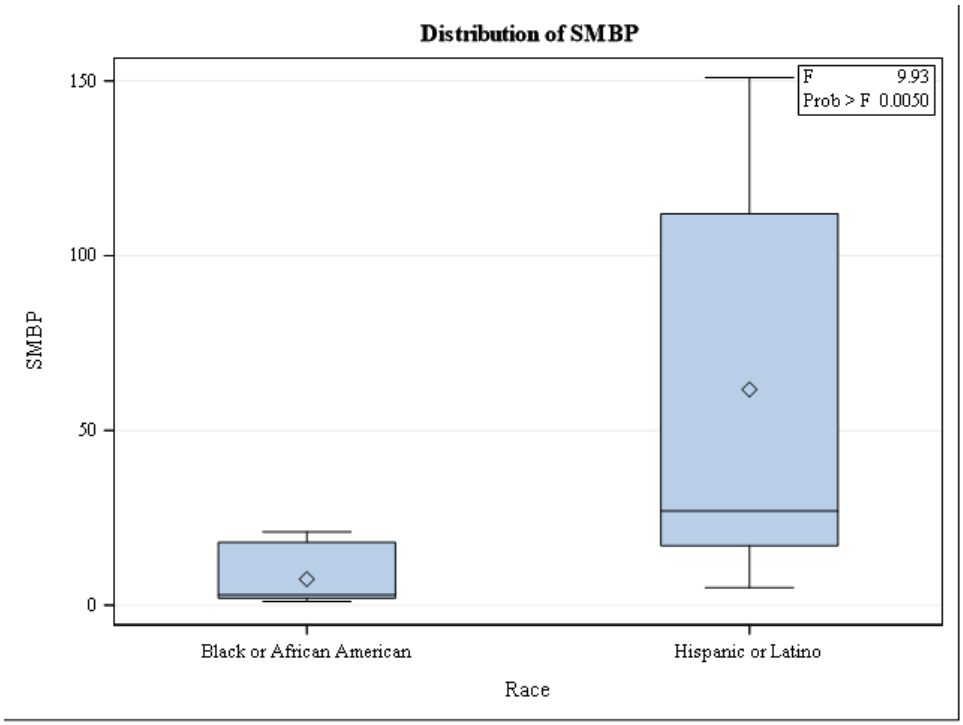


FIGURE 2 DISTRIBUTION OF BP SUBMISSIONS BY RACE

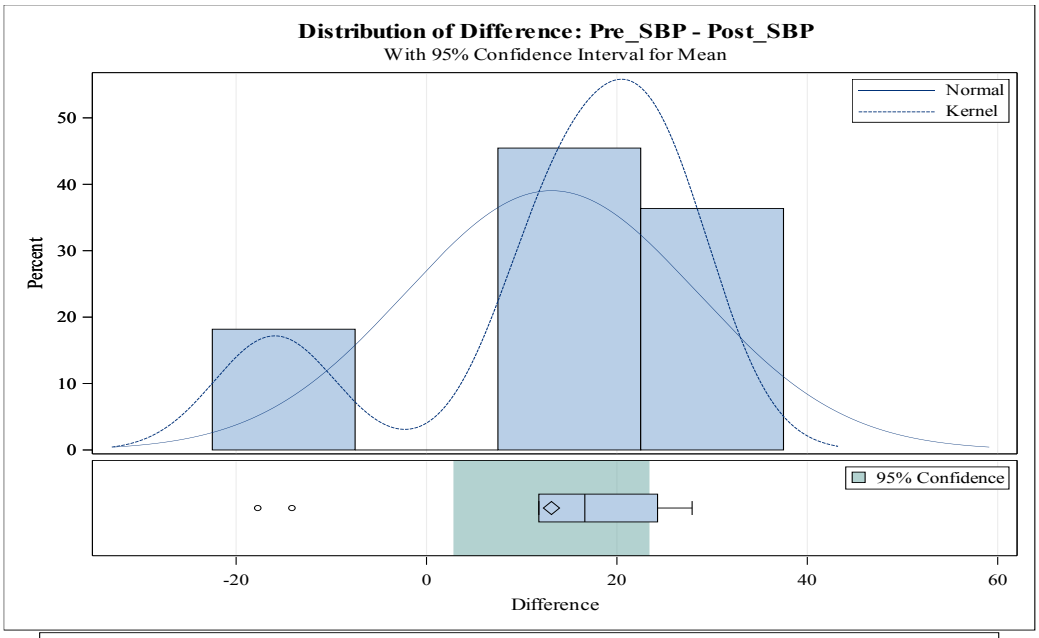
TABLE 15 MEAN BP ASCERTAINMENT BY RACE

Analysis Variable : SMBP Submission						
Race	**N Obs**	**N**	**Mean**	**Std Dev**	**Min**	**Max**
Black or African American	11	11	7.4545455	8.0170273	1.0	21.0
Hispanic or Latino	11	11	61.7272727	56.5704709	5.0	151.0

TABLE 16 THE TTEST PROCEDURE - DIFFERENCE: PRE_SBP - POST_SBP

Mean	95% CL Mean		Std Dev	95% CL Std Dev		t Value	Pr > |t|
13.1250	13.1250	23.4231	15.3289	10.7106	26.9012	2.84	0.0176

FIGURE 3 PRE & POST SBP



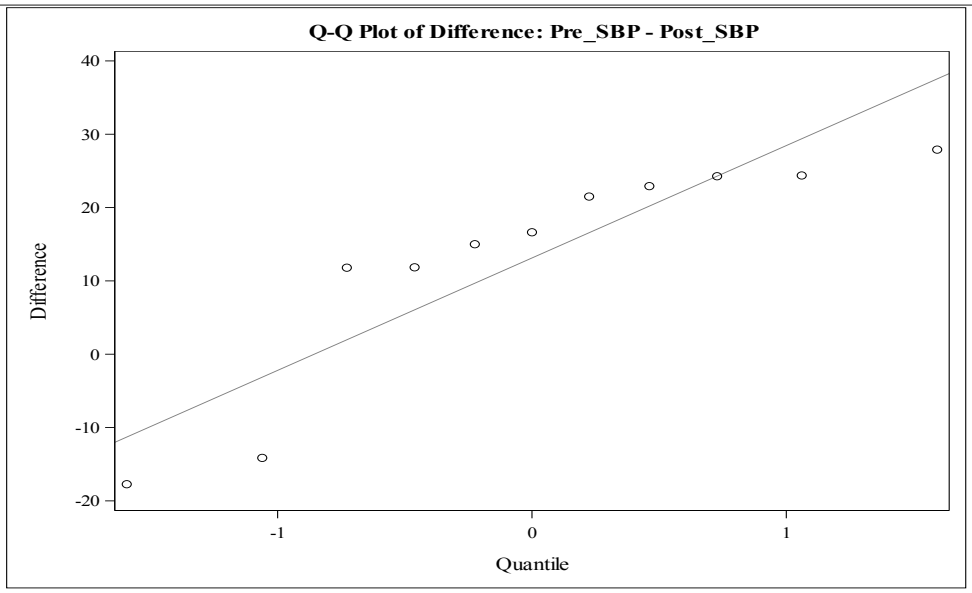


FIGURE 4 Q-Q PLOT OF DIFFERENCE PRE & POST SBP

TABLE 17 TTEST PROCEDURE - DIFFERENCE: PRE_DBP - POST_DBP

Mean	95% CL Mean		Std Dev	95% CL Std Dev		T value	Pr > |t|
8.1191	3.5040	12.7342	6.8697	4.7999	12.0558	3.92	0.0029

FIGURE 5 DISTRIBUTION OF DIFFERENCE PRE & POST DBP

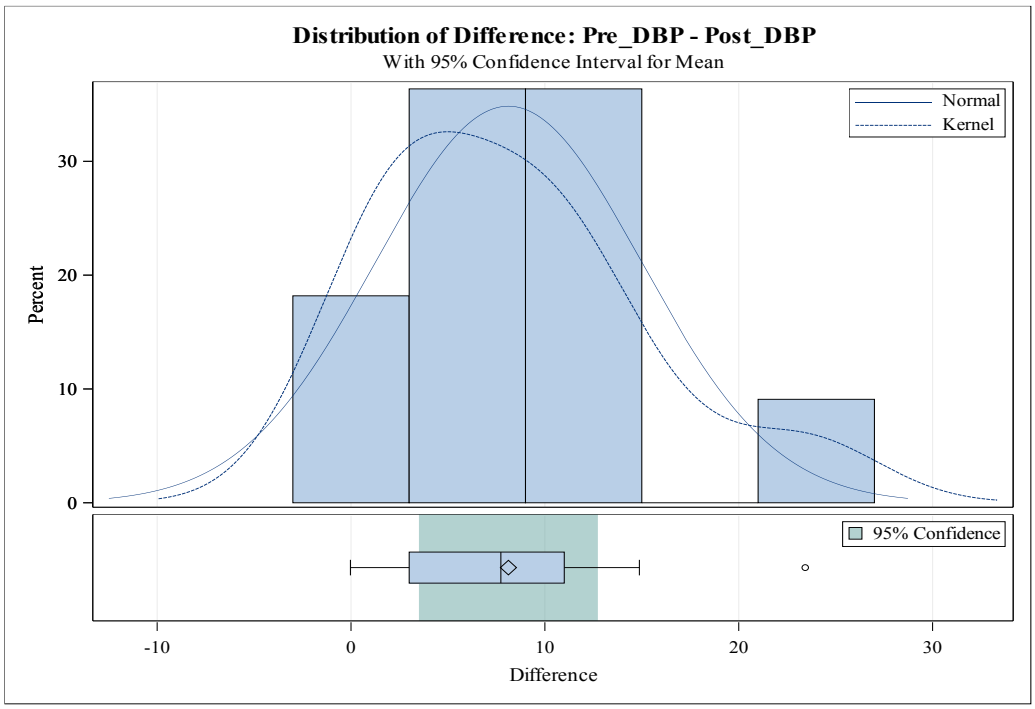


FIGURE 6 Q-Q PLOT OF DIFFERENCE PRE &POST DBP

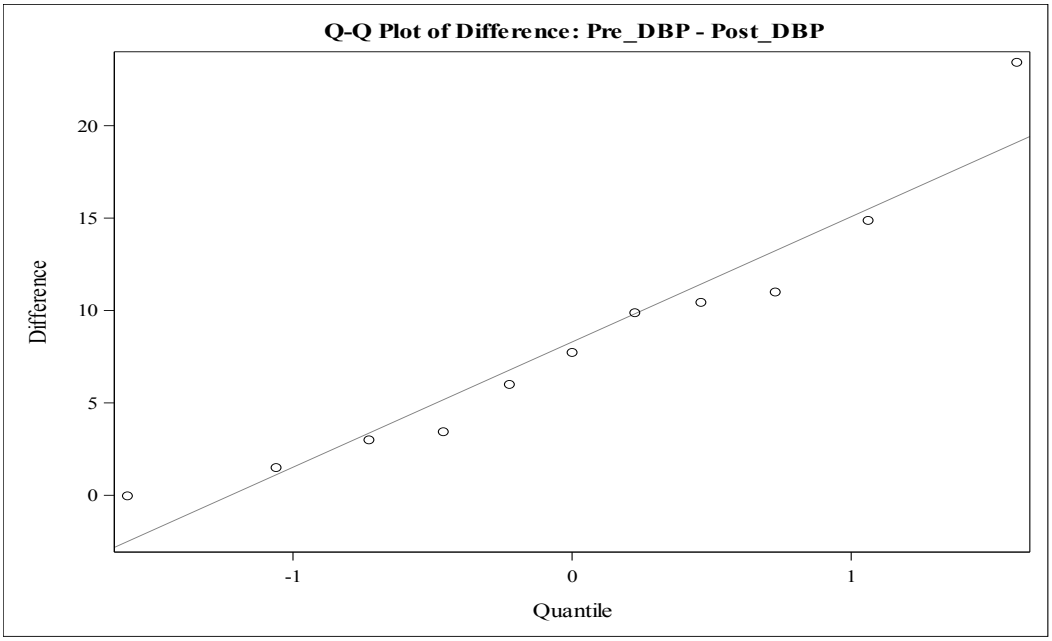


TABLE 18 TTEST PROCEDURE - DIFFERENCE: PERCENT CHANGE IN SBP BY RACE

Race	Method	Mean	95% CL Mean		Std Dev
Black or African American		-0.1175	-0.1701	-0.0649	0.0330
Hispanic or Latino		-0.0671	-0.2032	0.0690	0.1472
Diff (1-2)	Pooled	-0.0504	-0.2229	0.1221	0.1217
Diff (1-2)	Satterthwaite	-0.0504	-0.1876	0.0869	

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	6	3	19.84	0.0327

FIGURE 7 DISTRIBUTION OF PERCENT CHANGE IN SBP BY RACE

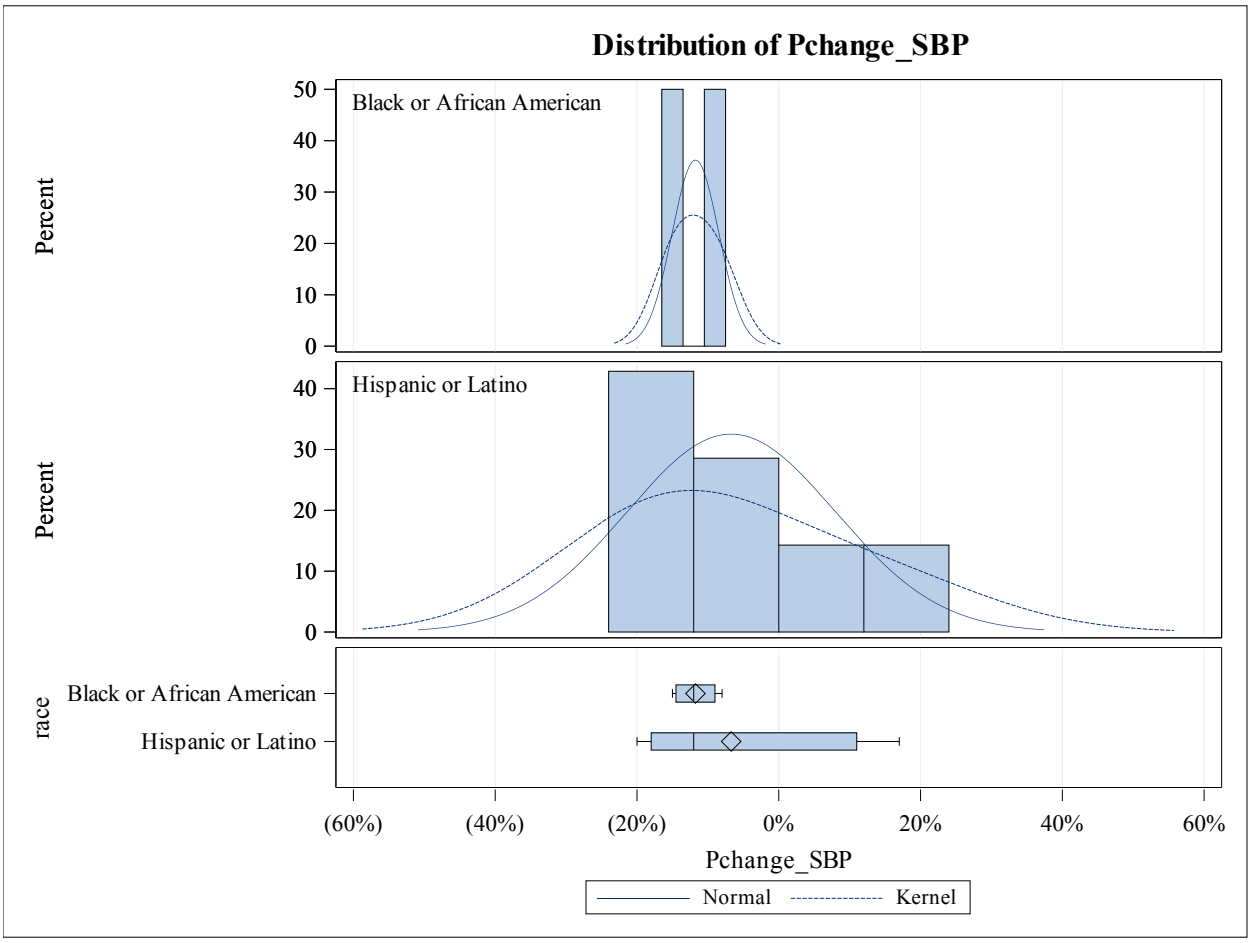


TABLE 19 TTEST PROCEDURE - DIFFERENCE: PERCENT CHANGE IN DBP BY RACE

race	Method	Mean	95% CL Mean		Std Dev
Black or African American		-0.1000	-0.2344	0.0344	0.0845
Hispanic or Latino		-0.0771	-0.1269	-0.0274	0.0538
Diff (1-2)	Pooled	-0.0229	-0.1159	0.0702	0.0656
Diff (1-2)	Satterthwaite	-0.0229	-0.1481	0.1024	

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	3	6	2.47	0.3192

FIGURE 8 DISTRIBUTION OF PERCENT CHANGE IN SBP BY RACE

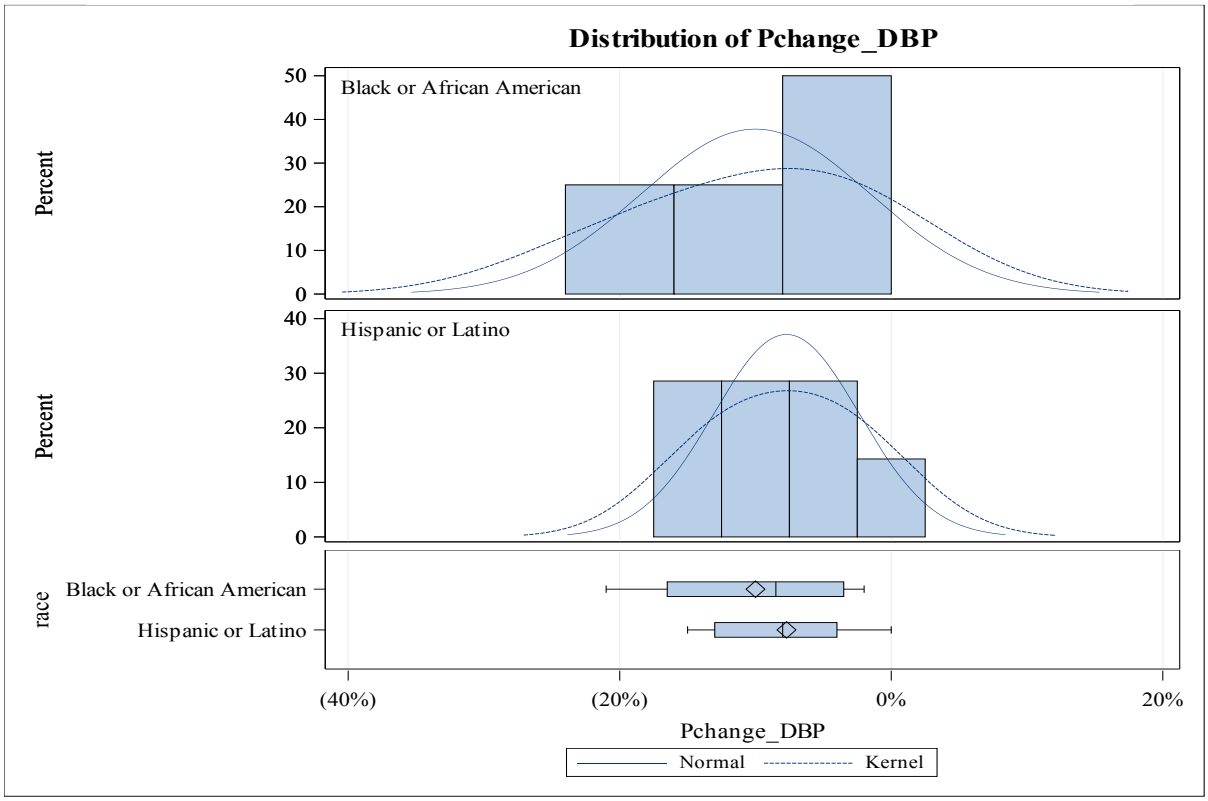


TABLE 20 ANOVA RESULT TABLE: SDOH VARIABLES & PRE BP

Independence Variables	Pre-Systolic Blood Pressure P-value	Pre-Diastolic Blood Pressure P-value
SDOH		
Food Not Affordable (n=12)	0.0738	0.3835
Food Stamps (n=12)	0.0269	0.0777
Medicaid (n=12)	0.1521	0.0795

FIGURE 9 FOOD STAMPS & PRE SBP

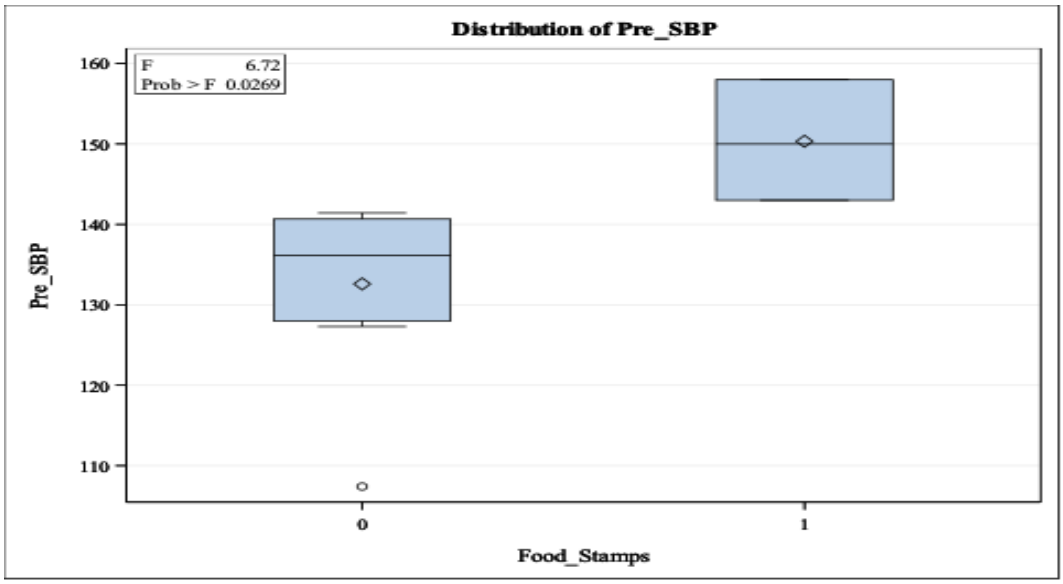


FIGURE 10 FOOD STAMPS & PRE DBP

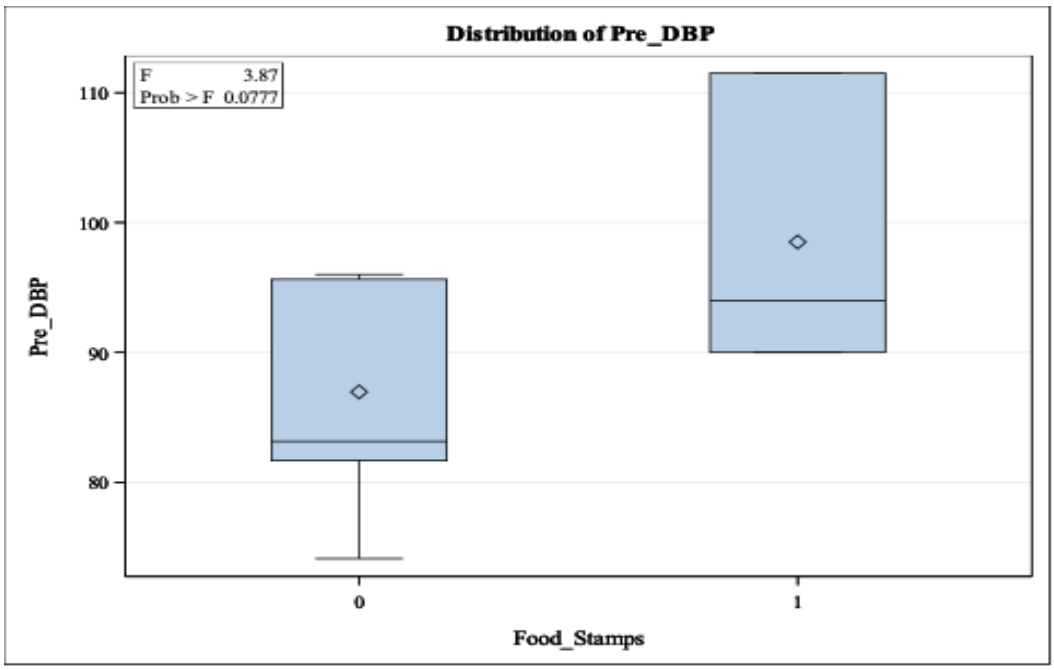


TABLE 21 ANOVA & LINEAR REGRESSION RESULT TABLE: PRE BP & SDOH, LIFESTYLE, & SELF-EFFICACY

Independence Variables	Pre Systolic Blood Pressure P-value	Pre Diastolic Blood Pressure P-value
Lifestyle Behaviors		
Eating Green Salad (n=12)	0.3882	0.2357
Eating Fresh Fruits (n=12)	0.0923	0.2303
Drinking Soda (n=12)	0.6918	0.1295
Using nutrition labels (n=12)	0.7643	0.2979
Adjusting Meals to be healthier (n=12)	0.5894	0.9539
Purchasing Whole Wheat Grain products (n=12)	0.0841	0.1224
*Low/light exercise (n=12)	0.6870	0.8029
Self-Efficacy		
*Confidence managing BP (n=11)	0.0854	0.0854
*Self-report of bad physical health days (n=12)	NA	NA
*Self-report of bad mental health days (n=11)	0.7205	0.7295
*Continuous variables ran with linear regression instead of ANOVA like the rest		

TABLE 22 LINEAR REGRESSION RESULTS: EXERCISE & PRE BP

Parameter Estimates – Pre_SBP (n=12)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	140.09231	8.29520	16.89	<.0001
low_exercise_days		1	-0.87423	2.10698	-0.41	0.6870
Parameter Estimates – Pre DBP (n=12)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	91.32731	6.51633	14.02	<.0001
low_exercise_days		1	-0.42423	1.65515	-0.26	0.8029

TABLE 23 LINEAR REGRESSION RESULTS: CONFIDENCE MANAGING BP & PRE BP

Parameter Estimates Pre SBP (n=11)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	76.58000	31.42710	2.44	0.0376
Confidence Managing bp		1	6.50500	3.36758	1.93	0.0854
Parameter Estimates Pre DBP (n=11)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	84.50886	28.61574	2.95	0.0161
Confidence Managing bp		1	0.51485	3.06633	0.17	0.8704

TABLE 24 LINEAR REGRESSION RESULTS: MENTAL HEALTH DAYS & PRE BP

Parameter Estimates Pre SBP (n=11)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	137.63800	4.17033	33.00	<.0001
mental_health		1	-0.72660	2.04304	-0.36	0.7295
Parameter Estimates Pre DBP (n=11)						
Variable	Label	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	Intercept	1	90.33200	3.25738	27.73	<.0001
mental_health		1	-0.58740	1.59579	-0.37	0.7205

Appendix I: Postpartum Dietary Management CHW Training Curriculum

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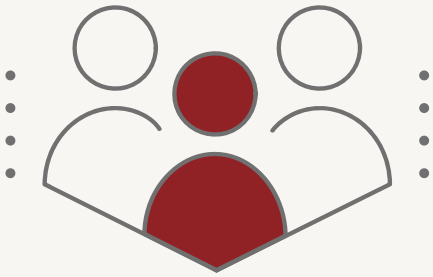
CHW TRAINING CURRICULUM

To facilitate the enhanced support of birthing persons with a hypertensive disorder(s) of pregnancy (HPD) during the fourth trimester



A GUIDE FOR COMMUNITY HEALTH WORKERS (CHW) AT GRADY MEMORIAL HOSPITAL (TOOLKIT)

Prepared for Grady Memorial Hospital by: Alda Dansou, MPHc; Ángie Joanna Núñez Rodríguez, MPHc; Amy Webb Girard, PhD, RN of the Rollins School of Public Health at Emory University

August 2022

Grady

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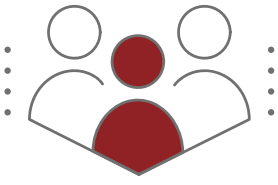
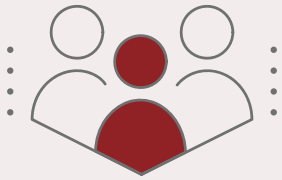


EXECUTIVE SUMMARY



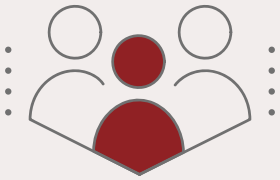
As an adaptive leader, a Community Health Worker (CHW) is a vital stakeholder needed to facilitate the enhanced support of birthing persons with hypertensive disorders of pregnancy (HDP) during the fourth trimester (i.e., the time between birth and 12 weeks postpartum). Most CHWs serve primarily as health coaches, patient navigators, and advocates. Thus, the purpose of CHWs is to bridge the communication gaps between patients and providers to optimize postpartum care at Grady Memorial Hospital (Grady), the tenth-largest public hospital in the nation and a Level I trauma center. The purpose of this program is to provide CHWs with training in postpartum dietary management. This training curriculum is a guiding toolkit for CHWs to offer person-centered care and high-quality support. The following literature incorporates a model of care focused on (1) CHW core competencies development and (2) comprehensive HDP dietary management.

Objectives of Training Curriculum

1. Understand the active role and responsibilities of a CHW as outlined by Grady
2. Gain the ability to describe the structure and benefits of the program to patients
3. Practice actionable skills as outlined by this curriculum to provide patients with person-centered care and high-quality support

INTERNAL TRAINING

OVERVIEW



Grady New Hire Orientation:

Community Health Workers (CHWs), part of Grady Health Systems, must complete Grady Onboarding and Training to ensure success as Grady professionals.

Epic Training:

Epic is the most widely used software for electronic health records in the United States, and it is home to over 250 million patient health records. Epic is helpful to community hospitals, hospices, and academic medical centers, among others. In this program, CHWs will utilize Epic for various tasks, including screening patients to find eligible participants for our program and documenting enrolled patient consent.

Motivational Interviewing Training:

Motivational Interviewing is an evidence-based approach to enhance a patient's self-motivation to make behavioral changes. CHWs will receive ongoing Motivational Interviewing Training to learn how to address challenges through case studies and role-playing practice.

Post-Partum Dietary Management Training:

Postpartum Dietary Management is a skill-based training session with budget-friendly methods for actualizing daily healthy dietary habits. This training aims to equip CHWs with actionable skills to empower postpartum patients with hypertensive disorders of pregnancy (HPD) to take agency of their health.

POSTPARTUM DIETARY MANAGEMENT

TRAINING SESSION 1: OUTLINE

This training should last approximately 1 hour and 30 minutes.

I. Introduction (5 min)
- Facilitator(s) introduction
- Explain the purpose of this training and module objectives

II. Icebreaker activity (5-10 min)

III. Heart Healthy (HH) Refresher (Kahoot) (15 min)
Note: Incorporate "bonus tips" in the Kahoot when necessary (e.g., using an air fryer, using sugar substitutes, using cashback apps)

IV. Module 1: Shopping Healthy on a Budget (30 min)
- Meal Planning
- Creating a Shopping List
- Unit Price Comparisons
- Q&A (10 mins)
- Bonus Tips (if time permits)

V. Module 2: Healthy Alternatives (30 min)
- Fast-Food-Inspired Cooking Recipes
- Packaged Food Makeover
- Low-Calorie No Sugar-Added Beverage Recipes
- Q&A (10 mins)

VI. Mini Module 3: Lactation Highlights (10-15 min) (if time permits)
- Lactation and Breastfeeding
- Importance of Hydration

POSTPARTUM DIETARY MANAGEMENT

PRE-MODULE: FACILITATOR GUIDE

Introduction (5 min)

Welcome the participants and introduce yourself (name, pronouns, and your role in this program). State the overall purpose of this program and the objectives of this training curriculum.

Purpose of the Program:
The purpose of this program is to provide CHWs with training in postpartum dietary management.

Objectives of the Training Curriculum:

- Understand the active role and responsibilities of a CHW as outlined by Grady
- Gain the ability to describe the structure and benefits of the program to patients
- Practice actionable skills as outlined by this curriculum to provide patients with person-centered care and high-quality support

Icebreaker Activity (5 - 10 min)

Now, the CHWs introduce themselves. Ask them to answer the following questions:

What is your name?	Where is your hometown?	What is your favorite thing to make as a healthy snack?

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1 - Shopping Healthy on a Budget

Overview:
Knowing how to shop healthy helps create healthy eating habits. People often associate nutritional choices with expensiveness, but this is not always true. This module teaches actionable skills to implement low-cost grocery shopping routines.

By the end of this module, CHWs should know how to:

1. Effectively meal plan to maintain nutrition goals
2. Build a meal plan-based shopping list using existing ingredients from home
3. Maximize a grocery budget by calculating unit prices, a comparison strategy to analyze the different pricing of food items across local brands and stores
4. Use practical cooking resources to help save money after grocery shopping

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1: Shopping Healthy on a Budget

Activity 1. Meal Planning

Explain:
Meal planning is an important skill to master. Meal planning encourages individuals and their families to upkeep healthy eating habits. Incorporating meal planning into daily routines saves time, food, and money. Meal planning also helps with portion control.

Materials Needed:
- Pen or Pencil, "Meal Planning Bingo" Handout

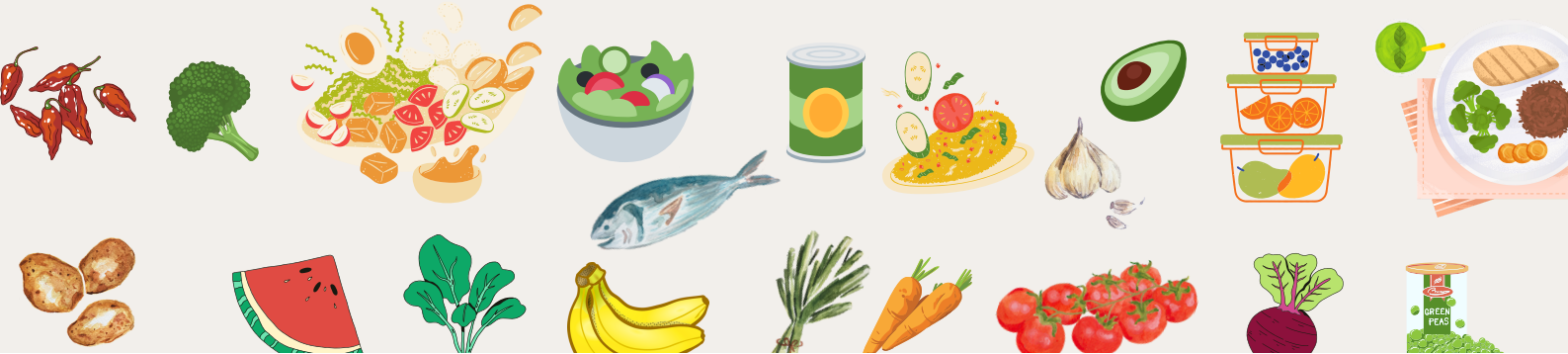
Activity Instructions:
- Distribute the "Meal Planning Bingo" Handout to each participant.
- Explain that they will play a Bingo-like game and have to "Find Someone Who...".
- Instruct participants to walk around the room with a pen or pencil and find someone who engages in one of the meal planning steps written on the handout. Participants should write their first names in the corresponding boxes.
- The goal of this game is to have a complete row signed.
- Give participants 5 minutes to complete this task.
- After, participants will sit down and discuss each box in detail.

Module 1. Activity 1 Handout

MEAL PLANNING BINGO

Find someone who does the following...

Check your cabinets and refrigerator for what you have/don't have before grocery shopping	Look up recipes for meal plan ideas	Plan your meals according to how busy your weekly schedule is
Use leftovers to make new recipes	Plan out your meals (Breakfast, lunch, dinner) for the week	Make a grocery list before you go shopping
Build your shopping list as you go throughout the week	Buy a combination of fresh, frozen, and shelf items	Cook in large quantity so you can have leftovers for the week



POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1: Shopping Healthy on a Budget

Activity 1. Meal Planning

Steps for Creating a Meal Plan and Why (Derived from MyPlate)

1. **Check what you have**
    a. **Explain:**
        i. The first step of meal planning is to take note of the products you already have in your freezer, cabinets, and refrigerator. This way, you can plan to incorporate products you already have in your upcoming week's menu and save time, food, and money.
2. **List out recipes to make**
    a. **Explain:**
        i. When meal planning, use new recipes for healthy and low-cost meals based on the foods you and your family enjoy and ingredients you already have. This way, you may avoid getting bored of eating the same meals and can find food inspiration before you go grocery shopping.
3. **Think about your schedule**
    a. **Explain:**
        i. When searching for recipes, be mindful of your upcoming weekly schedule. Some recipes take longer to make, while others do not. When busy, choose quick and easy meals (e.g., chicken or tuna salad wraps). When you have more availability, or when there are days you can receive help in the kitchen from your family, consider more time-consuming meals (e.g., stews, casseroles, and dough with filling foods).
4. **Plan to use leftovers**
    a. **Explain:**
        i. Avoid wasting food by using them in new recipes to make meals. For example, turn leftover or store-bought rotisserie chicken into enchiladas, a chicken noodle soup, or a chicken, beans, and avocado bowl. Cooking is experimental. Allow your creativity a seat at the table.

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1. Shopping Healthy on a Budget

Activity 1. Meal Planning

Steps for Creating a Meal Plan and Why (Cont.)

5. Write down your meals
    a. **Explain:**
        i. After checking your kitchen for the ingredients you already have, considering your schedule, and researching new recipes, you can write down your meals for the week. Map out your breakfast, lunch, and dinner, and don't forget to include snack items and beverages.
6. Make a Grocery List
    a. **Explain:**
        i. Based on what you have, your availability, and the recipes you find, create a shopping list for when you are going grocery shopping. Organize your grocery list by store section or food group to make shopping quicker and easier. The next module will show how to practice creating a grocery list.
7. Build your shopping list as you go
    a. **Explain:**
        i. To build an effective grocery list, keep an ongoing list of foods you need on the refrigerator door or smartphone notes. As you consume food items and they run out, add them to your list. This way, you are less likely to forget needed items while making a last-minute list. In our next activity, you will have a chance to create a shopping list.
8. Buy a combination of fresh, frozen, and non-perishable items
    a. **Explain:**
        i. Plan to buy fresh, frozen, and shelf food items while meal planning. Eat fresh foods first since they are exposed to natural elements and expire fast. Save the frozen and shelf items for later since they expire slowly.
9. Cook in large quantities
    a. **Explain:**
        i. During busy weeks, plan to make recipes with several servings so you can spread out the dish throughout the week.

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1 - Shopping Healthy on a Budget

Activity 2. Create a Grocery List

Explain:
Creating a grocery list helps you stay organized and avoid making unnecessary purchases. Creating a shopping list before you go grocery shopping may also help you make budget-friendly and health-conscious decisions.

Materials Needed:
- Pen or pencil, "Grocery List" Handout

Activity Instructions:
- Distribute the "Grocery List" Handout to each participant.
- Reflect on the different steps involved in creating a meal plan.
- Ask participants to list the food items they currently have at home (in their fridge, freezer, & cabinets) to the best of their ability.
- Instruct participants to think of a recipe they want to try and build a shopping list based on this recipe, including items they already have at home.
- Give participants 5 minutes to complete this task.
- After, ask for two volunteers willing to share their plan.

Module 1. Activity 2 Handout

GROCERY LIST

QTY	PRODUCE

QTY	FROZEN

QTY	DELI

QTY	MEAT & FISH

QTY	DAIRY

QTY	BEVERAGES

QTY	PANTRY

QTY	BAKERY

QTY	OTHER

NOTES

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1 - Shopping Healthy on a Budget (30 minutes)

Activity 3. Unit Price Comparisons

Explain:
How about finding the best price for groceries? Finding the best prices takes time and a little bit of math. Your local grocery stores have an easy-to-use tool that helps you find the lowest prices: unit price. Product labels on grocery shelves usually include unit prices. The unit price (or unit cost) tells you the cost per liter, pint, pound, or ounce of what you want to buy. For example, an 18.7-ounce box of raisin bran cereal at Kroger costs $1.99 and has a unit price of $0.11 per ounce.

Unit Price (UP) Formula:

UP = cost of item/quantity

$1.99/18.7 oz = $0.106/oz = $0.11/oz

To save money, take a few minutes longer to read product labels and buy foods with *lower* unit prices. Compare unit prices carefully. Comparing unit prices may take longer at first. With practice, the process will become routine.

Materials Needed:
- Pen or pencil, "Unit Price" Handout, Calculator

Note: Some grocery stores like Walmart and Whole Foods highlight the unit price. Most stores place the unit price in the lower corners of the label.

Image source: https://tinyurl.com/2p8dnxfx

Activity Instructions:
- Distribute the "Unit Price Comparisons" Handout to each participant.
- Ask participants to recall the Unit Price Formula to complete the table by calculating the correct unit price for each item.
- Give participants 5-6 minutes to complete this task.
- Reflect on the selection of foods and their unit prices.

Module 1. Activity 3 Handout

UNIT PRICE COMPARISONS

Fill in the blanks with the correct unit price for each item.

Store Name	Item Description	Unit Price
Walmart	Equate High-Performance Protein Shake, Chocolate, 11 fl oz, 12-count Price $18.98 	$0.14/fl oz
	Snack Pack Juicy Gels Sugar-Free Gelatin Cups, 3.25 oz, 4-count Price $1.25 	
	Sugar-Free A&W Rootbeer Powder Mix, Single Packs, 1.09 oz, 6-count Price $1.25 	
ALDI	Whole & Simple Southwest Chicken Quinoa Bowl, Single Serving, 10.5 oz Price $3.29 	
ALDI	Mama Cozzi's Pizza Kitchen Veggie Cauliflower Crust Deli Pizza, 12-inch, 17.6 oz Price $8.79 	
Kroger	Private Selection Sugar-Free Whole Wheat Sliced Wide Pan Bread, 24 oz, Price $2.50 	

POSTPARTUM DIETARY MANAGEMENT

MODULE 1: FACILITATOR GUIDE

Module 1 - Shopping Healthy on a Budget (30 minutes)

Activity 4. Bonus Tips

Explain:
We will cover additional tips for saving money while shopping healthily, including providing resources to use before and after grocery shopping.

Materials Needed:
- "Shopping Healthy on a Budget" Handout

Activity Instructions:
- Distribute the "Shopping Healthy on a Budget" handout to each participant.
- Review the eight listed tips. Ask for volunteers willing to read.
- Distribute accompanying bonus handouts when reading tip #5.
  - (1) "Low-cost fruits and vegetables by season" Handout
  - (2) "Low-cost fruits and vegetables all year long" Handout
- Briefly describe both handouts. Inform participants that these handouts are not exhaustive lists of all seasonal fruits and vegetables. However, these lists are for them to keep and reference. Encourage participants to conduct their research via Google Search to learn more.

SHOPPING HEALTHY ON A BUDGET

Tips to Save Money

1) Find recipes online that require simple and cheap ingredients

2) Buy some items in bulk or as family packs

3) Check for sales and coupons in the local paper or online

4) Use a shopping rewards app that rewards you with cash and rewards for points earned after you scan your receipts. (Eg. Receipt Hog, Ibotta, and Fetch Rewards)

5) Avoid buying pre-packaged items such as pre-cut vegetables, and instead get fresh or frozen vegetables

6) Choose vegetables and fruits in season

7) Ask about a loyalty card at your grocery store

8) Bring your own reusable tote bags instead of paying for plastic shopping bags

9) For EBT/SNAP users, consider shopping at farmers market that partake in the Georgia Fresh For Less program where they "double up" EBT dollars

10) Order curbside pickup if you can. This way you only order what is on your grocery list and are not tempted to purchase other items.

LOW-COST FRUITS AND VEGETABLES BY SEASONS

SPRING

Fruits:

Strawberries
Pineapple
Cherries
Honeydew Melons
Kiwis
Avocados

Vegetables:

Broccoli
Cabbage
Artichokes
Asparagus

SUMMER

Fruits:

Strawberries
Blackberries
Apricots
Plums
Peaches
Watermelons

Vegetables:

Basil
Eggplant
Zucchini
Sugar snap peas

AUTUMN

Fruits:

Dates
Asian Pears
Figs
Grapes
Cranberries

Vegetables:

Beets
Brussels Sprouts
Bok Choy
Kale
Spinach

WINTER

Fruits:

Clementine
Mandarins
Grapefruit
Oranges

Vegetables:

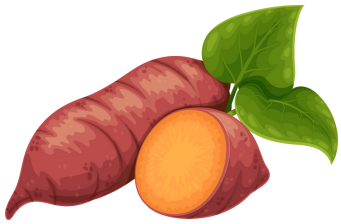
Yams
Cauliflower
Sweet potatoes
Mustard greens
Leeks

LOW-COST FRUITS AND VEGETABLES ALL YEAR-ROUND

Fruits

- Apples
- Bananas
- Raisins

Starches



- Corn, frozen or canned
- Green peas,
- Potatoes
- Lima beans
- Plantains (boiled or grilled)

Greens

- Romaine, fresh
- Spinach, frozen
- Broccoli, frozen
- Iceberg lettuce

Legumes

- Pinto beans, canned or died
- black eyed peas, canned or dried
- red kidney beans, canned or dried
- white beans, canned or dried
- mixed beans, canned or dried and cooked

Red and Orange Vegetables

- Baby carrots
- Whole carrots
- Red bell pepper, fresh or frozen

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives (30 minutes)

Module Overview:
Enjoying flavorful tastes, cravings, and favorite foods healthily is possible. We will cover ways to recreate popular meals and beverages into healthier alternatives by substituting ingredients and changing cooking techniques.

Materials Needed:

- Fast-Food-Inspired Recipes (pages 22, 23, 24), "Packaged Foods Makeover" Handouts (2 pages), Beverage Recipes (pages 27 and 28), Lactation Highlights (page 29)

By the end of this module, CHWs should know how to:

1. Prepare flavorful fast-food-inspired foods using an air fryer.
2. Prepare healthier versions of typically low-cost but low-nutritional-value packaged foods.
3. Prepare low-calorie and no-sugar-added beverages that are refreshing and flavorful without extra calories.

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives Make a copy to distribute.

Activity 1. Fast-Food Inspired Cooking

Explain:
An air fryer is a kitchen appliance that can cook “un-fried” foods. The air fryer can cook foods to taste like fried foods with less fat and calories in less time. An air fryer's construction is kid-friendly and easy to clean. Moreover, preparing homemade fast-food meals in an air fryer may motivate kids to learn about healthy and clean eating.

RECIPE 1: CHICKEN TENDERS

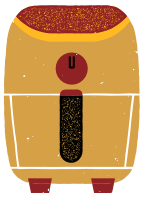
Crispy, juicy, and golden with extra flavor, without the extra grease.

Ingredients Needed:

- 1 lb. sliced chicken breast
- ½ cup of buttermilk or heavy cream
- 2 cups of panko breadcrumbs
- ½ cup of flour
- 1 tbsp of baking powder
- 2 tbsp of salt-free herb seasoning
- ½ tbsp of paprika
- ½ tbsp of salt
- ½ tbsp of black pepper
- ½ tbsp of garlic powder
- ½ cup of melted butter

Materials Needed:

- Air fryer
- 1-gallon size Ziplock bag
- Fork
- Brush
- Mixing bowl



Cooking Instructions:

Step 1: Poke holes in the chicken tenders with a fork and place them in the Ziplock bag. Pour in the buttermilk or heavy cream. Squeeze the air out and seal the bag. Allow 15-30 min for the tenders to marinate in the refrigerator.

Step 2: Combine the panko breadcrumbs, flour, baking powder, herbs, and spices in a mixing bowl.

Step 3: Take the tenders out of the bag and shake off the excess liquid. Place the tenders in the mixture to coat on all sides one at a time.

Step 4: Preheat the air fryer to 350°F for 5 min.

Step 5: Place the tenders in the air fryer basket and cook for 10-12 min. Pause after 4 min to brush with melted butter, then turn over and brush the other side. Cook for the remainder of the time, or until golden and crispy.

Step 6: Let cool for 1 minute and enjoy!

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives Make a copy to distribute.

Activity 1. Fast-Food Inspired Cooking (Cont.)

RECIPE 2: TACO CRUNCH WRAP

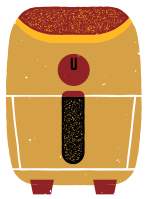
Crispy, juicy, and golden with extra flavor, without the extra grease.

Ingredients Needed:

- 1 lb. ground beef
- 1 salt-free taco seasoning packet
- 4 large-size flour tortillas (burrito-size)
- 4 average-size flour tortillas (taco-size)
- 4 corn tostadas
- 1 cup nacho cheese sauce
- 2 cups chopped lettuce
- 2 cups diced tomatoes
- 1 cup sour cream
- 1 diced large avocado
- Spray olive oil can

Materials Needed:

- Air fryer
- Skillet
- Knife
- 2 spoons
- Large plate



Cooking Instructions:

Step 1: Cook the ground beef in a skillet (do not add oil; the natural grease of the meat will suffice) for 4-5 min or until dark brown. Add the taco seasoning packet and remove the skillet from the heat.

Step 2: Preheat the air fryer to 400°F for 5 min.

Step 3: Place the larger tortilla on a plate. Scoop 2 tbsp of nacho cheese sauce and spread in a circular motion in the center of the tortilla. Scoop ½ cup of ground beef on top of the cheese and top with a tostada. Spread 1-2 tbsp of sour cream on the tostada. Sprinkle chopped lettuce, shredded cheese, tomatoes, and avocado. Top with the smaller tortilla.

Step 4: Tightly fold the edges of the large tortilla by making pleats in a circle. Flip the wrap over to keep the fillings secure.

Step 5: Coat the air fry basket with spray olive oil and place the wrap in the center with the folded side down. Cook for 4 min and pause to flip to the other side. Cook for another 4 min.

Step 6: Let cool for 1 minute and enjoy!

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives Make a copy to distribute.

Activity 1. Fast-Food Inspired Cooking (Cont.)

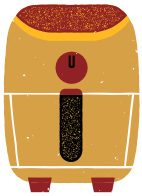
RECIPE 3: CHURRO DONUTS

Crispy, juicy, and golden with extra flavor, without the extra grease.

Ingredients Needed:

- 1 can of flaky biscuits
- ½ cup of coconut oil, liquid
- ½ cup zero-calorie sweetener
- 1 tbsp cinnamon powder
- ½ tbsp star anise powder (optional)

Materials Needed:



- Air fryer
- Water bottle cap
- Mixing bowl
- Brush
- Large plate
- Wax paper or silicone baking sheet

Cooking Instructions:

Step 1: Preheat the air fryer to 350°F for 5 min.

Step 2: Open a can of flaky biscuits and set each on wax paper or a silicone baking sheet. Using the water bottle cap, cut a hole in the center of each biscuit.

Note: Set aside the biscuit holes to make donut holes later.

Step 3: Place two to four biscuits in the air fryer basket in a single layer making sure none touch. Then, cook for 5 min.

Step 4: Mix sweetner and spices in a bowl and pour them into the plate.

Step 5: Remove the first batch of air-fried donuts. Brush each with coconut oil. Then, dip each donut in the "cinnamon sugar" and shake the excess coating.

Step 6: Repeat Step 3 and Step 5 until all donuts are air fried.

Step 7: Serve warm and enjoy!

Note: Place donut holes in the air fryer basket and cook for 5 min. Remove, dip in coconut oil, and roll in "cinnamon sugar."

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives

Activity 2. Packaged Food Makeover

Explain:
Packaged foods are quite popular and sought out for a variety of reasons - a few being that they are convenient, affordable, and accessible. However, the catch is that they're often highly processed with little to no nutritional value. This section will cover how to monopolize the convenience of some of the most popular packaged foods and how to make them healthier.

Materials Needed:
- "Packaged Food" Handout (2 pages)

Activity Instructions:
- Distribute the handouts to each participant.
- Read and review the handouts with the participants

Module 2. Activity 2 Handout

PACKAGED FOOD MAKEOVER

Packaged Food	Make it Healthier
Noodles	• Buy baked, whole wheat, or veggie noodles • Add fresh or frozen stir-fry veggies (e.g., onion, bell peppers, carrots, cabbage) • Add protein, if possible (e.g., egg, sausage, leftover cooked chicken, fish, beef, tofu, legumes) • Use only half of the seasoning packet, or low-sodium seasoning and herbs
Frozen or prepackaged Chinese-inspired-foods	• Use fresh, frozen, or canned fish • Use lean ground beef, chicken, or turkey • Drain fat from cooked meats • Add fresh or frozen veggies (e.g., carrots, broccoli, spinach)
Boxed macaroni and cheese	• Add fresh or frozen broccoli or spinach during the last few minutes of pasta cooking

Frozen Pizza	• Buy a plain cheese pizza and add toppings
	  ◦ veggies like broccoli, peppers, onions, olives, mushrooms, and spinach
	  ◦ meats like low-fat turkey pepperoni, chicken, sausage, and fish
	• Buy whole grain and thin crusts

Module 2. Activity 2 Handout

PACKAGED FOOD MAKEOVER CONT.

Packaged Food	Make it Healthier
Taco Dinner Kits	• Buy whole wheat or corn tortillas • Use lean ground beef, chicken, or turkey • Cook half the amount of ground meat called for; drain fat; add a can of rinsed and drained black or pinto beans to the cooked meat. • Add cooked veggies like chopped tomatoes or shredded zucchini • Top with low-fat cheese or sour cream
Frozen or prepackaged single serving foods	If veggies are not included, stir them in (e.g., bell peppers, broccoli, cauliflower, carrots, edamame)
Canned ravioli or spaghetti	• Buy whole grain canned pasta • Add veggies (e.g., zucchini, yellow squash, spinach) • Serve with a veggie-filled side salad • Opt out of the breadsticks
Frozen chicken nuggets or fish sticks	• Compare labels and buy a brand with less saturated fat and sodium • Buy grilled chicken nuggets instead of breaded • Serve with a hearty salad or a colorful vegetable side dish • Opt for sweet potato fries and bake or air fry them instead of frying
Frozen waffles or pancakes	• Buy whole grain pancakes or waffles • Top with fresh fruits and yogurt instead of sugar and syrups

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives Make a copy to distribute.

Activity 3. Beverage Recipes

Explain:
Quenching your thirst is important to help keep your heart rate and blood pressure well-managed. Staying hydrated is vital to your overall health, especially if you are breastfeeding. Hydration is also helpful for mental functions like short-term memory and alertness.

RECIPE 1: SPRITE-INSPIRED DRINK
Extra fresh without extra calories.

Ingredients Needed:
- 32 oz. low-sodium plain sparkling water
- Juice of 4 limes
- Juice of 2 lemons
- 2 tbsp of zero-calorie sweetener
- Ice cubes

Materials Needed:
- Knife
- Squeezer
- Mixing spoon
- Pitcher

Preparation Instructions:
Step 1: Pour the sparkling water into the pitcher.
Step 2: Add the juice of the limes and lemons, and zero-calorie sweetener and mix carefully.
Step 3: Pour the mixed drink over ice in your favorite cup or tumbler. Enjoy!

RECIPE 2: AGUA DE JAMAICA-INSPIRED DRINK
Extra fresh without extra calories.

Ingredients Needed:
- 24 oz. low-sodium plain sparkling water
- 8 oz. boiled water
- 4 hibiscus tea bags
- Juice of 1 lime
- 1 tbsp of ginger paste
- 2 tbsp of zero-calorie sweetener
- Ice cubes

Materials Needed:
- Knife
- Squeezer
- Mixing spoon
- Pitcher
- Kettle
- 8 oz. cup

Preparation Instructions:
Step 1: Pour the sparkling water into the pitcher.
Step 2: Start the kettle and boil 8 oz. of water.
Step 3: Brew the teabags in the boiled water for 3 min. Set aside and let cool for 10-15 min.
Step 4: Add the juice of the lime, ginger paste, concentrated tea, and zero-calorie sweetener to the pitcher and mix carefully.
Step 5: Pour the mixed drink over ice in your favorite cup or tumbler. Enjoy!

POSTPARTUM DIETARY MANAGEMENT

MODULE 2: FACILITATOR GUIDE

Module 2- Healthy Alternatives Make a copy to distribute.

Activity 3. Beverage Recipes (Cont.)

RECIPE 3: SOUTHERN PEACH LEMONADE-INSPIRED DRINK

Extra fresh without extra calories.

Ingredients Needed:

- 32 oz. purified water
- Juice of 4 lemons
- 1 can of no-sugar-added peaches
- Ice cubes

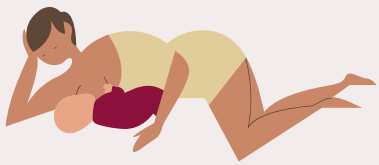
Materials Needed:

- Knife
- Squeezer
- Mixing spoon
- Pitcher
- Blender
- Can opener
- Strainer (optional)

Preparation Instructions:

Step 1: Pour water into the pitcher.
Step 2: Open the can of peaches and pour the content into a blender. Blend until smooth.
Note: If you prefer no pulp, pass the blended peaches through a strainer.
Step 3: Add the juice of the lemons, blended peaches, and zero-calorie sweetener to the pitcher and mix carefully.
Step 4: Pour the mixed drink over ice in your favorite cup or tumbler. Enjoy!

POSTPARTUM DIETARY MANAGEMENT



MODULE 3: FACILITATOR GUIDE

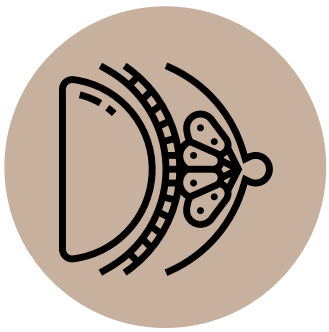
Mini Module 3: Lactation Highlights Make a copy to distribute.

Overview:
The decision to breastfeed is affected by multiple factors, including breastfeeding education and support.

By the end of this module, CHWs should know:
- The difference between lactation, breastfeeding, and exclusive breastfeeding
- Why hydration is important for overall health and breastfeeding

Explain:
Lactation is the physiological process of human milk production. Breastfeeding is the complex behavior patterns surrounding lactation by which an infant receives breast milk. Exclusive breastfeeding means an infant receives no liquids other than breastmilk and no solids except necessary micronutrient supplements and medications for at least the first six months of life for optimal nutrition and active immune protection. Exclusive breastfeeding is the gold standard in infant nutrition.

Consuming enough water daily is vital for overall health. Quenching one's thirst helps regulate body temperature, keeps heart rate and blood pressure well-managed, prevents infections, and keeps the body systems functioning properly. Staying hydrated is essential, especially if you are breastfeeding since your milk production requires the intake of liquids. Hydration is also helpful for mental functions like quality sleep, cognition mood, short-term memory, and alertness. Water is life. Would you drive a car with an empty water pump?

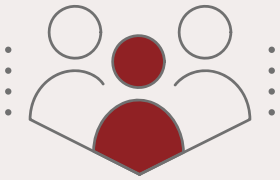


HUMAN MILK COMPOSITION

3.8 % fat
0.9% protein
7.0% lactose
0.2% other micronutrients
88% water

A person's daily nutrient requirements (~2,000 kcal) is **higher during lactation** (~2,500 kcal) than during pregnancy (~ 2,300 kcal).

EXTERNAL TRAINING



Community Health Workers' Core Competencies:

The Georgia Department of Public Health has developed a CHW training program that focuses on teaching CHW's core competencies. This training will equip CHWs with the basic knowledge of their roles and responsibilities and resources to enhance efficacy in their roles.

Healthy Heart:

The Healthy Heart Ambassador Blood Pressure Self-Monitoring Program is a training program created by the YMCA in partnership with the Georgia Department of Public Health (DPH).

The Healthy Heart training has three primary focuses:

- Nutrition and Blood Pressure
- Physical Activity and Blood Pressure
- Blood Pressure Self-Measurement

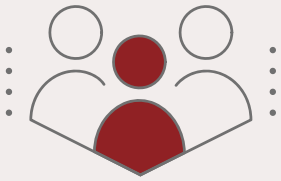
Completion of the training will equip CHWs with tools and knowledge to effectively manage blood pressure. This training prepares CHWs to pass forth this knowledge to post-partum patients with HDP.

Mental Health First Aid:

The Mental Health First Aid training is a course through the National Council for Mental Wellbeing. The training equips people with the ability to recognize, understand, and respond to signs of mental health challenges in adults.

The course comprises self-paced modules along with "live" group training. Certificates of Completion are available upon completion of the modules, live training, and a pre and post-online assessment.

ADDITIONAL ONLINE RESOURCES



Apart from the required training listed above, additional resources may prove t beneficial for the overall success of Community Health Workers as they practice their roles and responsibilities.

Topic	Where to Access
Boundary Setting for Community Health Workers	Georgia Department of Public Health
Heart Disease and High Blood Pressure	NHLBI
Making Heathy Eating Choices	USDA
Nutrition, Physical Activity, and Obesity	DPHP
DASH Recipes	Mayo Clinic
Fouth Trimester Care	ACOG
National Maternal Mental Health Hotline	HRSA
MCH Workforce Training and Development	HRSA
Hypertensive Disorders of Pregancy	PubMed

Appendix II: Patient Education Booklet, “High Blood Pressure: A Mother’s Survival Guide”

Go to next page

HIGH BLOOD PRESSURE:
A MOTHER'S SURVIVAL GUIDE

A GUIDE TO BLOOD PRESSURE MANAGEMENT AND WELLNESS AFTER CHILDBIRTH

This booklet is (partially) supported by the American College of Preventive Medicine through a cooperative agreement CDC-RFA-OT18-1802 with the Centers for Disease Control and Prevention of the U.S. Department of Health and Human Services (HHS). The contents are solely the responsibility of the author(s) and do not necessarily represent the official views of, nor an endorsement, by CDC/HHS, or the U.S. Government.

ABOUT THIS PROJECT

Did you know that women with high blood pressure are at higher risk of heart disease and stroke? To address this issue, we are offering services for women like you! You are participating in this project because you have recently given birth and have experienced issues with your blood pressure. Through guidance from a trained health coach, we plan to help you reach all of your health goals.

Over 12 months, your health coach will:

- Bridge communication between you and your healthcare providers
- Connect you with various community resources and programs at no additional cost
- Help you monitor your blood pressure at home

These are just a few of the ways we plan to help you.

Continue reading this guide to learn more!

TABLE OF CONTENTS

IMPORTANT INFORMATION

This guide belongs to: _____

Health Coach Name and Contact:

Name: _____ Phone number: _____

Other Important Contacts:

Upcoming Appointments:

Notes:

MANAGING BLOOD PRESSURE

What is High Blood Pressure?

Blood pressure is a measure of the force that your heart uses to pump blood around your body.

Hypertension, or **high blood pressure**, occurs when (1) the force in your blood vessel walls is too high and (2) the speed that your heart pumps blood is higher than it should be.

Uncontrolled high blood pressure can be harmful and increases the risk of health problems such as heart disease, heart attack, and stroke.

MANAGING BLOOD PRESSURE

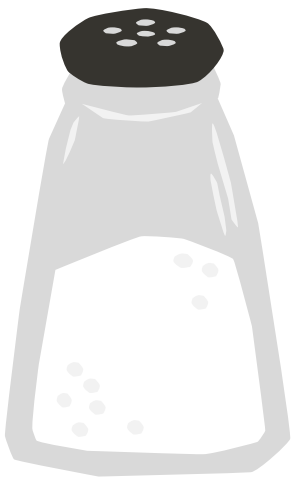
Common Causes of High Blood Pressure

There are several risk factors that can increase someone's chance of having high blood pressure.

Some <u>cannot</u> be controlled, such as:

- Family history
- Increasing age

While others <u>can</u> be controlled, such as:



Diet high in salt

No exercise

High Stress

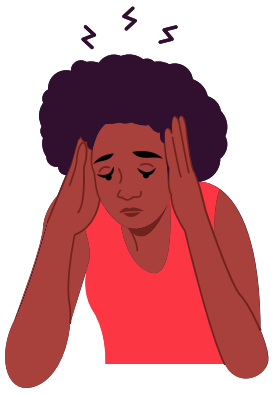
Cigarette Smoking

MANAGING BLOOD PRESSURE

Common Symptoms of High Blood Pressure

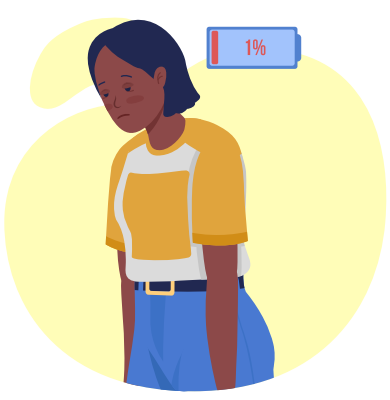
Nearly one-third of people with high blood pressure do not know because there are usually no symptoms.

However, when blood pressure is extremely high or severe, there are some symptoms that might happen, **including**:

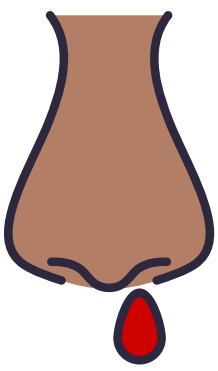


Severe headaches

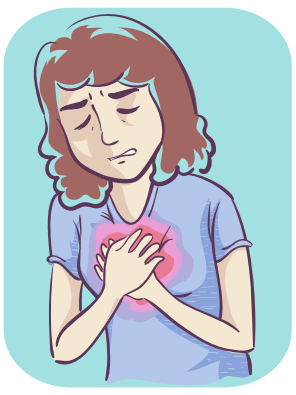
Vision problems or dizziness



Fatigue or confusion



Nosebleed



Chest pain

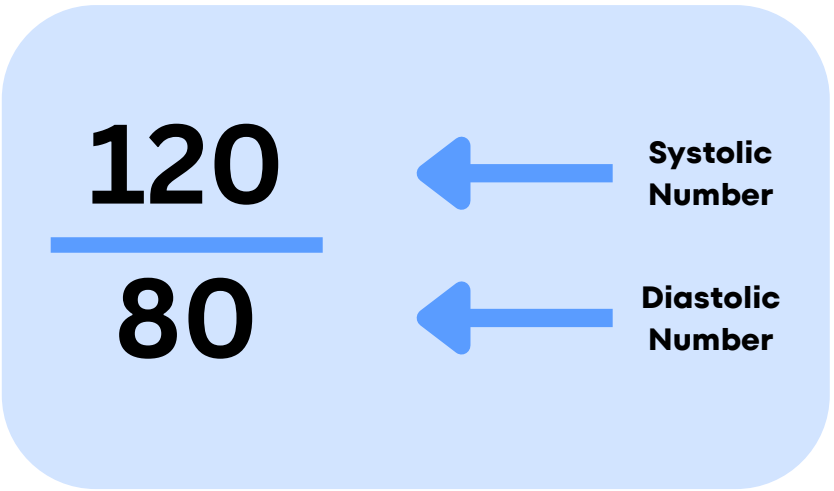
Difficulty breathing

MANAGING BLOOD PRESSURE

Blood Pressure Monitoring

When blood pressure is measured it is written as two numbers, for example, 120/80 mm Hg.

- The top number is called the **systolic blood pressure**
- The bottom number is called the **diastolic blood pressure**



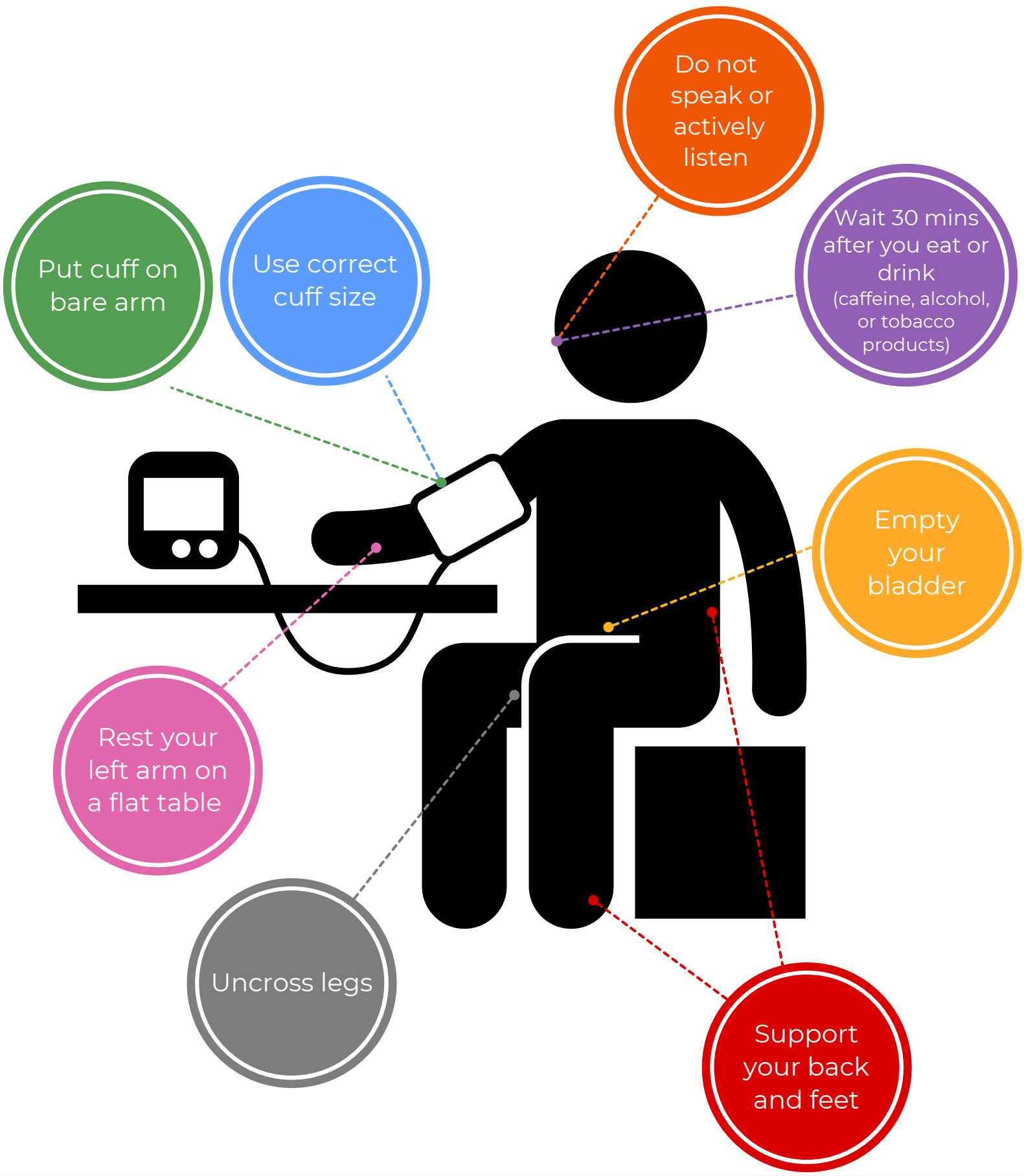
Self-measured Blood Pressure Monitoring (**SMBP**) means using a blood pressure monitor device to check your blood pressure from home, several times a day. This allows you to take an active role in managing your hypertension.

At the start of this program, your health coach will demonstrate how to use a blood pressure device step-by-step to get accurate blood pressure readings. This will prepare you to properly measure your own blood pressure from home.

MANAGING BLOOD PRESSURE

Measuring Blood Pressure at Home

8 Tips to Get An Accurate Blood Pressure Reading



MANAGING BLOOD PRESSURE

Measuring Blood Pressure at Home

After you check your blood pressure:

- Write down the date and time of your reading
- Record your blood pressure in the log provided to you
- Take note of any questions that you want to ask your health coach or doctor

American Heart Association.

My Blood Pressure Log

Name: _____

My Blood Pressure Goal: _____ mm Hg

Instructions:

- Measure your blood pressure twice a day—morning and late afternoon—at about the same times every day.
- For best results, sit comfortably with both feet on the floor for at least two minutes before taking a measurement.
- When you measure your blood pressure, rest your arm on a table so the blood pressure cuff is at about the same height as your heart.
- Record your blood pressure on this sheet and show it to your doctor at every visit.
- You can also use AHA's Check. Change. Control.® Tracker (ccctracker.com/aha), a free online tool to help you track and monitor your blood pressure. Just find the campaign code on the map for your state and sign up.

DATE	AM	PM

DATE	AM	PM

MANAGING BLOOD PRESSURE

Understanding Blood Pressure Readings

BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
Normal	Less than 120	and	Less than 80
Elevated	120-129	and	Less than 80
High Blood Pressure (Hypertension) Stage 1	130- 139	or	80 - 90
High Blood Pressure (Hypertension) Stage 2	140 or higher	or	90 or Higher
Hypertensive Crisis (Reach out to your health coach immediately)	160 or higher	and/or	110 or higher

Key:

Normal: Blood pressure numbers under 120/80 mm Hg are in the normal range.

Elevated: People with elevated blood pressure are likely to have high blood pressure.

Hypertension Stage 1: At this stage of high blood pressure, doctors are likely to suggest lifestyle changes, such as eating healthier and exercising. They may also consider adding blood pressure medication based on your risk of other conditions, such as heart attack or stroke.

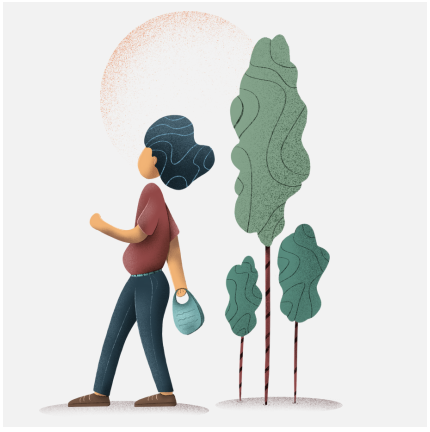
Hypertension Stage 2: At this stage, doctors are likely to prescribe a combination of blood pressure medications and lifestyle changes.

Hypertension Crisis: This stage of high blood pressure requires medical attention. If your blood pressure reading suddenly exceeds 160/110 mm Hg, wait 15 minutes, and measure your blood pressure again. If it is still as high, call 911 or emergency medical services.

MANAGING BLOOD PRESSURE

Healthy Choices for a Healthy Life

Tips For Physical and Emotional Wellness:



Go for a walk

Eat a balanced diet

Take a dance break

Do yoga

Get professional support

Destress with art

Meditate

Journal and practice stress management

Listen to your favorite music

NUTRITION

Grady Food As Medicine Program

Grady has joined together with the Atlanta Community Food Bank and Open Hand Atlanta to create the Food as Medicine partnership. This program provides access to healthy, affordable food to the entire Grady community.

The Food Pharmacy is located just outside Grady's main entrance, in the Jesse Hill Market. This program helps patients manage chronic conditions by encouraging healthy lifestyle changes. Through this program you can pick up fresh food, receive nutrition education, and participate in cooking classes. Eligible patients must be referred to the program by their Grady primary care provider.

Your health coach will discuss this program with you to see if you are eligible. If not, you may be eligible for other food assistance programs.

JESSE HILL MARKET

OPEN HAND · Grady · ATLANTA COMMUNITY FOOD BANK

NUTRITION

Other Nutritional Support Resources

Supplemental Nutrition Assistance Program (SNAP)

SNAP, also known as food stamps, is a federal program that provides eligible citizens with monthly funds to buy groceries. Unless you are already enrolled in this program, your health coach will assist you in benefiting from this program.

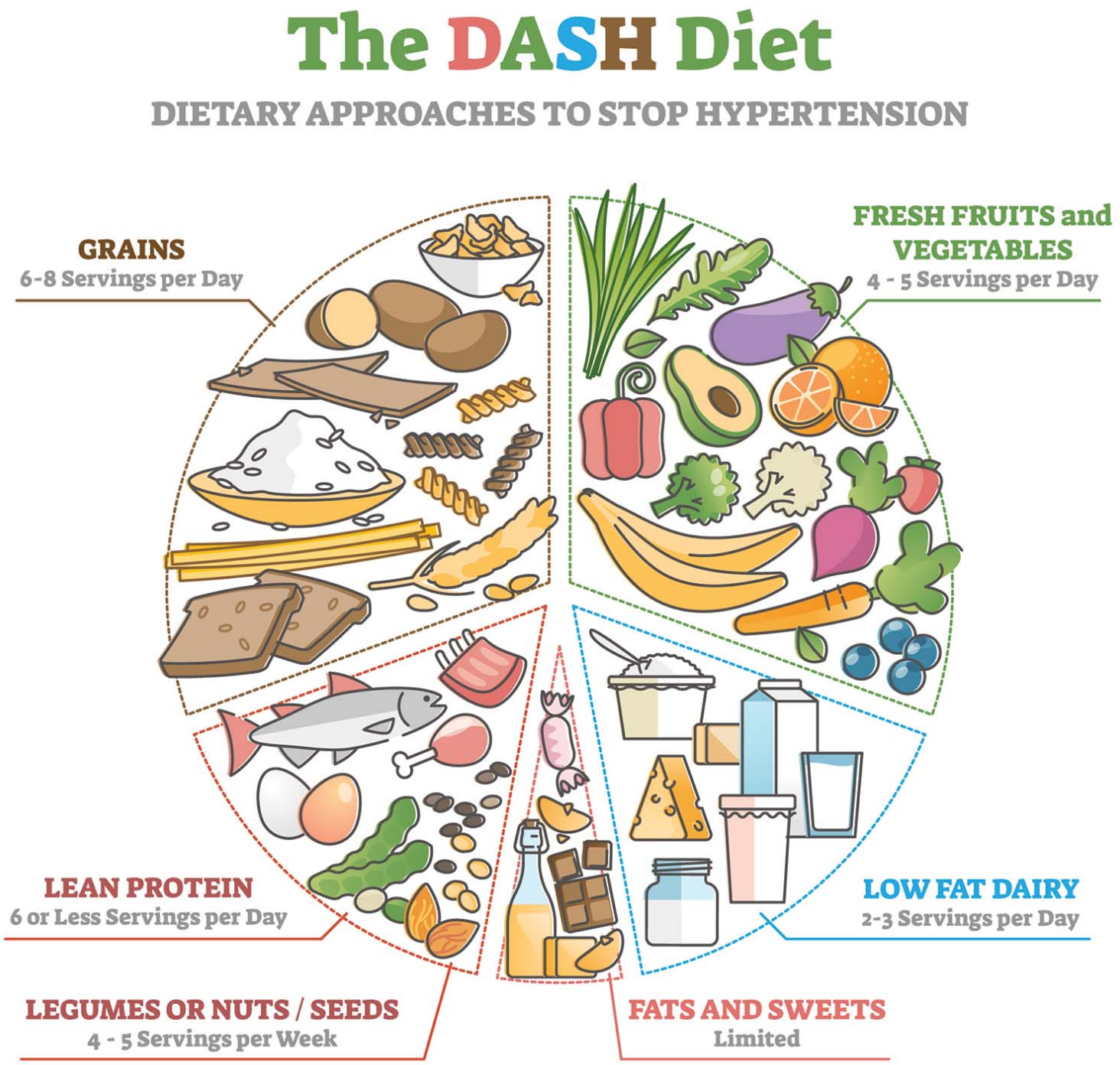
Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)

WIC is a federal program that offers nutritional support to pregnant women, postpartum mothers, and infants aged 1-5 years old. This program also provides access to infant formula. Unless you are already enrolled in this program, your health coach will assist you in enrolling and benefiting from this program.

NUTRITION

DASH Diet

The Dietary Approaches to Stop Hypertension (DASH) diet is a healthy-eating plan made to help treat hypertension. This diet includes foods rich in potassium, magnesium, and calcium which are nutrients that help control blood pressure. Throughout this program, your health coach will help you in practicing the DASH diet.

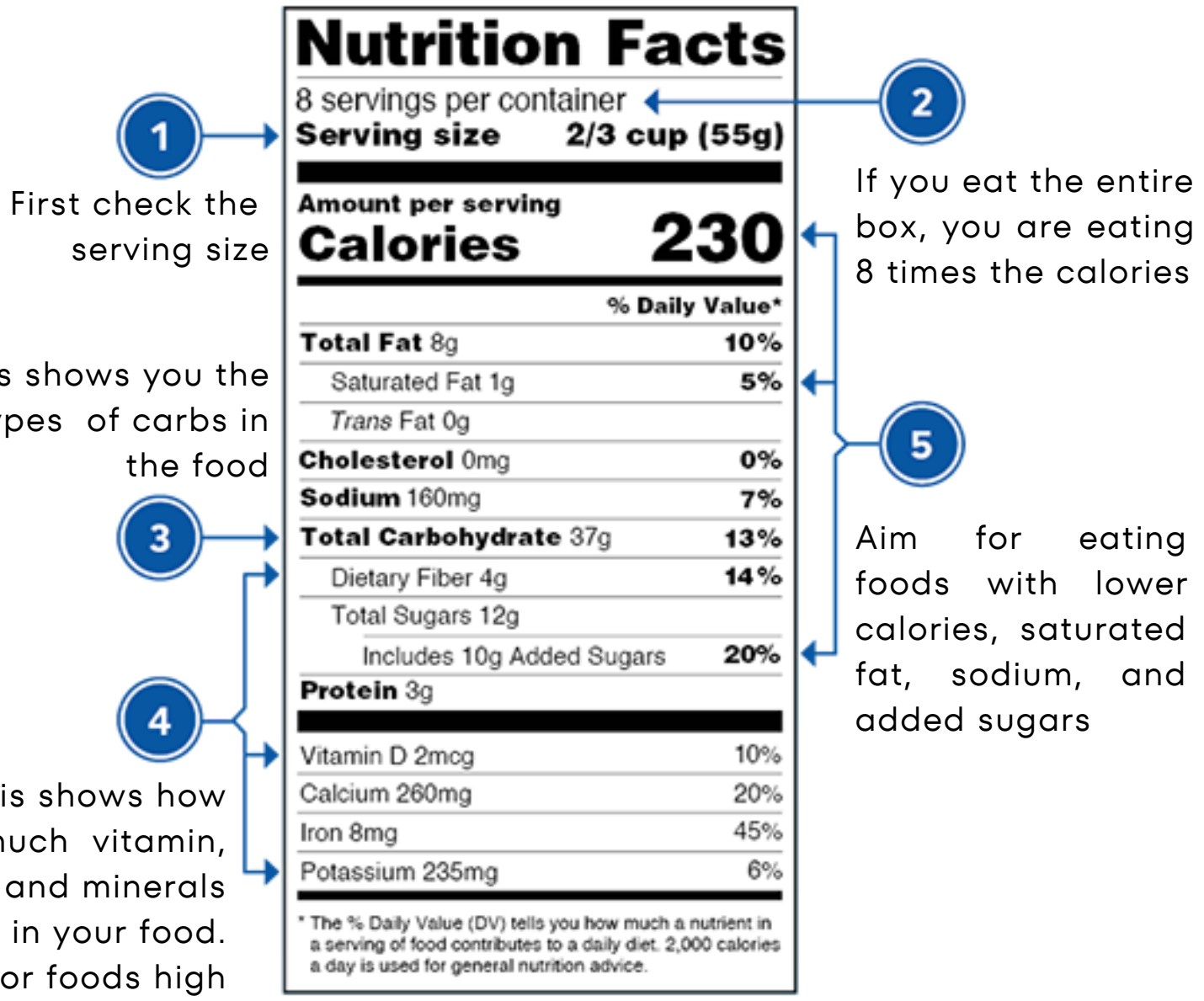


HIGH BLOOD PRESSURE:
A MOTHER'S SURVIVAL GUIDE

NUTRITION

Learning the Label

Making healthier food choices is an important part of managing blood pressure. Learning to read food labels can help you avoid foods low in nutrients and high in sodium, sugars and saturated fats.



Learn the label and make healthier food decisions!

NUTRITION

Seasoning Your Food

MEATS AND PROTEIN	SUGGESTED SEASONING
BEEF	Allspice, basil, bay leaf, black pepper, caraway seed, celery seed, chili powder, cumin, ginger, onion or garlic powder, rosemary, savory, tarragon, or thyme
EGGS	Basil, black pepper, celery seed, chili powder, curry, cumin, marjoram, rosemary, or savory
FISH	Black pepper, curry powder, dill, garlic powder, onion powder, lemon, or marjoram
LAMB	Curry powder, mint, garlic powder, onion powder, or rosemary
PORK	Bay leaf, black pepper, caraway seed, chili powder, cloves, curry powder, garlic powder, onion powder, rosemary, sage, savory, or thyme
POULTRY/CHICKEN	Bay leaf, black pepper, curry powder, ginger, lemon, garlic powder, onion powder, oregano, poultry seasoning, rosemary, sage, saffron, savory, tarragon, and thyme
VEAL	Bay leaf, black pepper, garlic powder, ginger, marjoram, mint, onion powder, oregano, rosemary, savory, or thyme

NUTRITION

Seasoning Your Food

VEGETABLES	SUGGESTED SEASONING
BROCCOLI	Garlic or onion powder
CABBAGE	Allspice, bay leaf, caraway seed, celery seed, chives, curry powder, dill, dry mustard, nutmeg, oregano savory, or tarragon
CARROTS	Allspice, basil, caraway seed, celery seed, chives, curry powder, dill, dry mustard, nutmeg, oregano, savory, or tarragon
CAULIFLOWER	Caraway seed, celery seed, curry powder, dill, dry mustard, nutmeg, oregano, savory, or tarragon
CORN	Chili powder or chives
EGGPLANT	Allspice, basil, bay leaf, chili powder, garlic powder, marjoram, sage, or thyme
GREEN BEANS	Basil, bay leaf, caraway seed, dill, garlic, or onion powder
LEAFY GREENS	Allspice, basil, cinnamon, dill, garlic powder, marjoram, nutmeg, onion powder, oregano, or rosemary
POTATO	Basil, bay leaf, caraway seed, chives, dill, garlic or onion powder, oregano, parsley, rosemary, savory, or thyme
SWEET POTATO	Allspice, basil, bay leaf, cardamom, cinnamon, cloves, ginger, nutmeg, or oregano
TOMATO	Basil, bay leaf, oregano, garlic or onion powder, or parsley

POSTPARTUM RESOURCES

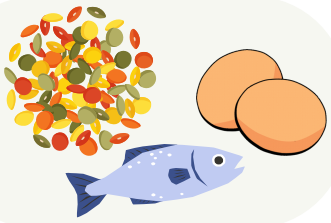
Lactation Guide: Diet and Hydration

Lactation is a word used to describe how a mother produces and releases breast milk. There are several things that can impact this process and a mother's breast milk supply after birth, including diet and hydration.

Diet Tips: It is important for breastfeeding mothers to eat plenty of calories and high-nutrient foods to refuel the body.

Healthy snacks throughout the day

Follow the DASH diet

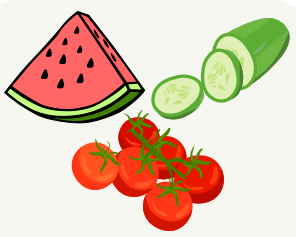


Eat foods high in iodine and choline

Hydration Tips: Breastmilk is 90% water, so it is important to stay hydrated in order to restore any water lost while breastfeeding.

Drink a glass of water every time you nurse your baby

Carry a bottle of water in your diaper bag



Eat water-rich foods

POSTPARTUM RESOURCES

Lactation Guide: Breastfeeding Positions

6 Breastfeeding Positions to Try

Cross-cradle Hold

Cradle Hold

Side-lying Positions

Laid-back Nursing

Football Hold

Upright Hold

POSTPARTUM RESOURCES

Postpartum Emotions and Moods

It is common for new mothers to experience feelings of sadness and anxiety after giving birth. Depending on your symptoms and how long they last, you may be experiencing either the baby blues or postpartum depression (PPD). It is important to know the differences between the two.

Baby Blues	Postpartum Depression
Short-term, lasts about 2 weeks after birth	Long-term, can last for several months to a year
Symptoms: • Mood swings • Anxiety • Sadness • Irritability • Crying • Trouble sleeping	Symptoms: • Depressed mood or severe mood swings • Excessive crying • Difficulty bonding with your baby • Withdrawing from family and friends • Loss of appetite • Severe anxiety or panic attacks

Let your health coach know if you are experiencing any of these symptoms so they can help you get the care you need.

POSTPARTUM RESOURCES

Postpartum Pre-eclampsia

Postpartum preeclampsia is a disease relating to high blood pressure. It can happen to anyone who has had a baby up to 6 weeks after the birth.

Most women with pre-eclampsia during pregnancy will deliver healthy babies and recover. However, some women can still experience complications.

Know the risks

- Seizures
- Stroke
- Organ damage
- Death

Know the warning Signs	What can you do?
 Stomach pain	• Ask if you should follow up with your doctor within one week of discharge • keep all follow up appointments • Watch for warning signs. If you notice any call your health coach or 911 • Trust your instincts
 Headaches	
 Nausea or throwing up	
 Seeing spots or other vision changes	
 Swelling of hands or face	
 Shortness of breath	

POSTPARTUM RESOURCES

Birth Control

After pregnancy and delivery your body needs time to heal and recover. This is why it is recommended to space out pregnancies. Using a birth control method during the postpartum period can help you family plan.

FREQUENTLY ASKED QUESTIONS (FAQS) & ANSWERS

Q | How soon can I start birth control after giving birth?

A | It depends on the method. Many birth control methods can be started right after childbirth. With other methods, you may need to wait a few weeks to start.

Q | Can I be on birth control while breastfeeding?

A | Yes! It's perfectly safe to use birth control while breastfeeding. There is a small risk that some hormonal birth control might affect breast milk supply, so it is recommended to wait 4 to 6 weeks after childbirth to start these methods.

Q | Is it true that breastfeeding can be used as a form of birth control?

A | Yes! This is called the Lactational Amenorrhea Method (LAM). When you exclusively and frequently breastfeed, meaning you nurse at least every 4 hours during the day and every 6 hours at night, your body naturally stops ovulation. If you do not ovulate, you cannot get pregnant. This method can only be used for the first 6 months after birth, or until your period returns.

Q | How do I choose a postpartum birth control method that is right for me?

A | There are several different types of postpartum birth control, including hormonal (eg. pills), barrier (eg. condoms), and lifestyle (eg. tracking ovulation). Speak to you doctor to go over your options in more detail and to help you make the best choice for you and your family.

OTHER RESOURCES

More Helpful Resources

YMCA MEMBERSHIP

WALKING GROUP

FREE TRANSPORTATION

Your health coach will discuss these resources with you in more detail to see how you can benefit!

GLOSSARY

Definitions

Blood Pressure: a measure of the force that your heart uses to pump blood around your body.

Diastolic Blood Pressure: Diastolic blood pressure is measured between heartbeats. This is when blood pressure is at its lowest.

Hypertension: Another word for high blood pressure, which is when the force used to pump blood around your body is consistently too high.

Lactation: The process of making human milk

Lactational Amenorrhea Method (LAM): A method of birth control that occurs when a mother is exclusively breastfeeding. It relies on the natural hormones your body produces while breastfeeding. This method is temporary and only effective for up to the first 6 months after childbirth.

Postpartum preeclampsia: A disease related to high blood pressure that mothers can experience up to 6 weeks after giving birth.

Self-Measured Blood Pressure Monitoring: Using a personal device to regularly monitor and track blood pressure outside of a clinical setting, for example, at home. SMBP helps improve blood pressure control.

Systolic Blood Pressure: Systolic blood pressure is measured when the heart beats. This is when blood pressure is at its highest.

Contact Us

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EMORY UNIVERSITY SCHOOL OF MEDICINE

Grady

Appendix III: Baseline Survey (Version English)

GRADY Community Health Worker Support for Hypertension in Pregnancy Demonstration Project

2022

Enrollment Survey

For program staff use only:

Participant ID #: _____

Assigned CHW: _____ Date (MM/DD/YY): _____

Delivery Date: _____

Data collector script: As part of the Grady CHW program, we will look at how the program influences your health and wellbeing over the next several months. Answering these questions will help us make the program better for you and for future participants. Our survey today, done at the beginning of the program, helps us to learn more about you. We will ask you questions about your background, ability to access foods, your diet habits, your mood, your health history including your most recent delivery, how you intend to feed your baby. This survey should take about 25 minutes. You can skip any questions you do not wish to answer and you can end at any time if you need to. Please let me know at any time if you have questions or if a question is unclear.

Key:

(*Italics*) – Directions on how to select responses, NOT to be read aloud

Red Font – Additional notes for interviewer, NOT to be read aloud

Background

1. What is the highest grade or year of school you completed? *(pick one)*
   - Less than a high school degree ☐
   - High school or GED certificate ☐
   - Some college / technical school, but have not graduated ☐
   - Two- Year College or technical school degree ☐
   - Four-year College or technical school degree ☐
   - More than four-year college degree ☐

2. What is your current marital or partnership status (*select all that apply*)
   - Married ☐
   - Unmarried but partnered ☐
   - Single / not partnered ☐
   - Divorced ☐
   - Widowed ☐
   - Prefer not to say ☐
   - Other ☐

   If other, please specify _____

3. What was your employment status prior to delivery? *(pick one)*
   - Working full-time ☐
   - Working part-time ☐
   - Student ☐
   - Not employed ☐
   - On disability ☐
   - Other ☐

   If other, please specify _____

4. I am going to read a list of statements. Please tell me which one is **most** true about your housing situation today.
   - I do not have housing (I am staying with others, in a hotel, shelter, on the street, in a car, abandoned building, bus or train station, or park) ☐

I have housing **today**, but I am worried about losing housing in the future..... ☐
I have housing..... ☐
Other (please specify: _____)..... ☐

I would now like to ask you about who lives with you. I am referring to people who have lived with you consistently for the past 1 month. This may include non-relatives.

5. How many people live in your home, **including yourself**? _____

a. How many children ages 0-5 years live with you?	
b. How many children 6-17 years live with you?	
c. How many adults 18-64 years live with you?	
d. How many adults over age 65 live with you?	

6. What is your approximate monthly household or family income from all sources after taxes? *(pick one)*

*Do not read aloud options. Ask for the amount per month, but if patient gives a broad answer, probe them to give an answer within one of the ranges. *

Less than $1,001..... ☐
$1,001-$1,300..... ☐
$1,301-$1,700..... ☐
$1,701-$2,000..... ☐
$2,001- $2,400 ..... ☐
$2,401-$2,700..... ☐
$2,701- $3,000..... ☐
$3,001-$3,400..... ☐
More than $3,401..... ☐
Don't Know..... ☐

7. I am going to read off a list of programs. Please let me know if you or anyone that lives with you participated in any of these programs in the past 12 months? *(check all that apply)*

WIC ..... ☐
Food Stamps, also known as SNAP ..... ☐
Free or reduced-price school meals ..... ☐
Head Start ..... ☐
Food Pantry, Food Bank, or Church Food Pantry ..... ☐
Medicaid ..... ☐
TANF ..... ☐
Government housing assistance / section 8 ..... ☐

8. In the past 12 months, has lack of transportation kept you from medical appointments, meetings, work or from getting things needed for daily living? (*select all that apply*)

* If yes, probe on whether medical, nonmedical or both*

Yes, it has kept me from medical appointments or getting medications ..... ☐
Yes, it has kept me from non-medical meetings, appointments, work, or getting things that I need..... ☐
No ☐

9. What is your primary method of transportation? (*select up to 2 if relevant*)

Own car..... ☐
MARTA (or other public transit such as Gwinnet Transit)..... ☐
Uber / Lyft / Taxi or Rideshare..... ☐
Friends / neighbors ..... ☐
Other (Specify _____)..... ☐

These next questions are about the food eaten in your household in the last 30 days and whether you were able to afford the food you need. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true for (you/your household) in the last 30 days —that is, since [today's date, name of previous month]

	Often	Sometimes	Never	DK / refused
10. During the **last 30 days**, how often was this statement true: *The food that we bought just didn't last, and we didn't have money to get more.* Was this often, sometimes, or never true for you?	☐	☐	☐	☐
11. During the **last 30 days**, how often was this statement true: *We couldn't afford to eat balanced meals.* Was this often, sometimes, or never true for you?	☐	☐	☐	☐

	Yes	No	DK / refused
12. In the **past 30 days**, did you or other adults in your household ever cut the size of your meals because there wasn't enough money for food?	☐	☐	☐
If yes, how many days did this happen?	_____days		
13. In the **last 30 days**, did you ever eat less than you felt you should because there wasn't enough money for food?	☐	☐	☐
14. In the **last 30 days**, were you ever hungry but didn't eat because there wasn't enough money for food?	☐	☐	☐

Obstetric and Medical History

15. Would you say that in general your health is

- Excellent ..... 1 ☐
- Very good ..... 2 ☐
- Good ..... 3 ☐
- Fair ..... 4 ☐
- Poor ..... 5 ☐

16. Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?

Number of days ___ (enter 88 if no good days, 77 if refused and 99 if unsure)

17. Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?

Number of days ___ (enter 88 if no good days, 77 if refused and 99 if unsure)

18. During the past 30 days, for about how many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?

Number of days ___ (enter 88 if no good days, 77 if refused and 99 if unsure)

19. What would you say is the major health problem that limits your activities the most?

Do not read options. Have respondents identify only one major problem

- None ..... 0 0 ☐
- a. Arthritis/rheumatism ..... 0 1 ☐
- b. Back or neck problem (pain, injury) ..... 0 2 ☐
- c. Fractures, bone/joint injury (pain, injury) ..... 0 3 ☐
- d. Walking problem ..... 0 4 ☐
- e. Lung/breathing problem ..... 0 5 ☐
- f. Hearing problem ..... 0 6 ☐
- g. Eye/vision problem ..... 0 7 ☐
- h. Heart problem ..... 0 8 ☐
- i. Stroke problem ..... 0 9 ☐
- j. Hypertension/high blood pressure ..... 1 0 ☐
- k. Diabetes ..... 1 1 ☐
- l. Cancer ..... 1 2 ☐
- m. Depression/anxiety/emotional problem ..... 1 3 ☐
- n. Other impairment/problem ..... 1 4 ☐
  - If other, please specify _____
- o. Pain or other issues related to labor / delivery ..... 1 5 ☐
- Don't know/Not sure ..... 7 7 ☐
- Refused ..... 9 9 ☐

20. How are you currently feeding your baby?

- Breastmilk only / breastfeeding ..... ☐
- Combination of breastmilk and formula ..... ☐
- Formula only ..... ☐

Not sure…….. ☐

21. *If the participant is 0-1 month post partum, ask:* How are you planning to feed your baby for his / her first 4-6 months of life?

If the participant is 2-4 months post partum, ask: How were you planning to feed your baby for his / her first 4-6 months of life when you first delivered?

Breastmilk only / breastfeeding…….. ☐
Combination of breastmilk and formula…….. ☐
Formula only…….. ☐
Not sure…….. ☐
Other: _____

Hypertension Management

While pregnant this last time, you were diagnosed with high blood pressure. I would like to ask you some questions about how you are managing your blood pressure.

22. When you were diagnosed with high blood pressure, were you prescribed blood pressure medication by your provider?
    - Yes…… ☐
    - No…… skip to 27 ☐
    - DK……skip to 27 ☐

    If yes, what medications were you prescribed?

    Medications: _____

    Can't recall medication names …… ☐

23. Are you currently taking this medication for your blood pressure?
    - Yes…… Skip to 24 ☐
    - No (stopped taking this medication and did not start taking any other medication)…… answer why not and skip to 27 ☐
    - No (stopped taking this medication and started taking a new hypertension medication)…… ☐
      - →Record name of current medication:_____ Skip to 24
    - DK…… ☐

    If no, why not (*and skip to Q27; if yes, continue*)?

    _____

For questions 24-26, if the participant does not know the response, indicate 99. If they refuse to answer, indicate 77

24. In the past 7 days, on how many days did you take your blood pressure medication? _____
25. In the past 7 days, on how many days did you take your blood pressure medication at about the same time every day? _____
26. In the past 7 days, on how many days did you take the recommended / prescribed dose? ____

I would now like to ask you some questions about how comfortable or confident you are in your ability to manage your blood pressure. Please rank your confidence on a scale of 1-10 with 1 being not at all confident to 10 being completely 100% confident. (*do not allow decimal points. Ie. 9.5*)

27. Having *high blood pressure* often means doing different tasks and activities to manage your condition. How confident are you that you can do all the things necessary to manage your *high blood pressure* on a regular basis? _____
28. How confident are you that you can judge when changes in your *high blood pressure* mean you should visit a doctor? _____
29. How confident are you that you can do the different tasks and activities needed to manage your *high blood pressure* so as to reduce your need to see a doctor? _____
30. How confident are you that you can reduce the emotional distress caused by your *high blood pressure* so that it does not affect your everyday life? _____

31. How confident are you that you can do things other than just taking medication to reduce how much your *high blood pressure* affects your everyday life? _____

32. Do you currently have a primary care provider, other than your OB?
    No..... ☐
    Yes, if yes, proceed to 32a..... ☐
    a. When was the last time you saw them? (MM/YYYY) __ __ / __ __ __ __

33. Have you received a cardiology referral?
May need to remind respondents that a cardiologist is a heart doctor
    No..... ☐
    Yes, if yes proceed to 33a..... ☐
    a. Have you made an appointment with the heart doctor yet?
    ☐ Yes à Proceed to 33b
    ☐ No à Skip to Physical Activity Section
    b. What is the date of the appointment? (MM/DD/YYYY) __ __ / __ __ / __ __ __ __

I would now like to ask you some questions about your usual diet and exercise habits. By usual I mean your usual habits when you are not pregnant.

For questions 34-38, if the participant does not know the response, indicate 99. If they refuse to answer, indicate 77

Physical Activity

34. In a typical week, on how many days do you engage in low intensity / light exercise, for example walking, yoga, yard work? ___ days
35. When you engage in light or low intensity exercise, for about how long do you exercise? ____ min
36. In a typical week, on how many days do you engage in moderate to intense exercise, for example to the point of breaking a sweat or it's to difficult carry on a conversation while exercising? ____ days
37. When you engage in moderate to intense exercise, for about how long do you exercise? ____ min
38. In a typical week, how often do you do weight training or exercise with weights? ____ days

**Have respondents give free responses. Interviewer can probe to identify the most appropriate option. E.g., If they say they eat fruit "every day" we can probe and ask, "do you eat fruit about once a day or more than once a day?" **

Eating Habits

How often do you typically eat...	Not at all	Once a week or less	More than once a week	Once a day	More than once a day
39. Fresh, frozen or canned fruit in juice like apples, bananas, mixed fruit, melon or any other fruit. This does not include fruit in syrup	☐	☐	☐	☐	☐
40. green salad?	☐	☐	☐	☐	☐
41. other dark greens like collards, kale, spinach, chard (Fresh or frozen)?	☐	☐	☐	☐	☐
42. French fries or other fried potatoes, like home fries, hash browns, or tater tots?	☐	☐	☐	☐	☐
43. any other kind of white potatoes that aren't fried?	☐	☐	☐	☐	☐
44. refried beans, baked beans, pinto beans, black beans, or other cooked beans? (**Do not** count green beans or string beans)	☐	☐	☐	☐	☐
45. other non-fried vegetables like carrots, broccoli, green beans, sweet potatoes or zucchini, or other vegetables (fresh, canned or frozen)	☐	☐	☐	☐	☐
46. a meal from a fast-food or sit-down restaurant (includes breakfast, lunch or dinner.)	☐	☐	☐	☐	☐
47. eat packaged salty foods such as chips, crackers, Takis, ramen noodles, fried pig skins / chicharrons,	☐	☐	☐	☐	☐
48. canned soups, meats or vegetables that are not low sodium	☐	☐	☐	☐	☐

How often do you typically drink...	Not at all	Once a week or less	More than once a week	Once a day	More than once a day
49. 100% fruit juices like orange juice, apple juice, or grape juice? (**Do not** count punch, Kool-Aid, sports drinks or other fruit-flavored drinks.)	☐	☐	☐	☐	☐
50. a can, bottle, or glass of regular soda or pop, sweet tea, sports drink, Kool-Aid, Tang, or energy drink? (**Do not** count diet or zero calorie drinks.)	☐	☐	☐	☐	☐
51. a bottle or glass of water? (Count tap, bottled and sparking water.)	☐	☐	☐	☐	☐

52. diet or reduced sugar drinks or beverages for example sweetened with stevia, sucralose, aspartame	☐	☐	☐	☐	☐	

We are going to ask you a series of questions related to food shopping and preparation. Please let us know whether you do the option never, rarely, sometimes, often, or always

Shopping Choices						
	Never	**Rarely**	**Some-times**	**Often**	**Always**	**Does Not Apply**
53. When you eat grain products like bread, pasta, rice, etc., how often do you choose **whole grain** products?	☐	☐	☐	☐	☐	☐
54. How often do you choose low-sodium options when you buy packaged foods like canned soups or vegetables, snacks, pre-packaged rice, frozen meals, etc.?	☐	☐	☐	☐	☐	☐
55. When you buy meat or protein foods, how often do you choose lean meat or low-fat proteins like poultry or seafood (not fried), 90% or above lean ground beef, or beans?	☐	☐	☐	☐	☐	☐
56. How often do you use the "nutrition facts" on food labels?	☐	☐	☐	☐	☐	☐
57. How often do you adjust meals to be more healthy, like adding extra vegetables to a recipe, rinsing off salt, using whole grain ingredients, or baking instead of frying?	☐	☐	☐	☐	☐	☐

Thank you so much! We have come to the end of the survey. We greatly appreciate you taking the time to complete this survey as part of the community health worker program. Do you have any questions or comments for me? Do you have any comments or recommendations about the program you would like for me to share back with the team?

Appendix IV: Contact Protocol & Script for Research Assistants

1. At their first visit with participants, CHWs will inform participants that they will be contacted by a member of the Grady/Emory team and asked to complete a survey. Surveys will happen at enrollment, part way through the program and at the end. The survey will take 20-30 minutes each time and participants will be reimbursed for participating in the survey. The survey will be used to understand how the program works, for whom it works best and what improvements can be made to the program. The first survey will ask for basic demographic data – for example education, income, participation in social services as well as questions about housing, food access and transportation. The first and follow up surveys will also ask about blood pressure management, diet, physical activity and quality of health.
2. The enumerator, using the project's google number, will text the participant at the number they provided the CHW. In this text they will identify themselves as a member of the Grady / Emory team and ask if the participant is available to complete the survey and if not identifying an alternative time to reach out to them to complete the survey. The below text template is recommended.

   Hi, my name is XX. I work with the Grady / Emory postpartum team. Your community health worker told you about the survey we do with all participants at the beginning of the program. Are you available to do the survey now? It will take about 25 minutes to complete. You will receive a $50 gift card when you complete your Community Health Coach survey. If you are not available now, can you let me know when you will be available to complete the survey? Thank you!

   Spanish: Hola, mi nombre es XX. Yo trabajo con el equipo posparto de Grady / Emory. Tu asesor de salud comunitaria te dijo sobre la encuesta que hacemos con todas las participantes al principio del estudio. Estás disponible para completer la encuesta ahora? Tardará unos viente-cinco minutos en completarse. Si no está disponible ahora, puede avisarme un día y tiempo cuando estará disponible para completer la encesta? Recibirás una tarjeta de regalo por $50 cuando completes la encuesta de su asesor de salud comunitaria. Gracias!

   a. If the participant is available, the enumerator will call them to complete the survey and fill the participant tracking form in Redcap accordingly. Otherwise they will schedule the survey time via text, fill the tracking form accordingly and let the data collection team know so that data collection occurs at the scheduled time.
   b. If the participant does not respond to the text within 24h the enumerator should attempt to contact the participant the following day, repeating steps a and b as relevant. If the participant does not respond to the second text within 24h the enumerator should 1) complete the participant tracking spreadsheet accordingly; 2) verify with the CHW that the number is correct and 3) request the CHW contact the participant to remind them of the survey. The enumerator should then reach out to the participant a third time. If the participant does not respond within 24h of the 3rd attempt they are lost to follow up.
3. The enumerator will call the participant at the designated time and complete the survey. If the participant does not pick up the enumerator should try again 10 minutes later. If the participant still does not pick up the enumerator should reach out to the participant by text to reschedule. If the participant does not respond to the text within 24h the enumerator should follow steps 2b-c.
4. To conduct the survey the enumerator will first obtain consent from the participant to continue. The consent is located below and on the survey tool in RedCap / paper form. The enumerator will read the survey from RedCap to the participant in the language of their choice (English or Spanish) and directly enter their responses into the RedCap system. The enumerator will keep a log of any questions the participant has trouble with and enter those into the survey log.
5. Participant IDs – participant IDs will be available in the participant tracking log. Be sure to include their ID number in the RedCap form

6. Prior to finishing the survey and with the participant on the phone, quickly review the RedCap survey to ensure no questions were skipped.
7. Once you complete the survey, please thank the participant for their time and let them know how they will access their renumeration. Ask if they have any questions or concerns and address those as needed. Remind the participant that you will be reaching back out to them in about 5-6 months to do a follow up survey.

Consent:

Thank you again for taking the time to complete this survey for the Grady postpartum hypertension support program. This survey today should take about 25 minutes. We will also ask you similar questions about halfway through the program and again at the end. We are asking all participants in this program to complete these surveys to help us learn more about who is participating, how well the program supports you to manage your blood pressure and how we can improve the program so it works better for postpartum women. Your participation in this survey is completely voluntary. You do not have to participate in this survey to be a part of the project and can refuse to answer any questions you do not wish to answer. You can also decide at any time stop the survey. We will keep all information you provide us confidential and securely stored. Any data we present back to Grady or others will not include your name or identifying information. As a thank you for your time, we will provide you a XX gift card. Do you have any questions about the survey or the project beyond what I have already told you? Would you still like to proceed with the survey?