Improving Perinatal Care among Women of African Descent through Home Blood Pressure Self-monitoring in Seattle

Lydia K. Bukonde

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Public Health

University of Washington

2024

Committee:

Rachel Chapman

James Pfeiffer

Program Authorized to Offer Degree:

School of Public Health, Department of Global Health

University of Washington

Abstract

Improving Perinatal Care among Women of African Descent through Home Blood Pressure Self-monitoring in Seattle

Lydia K. Bukonde

Chair of the Supervisory Committee:

Rachel Chapman, MA, PhD

University of Washington, Department of Global Health

Perinatal racial and ethnic health disparity in Seattle reflects trends in Washington and nationwide, with a disproportionately high risk of adverse outcomes among women of African descent. Eclampsia is among the major leading causes of these adverse outcomes and has a high prevalence among women of African descent. The Heart, Soul, and Joy (HSJ) project implemented an intervention distributing a home blood pressure cuff (BPC) and self-monitoring tool to perinatal patients in two community health clinic systems to prevent perinatal health disparity among BIPOC communities in federally health-underserved areas in greater Seattle. (The HSJ project was funded by the UW Population Health Initiative). According to the HSJ project model, access to BPC leads to potential for increased home self-monitoring of BP. Home self-monitoring of BP leads to increased somatic information, which can improve patient understanding of and attention to health conditions. This increased understanding enhances self-

efficacy, which in turn empowers individuals to seek care more proactively. As a result of this proactive care-seeking, there is increased patient-provider contact, which facilitates timely care provision. This timely intervention has the potential to better address and/or avert health crises. This qualitative study used pre/post, mixed response format survey methods to identify the benefits and barriers to perinatal home blood pressure self-screening among African descent women attending these community health clinics. For this thesis, qualitative analysis was conducted using narrative survey data from intake, midway, and exit surveys of pregnant women recruited to the study at any stage of gestation and up to one week postpartum. An inductive thematic analysis approach was utilized to identify the benefits and challenges of perinatal home BP self-screening among women of African descent. Findings revealed significant benefits of home BP self-screening, including increasing both patient care-seeking behaviors and patient-provider points of contact. These two shifts due to increased BP self-screening led to timely provider interventions and enabled provider follow-up and patient follow-through. The study identified promising potential for home BP self-screening interventions to improve perinatal care, resulting in reduced racial/ethnic disparities. This thesis reviews these new steps in care flow and highlights the transformative potential of home blood pressure self-monitoring interventions among African-descent women in Seattle. Conclusions reinforce the HSJ model and suggest that it be expanded to include provider follow-up and patient follow-through as important elements in the efficacy of home BP self-screening. Larger-scale research initiatives are warranted to assess this expanded model and to further explore the efficacy of these interventions to improve perinatal outcomes and contribute to eradicating racial/ethnic health disparities.

Keywords: Black/African descent, perinatal outcomes, racial/ethnic health disparity, home BPC self-monitoring, eclampsia and preeclampsia, maternal health, community-based research

Introduction

In the US and globally, among the principal causes of adverse maternal/infant outcomes, pre-eclampsia and eclampsia stand out as leading causes of morbidity and mortality for both mothers and infants [1, 2] and contributes to many complications, including premature births and low poor growth, as well as liver, kidneys, brain and the clotting system problems [3, 4]. In the US, the incidence of pre-eclampsia has increased by 25% in the last 20 years, with Black women at a significantly higher risk compared to other racial groups [1, 4, 5]. Although there is wide recognition of this leading cause of adverse perinatal outcomes, there is a significant gap in addressing this issue comprehensively among marginalized populations [6].

Over the last two decades, the United States has maintained the highest adverse perinatal outcomes, notably contrasting with patterns of improvement across other high-resource-setting nations [7]. Maternal mortality rates (MMRs) have remained troublingly high across all racial and ethnic groups, with Black women disproportionately affected [8, 9], being approximately three times more likely to die from preventable pregnancy-related complications compared to non-Hispanic White women [7, 10]. This disparity is rooted in a complex interplay of socio-economic factors, systemic racism, political and bio-psychological harms [5], and barriers to healthcare access [11]. Although the incidence of MMRs in Washington State is lower than the national average, significant

racial and ethnic disparities persist, reflecting trends in nationwide [12, 13]. Black women in Washington are 2.9 times more likely to experience perinatal-related death compared than other racial or ethnic groups, a situation exacerbated by barriers to care, discrimination, and lack of adequate screening, compounded by broader social and structural determinants of health [12]. Despite significant literature acknowledging and documenting these various contributing factors to racial/ethnic perinatal health disparities, inequality across race and ethnicity continues to persist [11]

In response to these gaps, home BP self-monitoring tools have emerged as a potential strategy for improving perinatal health [14] and gestational hypertension [15]. Previous research on home BP self-monitoring intervention in pregnant women has shown that BP self-monitoring has the potential to improve BP control during pregnancy [16]. Individuals who self-monitor tend to have a better understanding of their blood pressure [17]. With this increased awareness, patients can initiate more timely treatment [15, 18]. In this way, self-monitoring blood pressure during pregnancy is practical and may be beneficial for the early detection of gestational hypertensive disorders [15, 18]. However, since some insurance does not cover the cost of a personal BPC for home use, the lack of availability and high cost of the equipment can present a challenge for patients with low resources [3].

In Washington State, public insurance typically does not cover the cost of home blood pressure monitors (including BPCs) [19]. Coverage for medical devices such as blood pressure monitors varies significantly depending on the insurance provider and the specific plan. Generally, many private insurance plans and Medicaid do not include home blood pressure monitors under standard perinatal care benefits [19, 20].

This limitation in coverage can pose significant financial barriers for low-income pregnant individuals. The BPC is a crucial tool for monitoring maternal health and detecting potential complications such as hypertension. In response to the lack of coverage for perinatal BPC, the HSJ project in Seattle has implemented a pilot intervention, providing home blood pressure cuff and self-monitoring tools to perinatal patients who enrolled in the study within two community health clinic systems. The goal of the pilot project was to test an approach to mitigating these perinatal health disparities among Black, Indigenous, and other People of Color (BIPOC) by improving outcomes for all patients seeking care in federally underserved areas. This thesis reviews the Heart, Soul, and Joy (HSJ) model and assesses its potential to improve perinatal health among marginalized populations seeking care at federally underserved health clinics in the greater Seattle area. For the purpose of this thesis, we concentrated solely on women of African descent within the larger sample of participants. The main objective of this thesis is to identify the benefits and challenges of the HSJ approach to perinatal home blood pressure self-screening among women of African descent within these underserved health clinics. In order to achieve this aim, my research questions were as follows: 1) What are the uses, experiences, and impact of access to a BPC and screening tool kit for perinatal BP home self-screening among women of African descent in six clinics within two community health systems; 2) what are the reported benefits and challenges to perinatal home BP self-screening; and 3) what is the potential for this technology provision to improve perinatal outcomes in ways that might decrease racial/ethnic health disparities?

METHODS

The Heart, Soul, and Joy (HSJ) project implemented an intervention distributing a home blood pressure cuff (BPC) and self-monitoring tool to perinatal patients in two community health clinic systems to prevent perinatal health disparities among BIPOC communities in federally health-underserved areas in greater Seattle. The project's intervention consisted of three core components: 1) provision of BP cuff and screening tool to support home screening in four domains; 2) training of patients and providers in the use of both simple technologies; and 3) follow-up on use of these technologies through phone surveys and support. The home screening tool gave visual support to participants in four health domains: 1) BP self-monitoring, 2) emotion/mental health, 3) relationship/home safety and basic living needs, and 4) including joy and pleasure as a daily practice. Each of these domains was identified as being crucial for overall well-being pre- and postpartum. For monitoring BP levels, we provided each participant with a blood pressure cuff (BPC). To support individuals in monitoring their health, we offered a comprehensive screening tool with a visual guide featuring color-coded zones of yellow, red, and green to reflect low, medium, and high risk. Values within the normal range are indicated in green, values above the normal range in yellow, and values deemed very high in red. Similarly, for emotion/mental health, the screening tool assesses mood, stress levels, and overall mental well-being, with corresponding color indicators. Relationship/home safety and basic needs are evaluated through questions addressing living conditions, safety measures, and access to essential resources, with visual cues indicating areas of concern. Finally, joy and pleasure as a daily practice

involve activities that bring happiness. For the joy practice, we offered simple and enjoyable activities such as finding pleasure through the senses, laughing, appreciating community, finding gratitude for everyday things, and moving the body. However, for the purpose of this research, we focused on BP - the heart component of the model - and principally centered our focus and data analysis on BPC use, experience, challenges, and benefits.

Site description

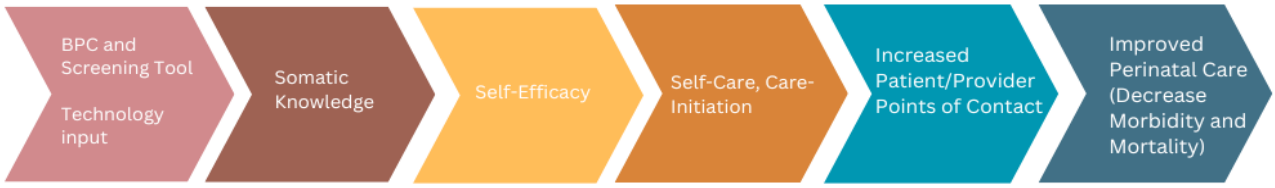
The intervention was carried out at six clinics in two community health clinic systems in the greater Seattle area: NeighborCare Health and Healthpoint Clinics. The choice of these clinics was due to their placement in federally underserved areas, their commitment to serving the most health underserved communities in Seattle, and to the diverse demographic composition of their patient pools, encompassing various ethnicities, socioeconomic statuses, and cultural backgrounds.

Heart, Soul, and Joy (HSJ) Project Model

The HSJ model is grounded in the concept of somatic information of authoritative knowledge [21, 22]. The model asserts that empowering people with comprehensive information to enable autonomous management of their perinatal health as needed [23] could lead to improved perinatal health. The HSJ team hypothesized that BPC and screening tools increase somatic information, which would increase self-knowledge, self-confidence and self-efficacy (black authoritative knowledge) which, in turn, would lead to increased self-advocacy and self-care - the initiation of care-seeking and increased service use. This action would likely increase the number of patient/provider

points of contact, facilitate provider responsiveness and intervention, with the potential impact of reducing maternal and infant mortality and morbidity and racial and ethnic health disparity.

Fig. 1



Sample

The sample frame consisted of pregnant or postpartum women currently receiving care in six clinics within the two community clinic systems in the Seattle area. Clinic staff recruited and referred patients to the HSJ research team at the clinic. Participants were considered eligible if they met the inclusion criteria of not previously having BPC at home, and agreeing to participate in the study. They were then enrolled and received the BPC and home screening tools.

Data Collection and Procedures

This thesis focuses on survey responses from a subset of women in the sample who identified as women of African descent. The survey was designed with closed response formats as well as open-ended response formats and included questions related to the four domains of our intervention: BP, emotion/mental health, relationship/home safety and basic needs, joy and pleasure. Before data collection, HSJ researchers underwent training on the survey questionnaires to understand the survey questions better and homogenously with the research team. Intake surveys were conducted in person and initially designed in English, with interpretation services provided by bilingual researchers or in-person and phone medical interpreters. Midway and exit survey data were collected via phone calls, each lasting approximately 40-50 minutes per participant, and participants were informed of the estimated 40–50-minute duration of the phone interviews to allow for scheduling adjustments if needed, given the sensitive nature of some questions.

Data Analysis

Survey data were entered into Survey Planet [24]. and open-ended questions were exported into Word documents for analysis [5]. We used the qualitative method of thematic analysis [25] to identify, analyze, organize, and then describe the main themes found across participant responses [26]. One lead researcher worked with the qualitative data to establish codes and organize them into themes. This analysis process involved an open coding approach at the first stage, followed by closed coding and axial coding. Finally, we proceeded by designing a visual representation (visual diagram) for identifying the benefits of and barriers to perinatal home BPC. Initially, we

referred to the transcript and briefly read three to five transcripts to get an overall sense of what the data was saying. During the coding process, we adopted an open coding method and then closed coding (an inductive approach). This involves examining the data to identify overarching patterns, themes, or concepts capturing benefits and barriers to perinatal BPC. To assess the reliability of the coding, we coded five transcripts at a time, taking a day's break before returning the next day to re-examine and compare the coding from the previous day with the new coding.

During the late stage of analysis and interpretation, our focus was on identifying patterns within and across themes. To do so, we turn our closed codes and axial codes into a visual diagram to investigate their connections and detect any emerging patterns. To facilitate the organization and visualization of coded data, we used distinct color pens and highlighters to group codes that generate similar themes. This method helped manage and analyze the data effectively without using any software for analysis. Additionally, I conferred with team co-researchers and the PI to ensure the thoroughness, consistency, and accuracy of the analysis.

FINDINGS

The individual interview participants were all patients who sought perinatal care at clinics in the two participating community clinic systems. A total of 215 women were enrolled at their perinatal visit, with approximately 102 identifying as women of African descent, representing 47.4% (102/215) of the total population. Out of the total population, 195 women, or 89.3% (195/215), completed the intake survey. Among these, 88 identified as women of African descent, making up 45.8% (88/195) of those who completed the intake survey. Additionally, 85 women, or 39.5% (85/215),

completed the exit survey. Of these, 52 identified as women of African descent, accounting for 61% (52/85) of the exit survey respondents.

Of the 52 participants who identified as women of African descent and completed the exit survey, 23% (12/52) screened in either the yellow or red zone for blood pressure (BP), indicating pre-eclampsia. Among those who experienced pre-eclampsia, all 12 (100%) sought and received care.

The median age of participants was between 26 and 30, and the median number of pregnancies was five. The median level of education was a high school diploma or equivalent. The low number of participants who completed the exit survey was due to difficulties in tracking down participants and arranging times for interviews after the long project period.

Reported Benefits of the BPC Home Self-Screening.

Three themes emerged as the greatest benefits of using the BPC and screener tool at home reported by participants who used the BP cuff at home include: 1) increased self-efficacy; 2) supported care-seeking behaviors; and 3) increased patient-provider points of contact, timely care provision, and patient follow-up.

Increased Self-Efficacy

Self-efficacy emerged as the predominant theme among patients when discussing the benefits of home blood pressure monitoring for home screening. Albert Bandura has defined self-efficacy as a person's confidence in their capacity to influence their own behavior and the events that impact their lives [27]. Here we are defining self-efficacy as the confidence participants have to trust their feelings to accomplish desired

outcomes[5]. Access to the knowledge from the BPC intervention let women feel more aware, calm, peace of mind, empowered, and confident to make informed decisions - agency - and take action for their own health, whether regularly checking on their blood pressure- self-care or taking other further steps. Participants reported that knowing their blood pressure levels whenever they wanted to provide a sense of mindfulness, fostered a deeper understanding of their health condition, and facilitated proactive decision-making. Below are the quotes from four participants:

> *“Having the blood pressure cuff and the home screening tool made me more aware of monitoring my blood pressure. When I feel under the weather or possibly have a headache, I immediately check my blood pressure. It made me more conscious and aware of blood pressure, so if I'm ever feeling down, I'll check my blood pressure."*
>
> *“Having this tool at home has changed my awareness of my health and body. Prior to this research, I wasn't aware of how to check my blood pressure. But through this, I have been able to learn how to monitor and check my blood pressure and my overall health.”*
>
> *"Yes it helped me with peace of mind. It helped me feel like an advocate for pregnant women. Yes, it gave me peace of mind knowing that BP isn't high and not having to worry about it, like being able to take it without going to the doctor.”*
>
> *“yes, the information helped a lot and made me feel empowered. It was very informative because I am getting older and have 4 kids to look after alongside my own physical and emotional health..... It helped me remember to check it.”*

As these quotes illustrate, knowing their BP empowered and made women aware of their health, leading them to manage their blood pressure whenever needed. They felt they had more ownership and control over their health outcomes. They were no longer

worried when they felt bad or tired, because they possessed the devices and could use it whenever they needed. Sometimes they even carried it with them when they went out. It was practical and compact enough to fit in their bags, providing convenience and peace of mind. This easy accessibility and portability led to a significant improvement in their mental state, as they felt more in control and reassured by having it on hand. Women gained a better understanding of their health with access to their home BPC. As they learned to take their blood pressure on their own, they developed a sense of autonomy. This increased self-sufficiency not only boosted their confidence in managing their health but also encouraged proactive healthcare practices.

Supported Care-Seeking Behaviors

The second key benefit of home BP self-screening was support for initiating care-seeking. Individuals who experienced high blood pressure or pre-eclampsia during their pregnancy were better equipped to make informed decisions and take further action to call their clinics or providers to seek care. Participants stated that they immediately contacted their clinics or providers for assistance when their blood pressure readings were elevated while they were monitoring their blood pressure. Quotes from five participants further illustrate this proactive care-seeking behavior:

> *"I am not sure, I just took it. It was high, it was in the yellow zone. I think I was overwhelmed that day. I did the same procedure again, I called, and they told me to wait 30 mins, and it didn't stay the same. It went down to the green area". I called and retook it 30 minutes later it went down"*
>
> *"Yes, I reached out to them, I went to the clinic when I took my son in and was given medication and told to rest. And I got more rest, and my blood pressure got better"*

Yes, I reached out to the provider, and they advised take aspirin and drink water and relax"

" My blood pressure was high, I called and they gave me medication, amlodipine daily"

" I called the clinic, and I was sent to the hospital, I was admitted to the hospital and induced preterm due to high blood pressure and had my baby and decreased blood pressure in my baby…."

Home blood pressure self-monitoring led to a rise in seeking healthcare as individuals felt more confident in managing their health. Participants with high blood pressure readings or signs of pre-eclampsia promptly reached out to their clinics or providers for swift assistance.

Enabled Provider and Patient Point of Contact and Timely Provision and Patient Follow-Up

As a result of the increased and informed care-seeking behavior described above, researchers saw another benefit of home blood pressure monitoring. Increased patient care-seeking led to increased points of contact between patients and providers, improving provider timely provision, and enabling provider follow-up and patients' follow-through. Participants who experienced high blood pressure or pre-eclampsia reported immediately contacting their providers and sharing their health concerns. They did not delay getting attention for abnormally high BP levels by waiting to see their providers on their scheduled antenatal visits or appointments to address their concerns. They sought care as needed, creating more points of contact between providers and patients. Additionally, participants reported that providers promptly responded to their health concerns and provided services, including assessments, prescriptions, or referral

instructions. Then, participants diligently reported following through with their providers' instructions, either going to the hospital for the closest follow-up or adhering to medication prescriptions. In addition, they reported that providers called to check on them to ensure compliance with the instructions given. Six quotes illustrate this theme:

> *"I called the hospital, and I was referred to the clinic, and medication dosage was changed."*
>
> *"When I checked once, it was high, and I called my doctor; I was sent to the hospital to be induced since I also already have gestation diabetes, so that was a nice thing…And the doctor called; he just wanted to know the record of her blood pressure and sugar levels."*
>
> *"I went to the office; they gave me pills to take to lower my blood pressure. Doctor took blood pressure and it was really high, gave me an injection, stayed the whole night, the blood pressure was normal the next morning and I was able to go home. Feeling better, staying more."*
>
> *" It was at the end of pregnancy, so they would have me go into the clinic or the hospital. I had a close follow-up and was not allowed to leave until my blood pressure was normal."*
>
> *" I had to be hospitalized because I was not as diligent checking, and blood pressure was really high at a follow-up visit…" We have follow-up appts every two months, and they always ask about my blood pressure."*
>
> *"They just discussed and asked how I was doing, and since I was better and my blood pressure was down, she told me to change the pill every other day. But now my blood pressure has been normal, and I stopped taking the pills."*

Overall, home blood pressure monitoring increased patient/provider points of contact while also improving communication between patients, who could work with the BPC and screening tool to better report health status and their providers. This active health

seeking facilitated more timely provider provision care and encouraged efficient and attentive follow-up. Participants with high blood pressure or pre-eclampsia reported reaching out to their providers immediately, without the need to wait for scheduled appointments. They further reported that their providers actively followed up to ensure that patients adhered to treatment instructions, resulting in better health management on both sides. Participants also reported that they strictly adhered to their provider's instructions, a behavior that significantly contributed to the potential for improved care outcomes.

Reported Challenges of the BPC Home Self-Screening

Participants also reported some challenges with using the home BPC and/or screening tool. Four themes emerged from nine out of the 52 (17%) participants who reported challenges with the home BPC self-screening. These challenges included: 1) time constraints, 2) forgetfulness, 3) health conditions, and 4) technology challenges.

Time Constraints

Three respondents (6%) identified time constraints as a major obstacle to using the home blood pressure cuff self-screening tool. They reported that even though they knew the tool was important, they often forgot to use it because they were so busy. With all the things they had to do every day, finding time to check their blood pressure was hard. They felt like they had to do many different and mounting tasks, like working outside the home, taking care of their families, and managing their homes. This left them with little time to take care of themselves. They felt torn between looking after their health and doing what they needed to do for their families and jobs. These responses

emphasize how difficult it can be for women to balance taking care of themselves with everything else they have to do. The following quotes from three participants illustrate how time constraints are a challenge and hindrance to the use of the home BP screening tool.

> *“No reason, just haven't used it. I have had a very busy schedule with work and taking care of my other children, so it gets hard to get the chance to look over the screening tool or check the blood pressure cuff.”*

> *“ I have other 2 kids who are less than five years old, taking care of them, my other tasks ….I sometimes find myself exhausted at the end of the day and do not even have time for myself, just my family.”*

> *“ I have too many kids, not enough time to use the BP.”*

These difficulties of juggling a busy schedule led to these respondents not using the screening tool. Even though they understood how important it was, many women often forgot to use the tool in the course of very busy days. Finding time to check their blood pressure seemed almost impossible. They felt pulled in many directions, with little time left to focus on their own health. This left them feeling conflicted, torn between trying to take care of themselves while managing all their other responsibilities.

Forgetfulness

Two participants noted that forgetfulness made it difficult to use the home BP cuff consistently. These participants reported that they meant to check their blood pressure frequently, but that they had neglected to do so. In addition, it was stated that even though they were not facing any particular difficulties in using it, this forgetfulness made it difficult to develop a routine for using the screening tool. They reported that they just forgot to include the BPC in their weekly or daily routines. As a result, they had only

used the device a few times. The two quotes below capture the forgetfulness challenges faced by a few participants who were using the home-screening tool.

> *“ I just forget to use it that it is; there is nothing preventing me from using it ……..., just forget.”*
>
> *“Sometimes I do not get around to it, and I forget, I have only used it a few times.”*

Participants recognized that forgetfulness hindered consistent use of the home blood pressure cuff, despite intending to check their blood pressure regularly.

Health Condition Challenges

Two participants (3.8%) reported that feeling in great health was the main reason for not using the BPC to monitor BP at home. Their good health conditions discouraged them from using the device, because they felt well and healthy, and they never experienced blood pressure issues during pregnancy. They always had normal blood pressure measurements, and they always were told at clinic check-ups that their BP read within the normal range. This perception made them believe home monitoring was unnecessary, as they didn't expect any blood pressure issues. They, therefore, didn't think it was necessary to use the BP cuff at home because they did not think they were at risk for high blood pressure or other issues. Therefore, they did not feel the need to check their blood pressure regularly at home, trusting in their good health. Below are two quotes that illustrate the challenges due to health conditions.

> *“ I am healthy; we, all my family, never have high blood pressure during pregnancies; I always have a normal BP and never have experienced any complications with my pregnancies. I felt normal, and I am not sick.”*
>
> *“I feel like I was healthy and did not need it.”*

Their belief in their good health led these participants to deem home BP self-monitoring unnecessary, leading to a lack of motivation to monitor their blood pressure regularly. This strong conviction in their own good health led them to perceive home blood pressure self-monitoring as unnecessary. This confidence in their well-being created a sense of complacency regarding the need for regular monitoring, resulting in a diminished sense of urgency or importance attached to this aspect of their health maintenance routine. Given that elevated BP can go undetected, this was a response that the research team wished to consider carefully, as it suggested some possible need for new health messaging around eclampsia and preeclampsia.

Technology Challenges

Two participants (3.8%) faced challenges with the home BPC device itself, either due to the size of the cuff or its functioning. Specifically, individuals with larger upper arms found it challenging to use the cuff and achieve accurate readings, prompting them to place it on their lower arms instead. Additionally, participants encountered discrepancies in the readings obtained from the home BP cuff compared to those obtained during medical appointments, which appeared higher than expected, leading to feelings of anxiety or concern. However, upon verification during medical appointments, these readings were discovered to be inaccurate. It is difficult to determine if the discrepancy between the measurements taken at home and by a professional resulted from malfunctioning equipment or human error. Below are quotes that support this challenge.

> *“ I had to use it on my lower arm because I have bigger upper arms and couldn't get an accurate reading."*

> *“ Mine read a little bit high, so at first, I freaked out. But basically, I brought it back with me to my appointment. They told me that I was not high. So I knew if I was high, I knew that I was not my real numbers.”*

In this case, the size of BPC made a big difference in the BP readings and caused doubts whether the reading was inaccurate due to device function or human error. There was also a noticeable discrepancy in blood pressure readings between providers and patients. Providers and patients often recorded different values when measuring blood pressure. This variation raised concerns about the accuracy and reliability of the readings.

DISCUSSION

This qualitative study assessed the benefits and barriers of a perinatal home blood pressure (BP) self-screening intervention among women of African descent at two community health clinic systems in Seattle, Washington. Our findings revealed more significant benefits of home blood pressure screening than significant challenges. The findings showed that access to home blood pressure (BP) self-screening intervention increased women’s somatic information, which enhanced self-efficacy and agency. This, in turn, promoted care-seeking behaviors, increasing patient-provider's points of contact. These interactions facilitated timely provider interventions and caregiving, enabling providers to follow up with patients and patients to adhere to providers' recommendations. Moreover, our findings identified new steps in care flow. Home BP self-monitoring not only increased patient-provider points of contact but also improved timely provider intervention and caregiving, enhanced follow-up by providers, and adherence by patients. This new step has not only reinforced the HSJ model, but has expanded on the care flow such that other programs can benefit.

Based on patients' responses, we concluded that home BP facilitated care-seeking appeared to lead to increased points of contact between patients and providers. This enhanced interaction improved timely provider interventions and enabled consistent provider follow-up and patient adherence or follow-through. Specifically, patients with high BP did not wait for regular appointments but sought clinical health care as needed each time they felt their health was in danger. This proactive approach allowed providers to promptly respond to health concerns, offering timely assessments, making necessary referrals, and adjusting treatments. In this way, we could assume better care has been offered by the provider. Additionally, patients diligently followed their providers' instructions, and providers ensured compliance through follow-up, maintaining the patient's health stability.

These findings confirmed the HSJ model, which hypothesized that embodied self-knowledge, driven by home BPC and self-screening tools, gave patients a sense of control and confidence to make competent decisions (self-efficacy) and act and advocate on their own behalf when needed (care-seeking), resulting in increasing patient-provider point of contact, thereby improving perinatal health outcomes. Our study supports this theory model, and we could confirm that patients who experienced high blood pressure during their pregnancy, all sought and received care. They all trust their feelings to seek assistance or care on time. This could potentially lead to better care and a potential contribution to reducing maternal and infant mortality due to pre-eclampsia and decreasing perinatal race/ethnic health disparity. These findings also suggest that similar programs using BP self-monitoring could adopt the expanded

model to assess their effectiveness in improving care and potentially preventing health crises among all pregnant women. This is regardless of their socioeconomic status.

Several studies have explored the potential impact of BPCs on perinatal care, primarily focusing on the feasibility and acceptance of the tools [3, 17, 18]. While these studies have suggested the potential of such tools in improving perinatal care, they have not provided concrete evidence of their efficacy in enhancing service utilization or empowering patients to seek timely care. In contrast, our research advances beyond these preliminary findings by demonstrating the tangible impact of BPC tools on improving service utilization and empowering patients to seek timely assistance and care. By providing empirical evidence of these effects, our study fills a critical gap in the literature and contributes significantly to understanding the role of BPC and screening tools in improving perinatal care and outcomes. Specifically, our findings highlight the transformative potential of universal, supported home BP tool use in revolutionizing perinatal care practices, advocating for their widespread adoption as a means to enhance maternal and infant health outcomes globally and mitigate perinatal race/ethnic health disparities.

We assert that the home BP cuff intervention is a valuable tool in perinatal care to manage gestational hypertension, and universal provision of BPC is vital in perinatal care to intercept the high volume of undetected high BP during pregnancy, particularly among marginalized populations, such as Black, immigrant, low-income communities, and any families and communities who are uninsured or underinsured. While documenting how the right for all perinatal patients, regardless of income or insurance, to have access to a home BPC is a small shift in defining the provision of what is

considered “adequate” perinatal care, it is a potentially large step in rupturing the longstanding pattern of racial/ethnic perinatal maternal/infant health disparities in the US and beyond. And it is an important step in advocating for and moving towards a world where the provision of quality, universal healthcare is a human right.

FUTURE NEXT STEP

The research findings reported here suggest that the HSJ model is a viable and valued approach to improving linkages to care and follow-up for mothers who experience perinatal hypertension. A larger and lengthier controlled trial could assess and measure the impact of the HSJ model on a range of actual health outcomes, including treatment for pre-eclampsia and eclampsia, pregnancy outcomes, and infant health.

CONCLUSION

This study highlights the transformative potential of home blood pressure self-monitoring interventions among African-descent women attending community health clinics in the Seattle area. This intervention holds promise in improving perinatal health and addressing perinatal disparities, increasing patients’ care-seeking and provider-patient points of contact, improving timely provider intervention, and enabling provider follow-up and patient follow-up. Despite limitations such as small sample size and a lack of comprehensive outcome assessments, the findings illuminate the promising potential of home blood pressure self-screening in enhancing perinatal health and reducing race/ethnicity disparities. Moving forward, larger-scale research initiatives are warranted to explore the efficacy of this intervention further and guide healthcare strategies aimed at reducing health disparities in vulnerable populations.

REFERENCES

1. Ross, K.M., et al., *Socioeconomic Status, Preeclampsia Risk and Gestational Length in Black and White Women*. Journal of Racial and Ethnic Health Disparities, 2019. **6**(6): p. 1182-1191.
2. Macdorman, M.F., et al., *Racial and Ethnic Disparities in Maternal Mortality in the United States Using Enhanced Vital Records, 2016–2017*. American Journal of Public Health, 2021. **111**(9): p. 1673-1681.
3. Munyungula, J. and S. Shakwane, *Self-monitoring of blood pressure for preeclampsia patients: Knowledge and attitudes*. Curationis, 2021. **44**(1).
4. Duley, L., *The Global Impact of Pre-eclampsia and Eclampsia*. 2009.
5. Chapman, R.R., et al., *Preventing Health Disparities during COVID through Perinatal Home Screening as Black Authoritative Knowledge*. Journal of Racial and Ethnic Health Disparities, 2023.
6. CDC, *Pregnancy Mortality Surveillance System*. CDC, May, 2024.
7. Collier, A.-R.Y. and R.L. Molina, *Maternal Mortality in the United States: Updates on Trends, Causes, and Solutions*. NeoReviews, 2019. **20**(10): p. e561-e574.
8. Hoyert, D.L., *Maternal Mortality Rates in the United States*. 2021.
9. Njoku, A., et al., *Listen to the Whispers before They Become Screams: Addressing Black Maternal Morbidity and Mortality in the United States*. Healthcare, 2023. **11**(3): p. 438.
10. Saldanha, A., *To prevent maternal deaths, WA looks for advocates in pregnancy care*. Seattle times, July 2023.
11. Juanita J. Chinn, I.K.M., and Nicole Redmond, *Health Equity Among Black Women in the United States*. journal of women's health, 2 Feb 2021.
12. Health, W.S.D.O., *Maternal Mortality Review Panel*. 2023.
13. County, P.H.-S.K., *Health of mothers and infants by race/ethnicity; Assessment, Policy Development & Evaluation Unit*. August 2015.
14. Johnson, J.D. and J.M. Louis, *Does race or ethnicity play a role in the origin, pathophysiology, and outcomes of preeclampsia? An expert review of the literature*. American Journal of Obstetrics and Gynecology, 2022. **226**(2): p. S876-S885.
15. Tucker, K.L., et al., *Blood pressure self-monitoring in pregnancy: examining feasibility in a prospective cohort study*. BMC Pregnancy and Childbirth, 2017. **17**(1).

16. Sarira El-Den, C.L.O.R., Timothy F. Chen, *A systematic review on the acceptability of perinatal depression screening*. journal of Affective disorders, 1 December 2015. **188**: p. 284-303.
17. L Pealing 1, K.L.T., B Fletcher 1, E Lawley 1, L C Chappell 3, R J McManus 1, S Ziebland 1, *Perceptions and experiences of blood pressure self-monitoring during hypertensive pregnancy: A qualitative analysis of women's and clinicians' experiences in the OPTIMUM-BP trial*. 2022.
18. Muijsers, H.E.C., et al., *Blood pressure after PREeclampsia/HELLP by SELF monitoring (BP-PRESELF): rationale and design of a multicenter randomized controlled trial*. BMC Women's Health, 2020. **20**(1).
19. Usha Ranji, I.G., Alina Salganicoff, Carrie Rosenzweig, Rebecca Kellenberg, and Kathy Gifford, *Medicaid Coverage of Pregnancy-Related Services: Findings from a 2021 State Survey*. May 19, 2022.
20. Berg, S., *Medicaid often doesn't cover self-measured BP. Now that's changing*. FEB 21, 2023.
21. Jordan, B., *Birth in four cultures: A crosscultural investigation of childbirth in Yucatan, Holland, Sweden, and the United States*. 1992.
22. Ellison, M.A., *Authoritative Knowledge and Single Women's Unintentional Pregnancies, Abortions, Adoption, and Single Motherhood: Social Stigma and Structural Violence*. Medical Anthropology Quarterly, 2003. **17**(3): p. 322-347.
23. McCoyd, J.L.M., *Authoritative Knowledge, the Technological Imperative and Women's Responses to Prenatal Diagnostic Technologies*. Culture, Medicine, and Psychiatry, 2010. **34**(4): p. 590-614.
24. SurveyPlanet, S.n.d., *A simple and powerful online survey tool*. Oct, 2022.
25. Schreier, M., *Qualitative Content Analysis in Practice*. 2012.
26. Lorelli S. Nowell lnowell@ucalgary.ca, J.M.N., [...], and Nancy J. Moules+1View all authors and affiliations, *Thematic Analysis: Striving to Meet the Trustworthiness Criteria*. Oct, 2017.
27. Lopez-Garrido, G., *Bandura's Self-Efficacy Theory Of Motivation In Psychology*. July 10, 2023.