

Running head: BARBERSHOP BLOOD PRESSURE PROGRAM

Barber Shop Blood Pressures Program: A Quality Improvement Initiative

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Table of Contents

Abstract.....	4
CHAPTER 1. PROBLEM.....	5
Introduction.....	5
Clinical Needs Assessment and Specific Aim.....	7
Background.....	9
Problem Statement.....	10
PICOT Question.....	10
Objectives.....	11
CHAPTER 2. REVIEW OF LITERATURE.....	13
Review of Literature.....	13
Methodology of Literature Review.....	14
Synthesis of Literature.....	15
Lack of Trust.....	16
Social Barriers.....	17
Lack of Culturally Tailored Programs.....	19
Barbershop Based Intervention Venue.....	20
Synthesis of Literature and Levels of Evidence.....	23
CHAPTER 3. METHODS.....	26
Project Settings.....	26
Sampling and Data Collection.....	26
Statistical Analysis Plans.....	26
Characteristics Likely to Influence Improvements.....	27

Identification of Intervention.....	28
Planning the Intervention and Components.....	28
Planning the Study and Plans for Evaluation.....	29
Study Design and Approach of Implementation.....	31
Project Objectives.....	31
Timeline.....	32
Strengths, Weaknesses, Opportunities and Threats (SWOT).....	32
Congruence of Project to Organization Strategic Plan.....	34
Cost Benefit Analysis.....	35
Guiding Framework.....	35
Plan Do Study Act (PDSA) Cycle.....	36
Ace Star Model of Knowledge Transformation.....	38
Executive Summary of Proposal.....	38
CHAPTER 4. RESULTS AND OUTCOMES.....	40
The Study Question.....	40
Phases of the Study.....	40
Plan-Approval of the Intervention.....	40
Do-Data Collection.....	41
Study-Analysis of Data.....	41
Act-Plan for Dissemination.....	41
Defended DNP Scholarly Project.....	42
Measurements of Objectives.....	42
Descriptive Statistics of Patient Demographics.....	42

Figure 1. Frequency Table of Individuals by Barbershop.....	43
Figure 2. Frequency Table of Age Groups of Individuals.....	43
Figure 3. Summary Statistics of Systolic Blood Pressure by Age & Overall.....	44
Figure 4. Summary Statistics of Diastolic Blood Pressure by Age & Overall.....	44
Figure 5. Two-Way Frequency Table of Blood Pressure Status by Age Group.....	45
Statistical Methods and Analysis.....	45
Ethical Implications.....	45
Methods of Evaluation.....	46
Figure 1a. Histogram of Systolic BP for Individuals Not Previously Referred.....	47
Figure 1b. Histogram of Diastolic BP for Individuals Not Previously Referred.....	47
Instruments Used to Assess Effectiveness.....	48
Validity & Reliability of Instruments.....	48
Methods to Ensure Quality.....	48
Data Analysis & Statistical Methods.....	49
Expected Versus Actual Outcomes.....	49
Quality Indicators and Resources.....	50
Barriers.....	50
Chapter 4 Summary.....	50
CHAPTER 5. DISCUSSION.....	51
Interpretation of Findings.....	53
Figure 6. Summary Statistics of Systolic Blood Pressure by Age Group.....	54
Figure 7. Summary Statistics of Diastolic Blood Pressure by Age Group.....	54
Figure 8. Results of Mann-Whitney U Test.....	54

Figure 1. Median Systolic Blood Pressure by Group.....	55
Figure 2. Median Diastolic Blood Pressure by Group.....	55
Figure 9. Distribution of BP Status by Medication Status.....	55
Figure 10. Results of Chi-Square Test.....	56
Figure 3. Bar Plot of Blood Pressure versus Medication Status.....	57
Limitations of Study.....	57
Recommendations.....	58
DNP Role Consideration and Implications.....	58
Plan for Dissemination.....	59
Chapter 5 Summary.....	60
Conclusion.....	62
REFERENCES.....	60
Appendix A.....	65
Appendix B.....	68
Appendix C.....	69
Appendix D.....	70
Appendix E.....	71
Appendix F.....	72
Appendix G.....	73
Appendix H.....	74

Abstract

Black males suffer from hypertension at far greater rates than any other demographic group. Such disproportions are due to complex, multifaceted factors ranging from perceived discrimination, physician bias, lack of culturally fluent healthcare providers, and an overall distrust of medicine marred by racist medical experimentation. Targeted healthcare delivery models have been shown to result in better outcomes when compared to current, traditional models. This project capitalized on the pre-existing trust between black barbers and their black male clients. Barbers administered blood pressure screenings at time of grooming services. This intervention brought the healthcare directly to the patient in a familiar place of comfort. Over 45 days, barbers conducted blood pressure checks on a combined 456 clients. Analysis of the blood pressure checks was performed with the Mann-Whitney U test and the Chi-Square test. Variables included systolic pressure, diastolic pressure, age, previous referral for hypertension, and medications. The findings did not suggest a statistically significant difference in blood pressures amongst those screened after being notified of their elevated pressure. However, the study shed light on the problem, fostered dialogue, and prompted black men to see a healthcare provider.

Keywords: African American males, barbershops, hypertension, barbers, blood pressure screenings.

Barber Shop Blood Pressure Program: A Quality Improvement Project

CHAPTER 1. PROBLEM

For decades, uncontrolled hypertension has been one of the leading causes of death amongst African American men (Victor, 2011). African Americans are known to not only have higher rates of hypertension but are at higher risk for hypertensive related consequences such as chronic kidney disease, end stage renal disease, and other forms of end organ damage (Richardson, 2015). Of the 4.4 million black men with hypertension, 70 percent remain undertreated and still have blood pressures well over the recommended threshold of 140/90 mmHg (Victor, 2011). Managing hypertension in this group remains a challenge because in comparison to black women, black men have “less frequent physician contact for preventative care and a substantially lower rate of hypertension detection, medical treatment, and control” (Victor, 2011, p. 2). Sadly, the hypertensive related death rates among African American men are two to three times higher than those of white males (Gluck, 2014).

Efforts to reach the African American male population for engagement in preventative health management have overwhelmingly and consistently failed time and time again. Releford, Frencher, and Yancey (2010) feel that healthcare in the eyes of the black community “has been marred by epic transgressions, including clandestine experimentation, deliberate under-treatment and racial discrimination; consequently, generations of black men have been found to view the healthcare system and efforts to intervene in their health behaviors with suspicion and doubt” (p. 2). There are many examples of the aforementioned heinous transgressions in U.S. history such as the

Tuskegee Study of Untreated Syphilis in the Negro Male in which 600 black men were told they were being treated for “bad blood” when in fact, they were being infected with syphilis in order for researchers to study the progression of the disease (Centers for Disease Control [CDC], 2017). In 1947 when penicillin was found to cure the infection, the uninformed, misled “participants” were not given the lifesaving antibiotic, but instead were forced to continue in the study until their demise (CDC, 2017). This experiment was designed to last six months, but instead continued on for 40 years (CDC, 2017).

In order to reach the disproportionately at-risk population of African American males, healthcare providers must no longer expect these patients to willingly walk through the doors of their clinics. Instead, utilization of a long-standing well trusted member of the community would bring a portion of preventative health directly to the patient. Historically, black barbershops have been far more than a place to get a haircut and perhaps a shave. “Barbershops are the hub of a community” and “barbers are trusted peers with a lot of respect in their community, more than healthcare workers” (Gluck, 2014). Barbershops are ideal sites for preventative health promotion for African American men and “provide a unique receptive environment for regular BP monitoring and health messages based on positive experiences of peers, a powerful motivator or health behavior” (Hess, Reingold, Jones, et al., 2007). Simply put, capitalizing on the numerous advantageous facets of the historical reverence of black barbershops could have a significant impact on a radically under controlled, mismanaged health issue. Black men on average visit their barber twice monthly, an ideal schedule for blood pressure check follow-ups. In addition, they already have a well-established trusting relationship

with the barber performing the blood pressure measurement while in a familiar and comfortable environment.

Clinical Needs Assessment and Specific Aim

According to Noonan, Velasco-Mondragon and Wagner (2016), “the greatest health disparity between total U.S. population and any ethnic group is African Americans”. African Americans are the least healthy ethnic group in the U.S.; black males fare far worse than females in terms of number of chronic illnesses and life expectancy. In fact, black males on average live six years less than black females (Bond & Herman, 2016). The cause of such inequities is multifaceted and a result of “a somber legacy of years of social and racial injustice” (Noonan, Velasco-Mondragon & Wagner, 2016). The solution involves far more than improving access to healthcare or implementing health education programs. One could argue that “a systemic cause of suboptimal black health requires a systemic solution” for successful rectification (Noonan, Velasco- Mondragon & Wagner, 2016). In addition to increased access and education, community-based programs have shown to be quite promising, especially amongst black men who tend to underutilize traditional primary care (Ravenell & Ogedegbe, 2015). Overall, to gain widespread control of hypertension, convergence of healthcare providers and patients coupled with assistance from health systems and communities is necessary. Only with all required players engaged can true progress take place.

According to the Office of Disease Prevention and Health Promotion (ODPHP) (2016), “dramatic improvement on public health could be gained from enhanced hypertension control.” Healthy People 2020 recognized this fact and developed a sixteen

objective focused plan to tackle this issue. The Health Disease and Stroke (HDS) committee will oversee this project and plans to incorporate “research, data analysis, public health initiatives, and public education activities that will facilitate the use of evidence-based strategies to prevent and control hypertension” (ODPHP, 2016). Federal backing of such programs implies two critical points: (a) hypertension is a widespread health issue with little regard for income level or socioeconomic status and (b) the complications of uncontrolled hypertension are severe and at times irreversible (Ravenell & Ogedegbe, 2015).

The Barber Shop Blood Pressure Program specifically targeted African American males with undiagnosed or undertreated hypertension. Typically, “the black community is not present when strategies and programs addressing their poor health status are designed”. To add insult to injury, the designers of such programs often lacked the insight and understanding of the culture, social mores, and history of the African American community (Noonan, Mondragon-Velasco and Wagner, 2016). The Barber Shop Blood Pressure Program was designed with the black male in mind; hence the location of the blood pressure screenings was the barbershop. Historically, black men see the barbershop as a safe haven, a place of comfort and familiarity. According to Hansen, Hodgson and Gitlin (2016) “trust is a fundamental aspect of the patient-provider relationship that affects every aspect of clinical exchanges and interventions from personal disclosure to adherence to treatment”. The Barber Shop Blood Pressure Program aimed to lessen the discomfort felt by African American men when interacting with healthcare establishments. Historically, minority males are more likely to distrust providers but have more interaction with culturally competent providers (Hansen, Hodgson and Gitlin,

2016). Their barber, someone who is not only culturally competent, but a revered, trusted member of the black community took the blood pressures. The barbers were trained by a nurse practitioner that required correct return demonstration and interpretation of readings. Trust is associated with both positive health outcomes and patient satisfaction; the entire premise of the Barber Shop Blood Pressure Program was based on capitalizing on the familiarity of the barbershop and the pre-existing trust between the barber and African American male client.

Background and Clinical Significance of Proposed Project/ Intervention

Hypertension is a worldwide health and economic burden and a burgeoning public health priority. In 2014, African Americans accounted for approximately 13 percent of the US population with 55 percent living in the southern regions (Noonan, Mondragon-Velasco and Wagner, 2016). African Americans have the highest rates of hypertension in the United States; 41 percent in comparison to 27 percent for whites (Frumin, 2017). Hypertension is a major contributor to the 46 percent of African Americans with cardiovascular disease. The disease is a precursor to stroke, heart attack and end stage renal disease, all of which African Americans see at 1.3 to 4.2 higher rates than whites (Noonan, Mondragon-Velasco and Wagner, 2016). About 41 percent of African Americans residing the state of Texas live with hypertension (Americas Health Rankings, 2017).

These staggering rates play a role in the economic burden of the disease, costing the United States about 52 billion dollars in direct and indirect associated costs.

Hypertension related cardiovascular costs are even higher and amount to 316 billion dollars per year (Wang, Grosse and Schooley, 2018). Unfortunately, African American

men lag far behind African American women in terms of health outcomes and therefore see such hypertensive related outcomes at higher rates. These devastating consequences of uncontrolled hypertension affect the families financially and emotionally for generations. Fiscally speaking, “indirect costs are incurred from productivity loss due to morbidity and disease related premature mortality” (Wang, Grosse and Schooley, 2018).

Indirect costs, such as payments for work absence and short-term disability, totaled a projected 27 billion dollars. From an emotional standpoint, hypertensive related consequences cost the family in ways that cannot be measured. Families must find ways to devote a substantial amount of time to care giving, which also sometimes feeds into the economic burden. This effects the latter generations due to the either the total absence of the male figure due to illness or the inability of the male figure to instill healthy habits into the younger males (Bond & Herman, 2016). This crucial health knowledge is not being passed down from generation to generation, leaving the future of health for black males in a vulnerable state.

PICOT Statement and Question of Inquiry

In African American males, over the age of 18, residing in Dallas County (P), do barber blood pressure screenings and referrals for hypertensive readings (I) positively affect blood pressure control (O) amongst those screened (C), over a span of forty-five days? (T)

The PICOT for this research question is detailed below:

- Population (P) – African American males, over the age of 18, who reside in Dallas County who seek grooming services at one of three designated barbershops.

- Intervention (I) – After being trained by nurse practitioner, barbers took clients blood pressure readings at completion of services, logged readings, and whether they were referred for evaluation.
- Compare (C) – Current blood pressures of African American males, over the age of 18, from Dallas County, who sought grooming services at the designated barber shops.
- Outcome (O) – Increased identification of undertreated and undiagnosed hypertension that was followed by a referral to a health care provider/clinic for evaluation; referrals possibly resulted in medication initiation by provider and subsequently lead to lower repeat blood pressure readings.
- Time (T) – Barbers took their clients blood pressures at completion of services for a span of 45 days.

Innovation/Objectives

Standard health care delivery models typically require the patient to meet the provider at their place of business. There is a great need for innovation of current delivery models; they should be crafted to meet the specific needs of the population being served or targeted. Models must also account for cultural barriers that are often overlooked. For example, providers do not account for linguistic barriers that portions of African American males struggle with every day (Tamparo & Lindh, 2017). Although both parties are speaking English, African American Vernacular English (AAVE), or more commonly known as “Ebonics”, is a dialect that “gives unique meaning to a variety of words based on experience, culture, and ethnicity” (Tamparo & Lindh, 2017). During a patient interview, a provider might ask a patient how long a symptom has been present.

An AAVE speaking patient might say, “I’ve been having this here for a minute.” The provider would assume he meant sixty seconds or a very short period of time, when in fact, “a minute” actually mean several days, or even months. This unique challenge coupled with an overall lack of awareness and education surrounding health in general, results in a recoiling from any type of health-related service. New healthcare delivery models aimed at serving the African American male should incorporate more providers that are fluent in the culture, which would allow for increased levels of comfort for the patient. The more comfortable the patient feels seeking and discussing their health, the more often they will be open to screening, evaluation, and treatment (Tamparo & Lindh, 2017).

Objectives for the program are as follows: a) Obtain blood pressure readings on a minimum of 80 percent of African American male patrons, aged 18 years or older, and keep records for subsequent readings in order to establish a trend. b) Refer 100 percent of patrons with elevated blood pressure readings, greater than 140/90 mmHg, to a PCP for follow up and potential treatment. c) To observe a statistically significant difference between the pre and post systolic and diastolic pressures of those referred for elevated readings.

CHAPTER 2: REVIEW OF LITERATURE

Literature Review

The health status of African Americans has consistently been ranked amongst the lowest in comparison to all other ethnic groups (Noonan, Velasco-Mondragon, and Wagner, 2016). Hypertensive related disease processes such as cardiovascular disease, cerebrovascular accidents, and end stage renal disease occur in disproportionate numbers due to the staggering rates of African Americans with hypertension. In 2014, African Americans were determined to have 1.8-times higher rate of stroke, 1.5-times higher risk of death related to heart disease, and 4.2-times higher rate of end stage renal disease (Noonan et al., 2016). For decades, African Americans have been known to have elevated rates of hypertension in comparison to all other ethnic groups (Cuffee et al., 2013). Reasons for such statistics are multifactorial and include deep rooted, socially systemic cultural and historical implications. While lack of knowledge and limited access to healthcare play a role in this issue, overall distrust of health care providers remains a rather high hurdle to clear. The African American male patient is one of the most vulnerable patient populations, as well as the most reluctant to seek regular healthcare and comply with treatment plans (Cuffee et al., 2013). This demographic will continue to suffer from the consequences of undiagnosed and undertreated hypertension until the reluctance is bypassed. The route of such a bypass follows a path that brings preventative and screening healthcare measures directly to the patient, on their turf, in an emotionally safe and familiar environment.

Methodology of Review of Literature

A review of literature was performed by utilizing the electronic library database at a large southern university. The databases used in the search included the following: “Pub Med”, “Academic Search Complete”, and “CINAHL Complete”. Terminology utilized as search terms included African American, male, hypertension, and barbershop. A GOOGLE SCHOLAR search was also performed using the above-mentioned search terms. PubMed was accessed using the BOOLEAN phrase hypertension in African American males with the inclusion criteria of publish date on or after January 2013, English language, and full text. The search yielded 3711 articles; when the term barbershop was included in the search, the yield reduced to one article. CINAHL complete was searched with the same BOOLEAN phrase mentioned above with the same inclusion criteria and the search yielded 167 articles. When the term barbershop was added to the search, the yield reduced to two articles. Finally, Academic Search Complete was searched with the same aforementioned BOOLEAN phrase and inclusion criteria; the search yielded 83 articles. When the term barbershop was added, the yield came down to four articles.

Overall, 12 peer-reviewed articles satisfied the comprehensive inclusion criteria for utilization within the project. Higher priority was given to articles that included peer reviewed research studies. Also examined were all articles relating to the history of African American barbershops, historical health trends of African American men, and community-based health programs targeting African Americans. At the end of this chapter, a succinct summary of all articles used in this project can be found within the table called synthesis of literature and levels of evidence.

Synthesis of Literature

African American males undeniably fare far worse than any other ethnic group in terms of health (Noonan et al., 2016). Black males are disproportionately affected by hypertension and hypertensive related disease such as cerebrovascular disease, cardiovascular disease, and end stage renal disease. The cause of such disproportional rates is complex and multifaceted and therefore calls for the means of rectification to mirror such complexity (Murphy et al., 2016). There were three major challenges facing African American males on the journey to better health outcomes. The first challenge is a serious distrust of health care providers and the healthcare system in general. The next challenge is the socioeconomic barriers such as racism/discrimination, poverty, lack of education, lack of access to health care, lack of access to health foods, and sub-optimal housing (Noonan et al., 2016). The final challenge is a lack of community-based programs tailored to the targeted population. One reoccurring suggestion was that of utilizing the barbershop for such community-based programs to specifically target the African American male.

There is an abundance of literature discussing the cause, associated factors, and poor health outcomes for black men. However, in comparison, there is only a scant amount dedicated to determining the appropriate methods to reach African American men in “culturally competent” venues (Luque, Ross, and Gwede, 2013). This indicates that more research needs to be dedicated to reaching African American men via community assets such as barbershops. Furthermore, the literature did not account for the

best locations or methods of how to reach black males of the older age groups and non-heterosexual orientation.

Lack of Trust. A lack of trust between the African American patient and the health care provider is an obstacle that stands between the currently poor state of African American health and more desired optimal health outcomes. The roots of such distrust run deep and date back to the historical transgressions imparted on African Americans for medical experimentation. Cuffee et al. (2013) conducted a project called the TRUST study from 2006 to 2008. The study examined multiple factors impeding the path of African Americans with hypertension to optimal health outcomes. Eligible participants were those aged 19 or older who identified as African American. Trust was measured using the Hall General Trust Scale; a 25-question survey that divides trust into the five following domains: (1) caring about the patient, (2) physician competence, (3) honesty, (4) confidentiality, (5) and global trust. The scale ranges from 11 to 54, a higher score correlating with a higher level of trust. Assessment of the scale determined high reliability, adequate item means, and solid validity of construct. At a threshold of $P < .05$ for statistical significance, ANOVA was used to compare the continuous variables of discrimination, age, and trust. A 780-subject sample size of African American men (29%) and African American women (71%) yielded a mean of 3.4 (+/- 4.4) and 39.2 (+/- 8.0) indicating a low to moderate level of trust amongst African Americans with hypertension. Overall the study concluded that lower levels of trust were associated with lower patient outcomes related to hypertension.

Watson (2014) studied barriers to healthcare specifically for young African American men under the age of 35. One of the perceived barriers was that of an “overall

distrust of medical practices associated with race history resulting in accessing healthcare as a last resort” (Watson, 2014). Despite these younger African American males not living near the time frame in which medical testing and experimentation was performed on African Americans, the distrust of medical practices in general was passed down from generation to generation. This has resulted in African American males, generationally speaking, continuing to have the shortest life expectancy of any other minority sub group.

Social Barriers. Comprehensively, the literature noted multiple barriers, both perceived and legitimate, that deter African American men from actively participating in striving for better health outcomes. The most commonly noted barrier was perceived racism or discrimination from the health care provider. Noonan et al. (2016) state that due to the systemic nature of racism, organized exclusion and prejudice led the manifestation of health-related disparities for African Americans living in the United States.

Physician bias is another social determinant of health that parallels systemic racism. Studies showed that African American males were more reluctant to seek healthcare in comparison to white males due to the lingering fear of being the subjected to bigotry (Cuffee et al., 2013). This fear directly correlates with decreased levels of participation, compliance, and adherence to treatment plan. Cuffee et al. (2013) dissected various studies that support the hypothesis of physician bias. One study concluded that physicians were less likely to refer African American patients to cardiology when complaining of chest pain. Such findings have brought physician bias to the forefront and call for the remolding of physicians’ delivery of healthcare.

According to Noonan et al. (2016), fewer African Americans graduate high school and go on to earn bachelor’s degrees compared to whites, 18.6% versus 32.5%

respectively (Noonan et al., 2016). An astounding 43 percent of African Americans have limited literacy capabilities (Noonan et al., 2016). Arguably, such differences in educational attainment directly impact employment rates among African Americans. In February 2016, the rate of unemployment for African Americans (8.8 %) was nearly twice that of whites (4.3%) (Noonan et al., 2016). These unfortunate rates of unemployment have a direct correlation with the rates of poverty in the black community. African Americans remain the poorest ethnic group in the nation with a median household income of \$35,398 calculated in 2014 (Noonan et al., 2016). Poverty leads to poor housing accommodations that are typically in areas where transportation is limited. Thus, preventative care, such as routine doctor visits and health screenings, are pushed aside; health care is only sought in emergency situations (Noonan et al., 2016). In addition to limited transportation, poverty-stricken areas housing African Americans often have limited access to healthy, fresh foods. Supermarkets are scarce in the poor neighborhoods earning the title of “food deserts”, leaving African Americans residing in these communities to purchase processed goods that are often laden with sodium (Noonan et al., 2016). Lackland (2014) studied the variety of factors influencing the staggering rates of African Americans with hypertension. The prevalence of hereditary salt sensitivity amongst those of African descent was noted as a direct contributing factor to the disproportionate rates of hypertension.

Bond and Herman (2016) discuss the fact that black males continue to have the lowest life expectancy rates among all ethnic sub groups. This has resulted in a lack of the black male, head of household figure in the homes of many African American families. This produces a chiasm of health knowledge that continues to widen from

generation to generation. Healthy habits are not being demonstrated and instilled in black, male youth. These self-maintenance skills are vital to improving the overall health status of African American men. Without such skill being passed on, the cyclical pattern will continue, and black men will continue to expire well before their time.

Lack of culturally tailored health programs. A frequently noted hypothesis to adequately reach the African American male population was to devise community-based programs that are culturally tailored to serve this specific sub group. Moore et al. (2016) conducted a survey among African American men in Chicago to test the implications of a barbershop health promotion model. The study provided the vantage point of both the barber and the black male client and delved into the sociodemographics of the participants. The self-administered survey was given to 127 men, clients and barbers combined, to assess attitudes towards receiving physical and mental health screenings in barbershops and other settings. Barbers felt they could impart the most influence on the African American male clients between the ages of 30 and 39, while those aged 50 and older would receive the least influence. The study concluded that barbershops affectively reach the African American male client in the community immediately surrounding the barbershop (Moore et al., 2016).

Ravenell and Ogedegbe (2015) discuss the historical success of the community-based programs that specifically target hypertension in the African American male. Such programs were found to be especially effective for those who deem primary care a last resort. The authors identified two crucial processes that serve as prerequisites to community-based programs: (1) pinpoint African American males who are currently diagnosed with hypertension or those who are at risk to develop hypertension, (2) and

establish interventions to control elevated blood pressures and mitigate consequences of uncontrolled and undertreated hypertension (Ravenell and Ogedegbe, 2015).

Watson (2014) researched what deterred black men from obtaining health care as well as the best approach to counter this problem. The research emphasized the need for further investigation of devising alternate methods, such as community-based programs, to reach the African American male demographic. The goal of such programs would be to educate the black male on preventative measures and wellness maintenance as well as providing medical services to those in need.

Healthy People 2020 note the deleterious effects of hypertension as well as the main group that is disproportionately affected by the disease, African Americans. Forty-five percent of African American men and 43 percent of African American women have hypertension compared to 31 percent and 33 percent of white men and women, respectively (Cuffee et al., 2013). Such rates directly correlate with the cardiovascular burden in the United States. The Office of Disease Prevention and Health Promotion (2016) concluded, “more work is needed to understand barriers to achieving better control and to develop evidence-based interventions”. The article goes on to highlight that community-based interventions specifically tailored to the target population they serve remains an encouraged method for better blood pressure control and improved cardiovascular outcomes.

Barbershop based intervention venue. Within the black community, there are landmarks that serve as longstanding, historical pillars that represent a welcoming, safe haven free of judgment or bias. According to Murphy et al. (2016), the black barbershop is a place of social cohesiveness and solidarity for black men. The barbershop is not

merely a place for haircut and a shave; it is a safe space for fellowship and freedom to discuss current events and community updates. There is ample evidence to support that reaching African American men at such safe spaces where congregation usually takes place is a crucial aspect of improving health outcomes in this specific population.

Murphy et al. (2016) conducted a survey of 501 black men residing in Chicago ranging in age from 18 to over 50 years. The survey concluded that in addition to barbershops, other areas such as churches are excellent places to reach the African American male community. However, there were two certain sub groups within the black community that were not adequately reached through the barbershop. More research is needed to determine the best areas to enrich elderly and non-heterosexual African American men (Murphy et al., 2016).

Luque, Ross, and Gwede (2013) performed a qualitative systematic review of barbershop administered health screenings that delved into current literature to extract common findings and areas of lacking research. Within the review, it was noted that barbershops were overwhelmingly viewed as a “culturally appropriate venue for reaching black men with health information and preventative screenings” to mitigate systemic and sociocultural hindrances (Luque, Ross, and Gwede, 2013). The 16-article literature review determined that barbershop mediated interventions primarily targeted hypertension and prostate cancer, two diseases that disproportionately affect African American men. Barbershops were deemed a culturally ideal venue for the delivery of health education and screenings. From the barbers’ perspective, the shops were an excellent location to receive the training necessary to conduct screenings and provide education. The health knowledge of the trained barber increased substantially, and they

were able to continue to share such knowledge well beyond the conclusion of the studies (Luque, Ross, and Gwede, 2013). On average, black barbershops are owned and staffed by black barbers. Historically, the black barber is seen as a revered member of the community that can delicately cater to their African American male client. The barber is a vital community resource and typically develops long lasting, trusting relationships with their clients (Luque, Ross, and Gwede, 2013). The clients pre-existing comfort level with the barber makes it easier for the client to divulge sensitive health information that generally would not be shared. Sharing of such information, resulting in the appropriate referral, can mean the difference between life and death.

A survey conducted by Moore et al. (2016) concluded that the barbershop is an ideal venue to target the African American male population for screening, health education, research and interventions. The survey concluded that the location of the barbershop played a role in the types of African Americans that were reached for such interventions and screenings. The various demographics of the black men surrounding the barbershop, such as age, responded differently to the information being provided. Of the 127 African American men surveyed in the city of Chicago, those aged 49 and over were more likely to receive health related influences in other settings, such as churches. Thus, more research is necessary to determine the best and most appropriate locations to reach the elderly black male population (Moore et al., 2016).

SYNTHESIS OF LITERATURE AND LEVELS OF EVIDENCE

Synthesis Section	Specific Themes	Variations: Concepts	Variations: Methods and Design	Citations: Author and Year	Level of Evidence
1	-Barriers to healthcare	-Poor Life Expectancies	Author Information	Bond and Herman, 2016	VII
2	-Lack of trust -Barriers to healthcare	-Distrust of Physicians -Physician Bias	Retrospective Analysis	Cuffee, Hargrave, Rosal, Buesacher, Scholenthaler, Person, Hullett and Allison, 2013	V
3	-Barriers to healthcare	-Genetic Sensitivities	Clinical Evidence Review	Lackland, 2014	V
4.	-Barbershops as healthcare delivery venue	-Barber Administered Screenings -Education Promotions & Outreach Programs	Qualitative Systematic Review	Luque, Ross, and Gwede, 2013	I
5.	-Barbershops as healthcare delivery venue	-Effectiveness of Barbershops for health screening and interventions -Culturally tailored community outreach programs	Cross Sectional Study	Moore, Wright, Gipson, Jordan, Harsh, Reed, Murray, Keeter and Murphy, 2016	IV
6.	-Barbershops as healthcare delivery	-Barbershops reaching sub	Cross Sectional Study	Murphy, Moore, Wright, Gipson, Keeter, Corneilious, Reed, Russell,	IV

	venue	populations of AA men		Watson and Murray, 2016	
7.	-Lack of trust -Barriers to healthcare	-Distrust of physicians -Received systemic racism	Systematic Review	Noonan, Velasco-Mondrago, and Wagner, 2016	I
8.	-Lack of tailored programs	Community tailored interventions to mitigate barriers	Special Report	Office of Disease Prevention and Health Promotion, 2016	VII
9.	-Lack of tailored programs -Barbershops as healthcare delivery venue	-Culturally designed to specific population -Long time use to control BP	Author Information	Ravenell and Ogedegbe, 2015	VII
10.	-Barriers to healthcare	-Lack of insurance	Retrospective Analysis	Riley, Hayes, and Ryan, 2016	V
11.	-Economic consequences of hypertension	-Burgeoning finance burden to HTN related illnesses	Clinical Evidence Review	Wang, Grosse, and Schoolery, 2017	V
12.	-Lack of trust -Barriers to healthcare -Lack of tailored programs	-Distrust of physicians -Perceived barriers and health disparities -Community	Prospective Cohort Study	Watson, 2014	IV

		based programs to educated AA men			

Key to Evidence Levels:

Level I Evidence: From systematic review or meta-analysis of all relevant randomized controlled trials (RCT's), or evidence based clinical practice guidelines based on systematic reviews of RCT's

Level II Evidence: From at least one well-designed RCT

Level III Evidence: From well-designed controlled trials without randomization

Level IV Evidence: From well-designed case-control and cohort studies

Level V Evidence: From systematic reviews of descriptive and qualitative studies

Level VI Evidence: From single descriptive or qualitative study

Level VII Evidence: From the opinion of authorities and/or reports of expert committees

Adapted from Melnyk, & Fineout-Overholt (2005). Evidence-based practice in nursing and healthcare: A guide to best practice, Rating system for the Hierarchy of Evidence, page 10.

CHAPTER 3: METHODS

Project Setting

This quality improvement project took place in three barbershops in Dallas County, servicing primarily African American males. The barbershops were open from Tuesday through Saturday from the hours of 0600 to 1800, and closed on Sunday and Monday. Appointments were made via an online application or by calling the barber directly; walk-ins were not accepted. Services ranged from haircuts, facial grooming, hair coloring, etc. Appointments typically lasted thirty minutes to forty-five minutes dependent on services requested.

Sampling and Data Collection

The target group for this project was African American males aged 18 years or older, residing in Dallas County. Inclusion criteria required the client to be fluent in the English language, display adequate literacy, and not currently have hemodialysis access in one or more extremities.

Statistical Analysis Plans

Analysis of the collected data was a collaborative effort between the DNP student conducting the project and the designated freelance biostatistician. Daily data collected from the three participating barbershops was stored in a Microsoft Excel spreadsheet. Categories and codes were assigned to specific values, such as *sys* (systolic blood pressure), *dia* (diastolic blood pressure), *age1* (18-30 years), *age2* (31-45 years), *age3* (46-59 years), and *age4* (60 years or greater) and so on. All variables and categories are listed in a codebook with the associated code used in Excel (Appendix G).

Data submitted to the biostatistician was analyzed to describe demographic data through means, modes, and standard deviations. Variables remained stable and

continuous but were not normally distributed. In this situation, the best method of analysis was the Mann-Whitney U test. This allowed for the determination of a statistical significance between pre and post referral blood pressure readings. When the collaborating biostatistician completed the analysis, the data was returned to the overseeing DNP student. Findings were interpreted and translated by the DNP student who displayed the data in graphic form. Ideally, the DNP wanted to find a statistically significant difference in blood pressures before barber screenings and after referral and assumed treatment. Further evaluations of results also provided insight on possible changes to make in the future or if current methods would yield positive results on a grander scale.

Characteristics Likely to Influence Improvement

The identified characteristics within this project that were likely to influence the improvement of hypertension identification outcomes included the barbers technique of checking blood pressures, appropriate cuff size, patient currently on pressure lowering agents, and undiagnosed illnesses that affect blood pressure. Although the barbers were being trained and were required to provide return demonstration, fatigue during the day could have lead to laxity of technique, which could alter the readings. Inappropriate selection of cuff size can greatly alter pressure readings; cuffs too small could have caused false high readings and cuffs too large caused false low readings. If the patient was currently on pressure altering agents, such as diuretics, this could have masked underlying hypertension that may need further treatment. Finally, undiagnosed illnesses that can alter pressure, such as chronic kidney disease, could have caused a false high reading that is merely a symptom of underlying disease.

Identification of Intervention

The intervention was identified in an attempt to tackle the disproportionate rates of African American males with hypertension. The intervention allowed for the preventative screening to be brought directly to the patient, as opposed to current methods, which require the patient to present themselves for such screenings. The intervention took place in a historically revered safe zone for African American males and was delivered by a trusted member of the community, with whom they have a pre-existing relationship.

Planning of the Intervention and Components

Planning of the intervention involved recruiting adequate participating barbershops and teachable barbers. The barbershop blood pressure program recruited three barbershops in Dallas County, which served a clientele that was at least 90 percent African American, had been in business a minimum of ten years, and provided services to at least fifteen patrons per day. A DNP student, who explained the program and its purpose in great detail, recruited barbers. Clients eligible for participation in the program were African American males at least 18 years of age or older. Participants were not compensated and the barbers provided blood pressure checks on a volunteer basis.

The program used a nurse practitioner to educate and train the participating barbers as well as to serve as a point person to field questions, monitor readings, and monitor referrals. Each barber was trained by the nurse practitioner on how to take a proper blood pressure reading, determine proper cuff size, position the client, and differentiate between normal and abnormal readings (Appendix A). This training took about two hours and required return demonstration for evaluation purposes. The

electronic blood pressure cuff used in this program was the Omron 3 Series BP Monitor. This particular machine has a large, adjustable cuff to facilitate accurate readings on various arm sizes. The barbers' chair must be functioning properly and able to position the client in a seated upright position with knees bent at a 90-degree angle and feet resting on foot pedals or the floor. Gluck (2014, p 5) states, "The high, straight back typical of barber chairs...is perfect for measuring blood pressures". Next, the barber was provided a log sheet and writing tools to keep track of readings and which clients are referred for follow up (Appendix B) as well as a wallet sized card for the clients serves as record of BP readings (Appendix C). The items mentioned thus far were placed on a small table near the barbers' station and which also held hypertension education pamphlets to pass out to clients (Appendix D). Lastly, a collection of business cards of providers open to accepting referrals from the barbershop will be present and available to give to those with abnormally high readings. In some cases, clients will not have insurance, so a list of free or low cost clinics was also kept on hand.

Planning the Study & Plans for Evaluation

The procedure was conducted in phases, starting with education and training of the barber. The program lasted 45 days, which allowed for approximately four visits per client. First, the DNP student assessed the barber's knowledge of hypertension through a simple interview. Then, using the barber education tool (Appendix A) the DNP student educated the barber on the pathophysiology of hypertension, hypertension statistics in the black community, normal versus abnormal readings, and negative outcomes associated with poorly controlled hypertension. This was done so the barber would be able to pass the information onto their clients. Next, the DNP student demonstrated on the barber how

to take a proper blood pressure. Barbers were instructed that readings should take place after services were complete, rather than before they were started. They were then shown how the client should be seated; chair back should be upright; client's shoulders should be square and relaxed with legs uncrossed and feet rested comfortably on foot rests or the floor. Then, how to adjust the cuff size to the client's arm was demonstrated. This step remained crucial and was stressed to the barber as proper cuff size played a large role in obtaining an accurate blood pressure reading. The cuff was to be wrapped around the upper arm, one to one and a half inches above the bend of the elbow. The cuff was to be snug, but allow enough space for one finger to fit underneath. This particular brand of cuff had an "arrow" that should align with the brachial artery. The barber needed to be shown how to palpate for the brachial artery as well shown the usual anatomical location. Next, the "start" button was pressed and the reading was computed and shown on the digital screen. All participating clientele were then given a card (Appendix C), which contained the date and blood pressure reading for that day. Any reading above 140/90 mmHg resulted in a referral to a primary care physician for follow up.

The barber noted all blood pressure readings taken in a log (Appendix B) in order to track the number of elevated readings as well as how many were referred for follow up. This log was also crucial in noting the hopeful improvement of elevated readings in subsequent visits. Clients were instructed to keep the card with them, take to all healthcare appointments, and bring back to following barbershop visits. Subsequent blood pressure readings were performed in the same manner and were recorded as well to allow for the establishment of trends. Lastly, the DNP student will visited the shop on a

weekly basis to review logs, ensured the cuff was working properly, and answered any questions for the barbers.

The DNP student analyzed the data recorded in the barbers' logs (Appendix B). Then the overall number of clients served was compared with the number of cases of hypertension identified. Those identified with hypertension were referred to a PCP for treatment; the value of post treatment readings was contrasted against the pre-treatment readings to determine the impact of treatment. The evaluation of the data was shared with the barber who performed the readings. The DNP student issued a post program questionnaire with the barber and clients to obtain feedback on how well they felt the program benefitted African American males as a whole, as well as determine any ways in which the program could improve (Appendix E).

Study Design and Approach of Implementation

The project consisted of a one-week training period to educate the barbers on how to take blood pressures, identify abnormal readings, and inform clients about hypertension in the black community. Next, the "go live" day started a 45-day period of blood pressures being taking by the barber on clients at the end of services. All readings were logged in their appropriate location, and readings greater than 140/90 were referred to a provider or clinic for evaluation. Clients were also given information pamphlets covering hypertension (Appendix D).

Project Objectives

The objectives of the project were as follows:

- Obtain blood pressure readings on a minimum of 80 percent of African American male patrons aged 18 years or older and keep records for subsequent readings in order to establish trends
- Refer 100 percent of patrons with elevated blood pressure readings, greater than 140/90, to a PCP for follow up and potential treatment
- To observe a statistically significant difference between the pre and post systolic and diastolic pressures of those referred for elevated readings.

Timeline

The timeline for this quality improvement project spanned a total of five months. The initial project defense took place on November 26th, 2018 and the final results were defended on April 5th, 2019 in front of the DNP Project committee. Exact dates of events are listed below:

November 26th, 2018- Defend Project Proposal

December 2018- Prepared supplies

January 9th-13th, 2019- Started training barbers for project

January 14th, 2019- Initiated 'go live' data for blood pressure checks to begin and data collection to commence.

February 28th, 2019- Completed 45-day data collection period

March 10th, 2019- Began data analysis and synthesis of finding

April 5th, 2019- Project defense date scheduled

SWOT (Strengths, Weaknesses, Opportunities, and Threats)

A SWOT analysis was performed to evaluate the strengths, weaknesses, opportunities and threats associated with implementation of a barbershop blood pressure

program. One of the strengths of the program was that the preventative screening was brought to the black male in a familiar place of comfort. A trusted person with whom a relationship was already established, the barber, delivered the intervention. These strengths also might have lessened the degree of “white coat syndrome”, asymptomatic elevation in pressure caused by anxiety from being in a doctors’ office, due to the relaxed, safe environment surrounded peers.

A weakness identified during the analysis was that the education period for the barbers was relatively fleeting. One week will be allotted to educate three barbers; the education and training takes about two hours plus time for questions and explanations. Such an expedited process possibly resulted in limited retention of knowledge and caused the barber to pass on erroneous information to the client.

The most anticipated opportunity of the program was the chance to save lives by the identification of uncontrolled hypertension. When the client was made aware of their hypertensive state, a potentially foreboding cardiovascular incident could have been mitigated or completely bypassed. The program also allowed for the opportunity of shared awareness. Ideally, the clients passed on what was learned from the program while in the barbershop. Promotional Health information was spread by word of mouth, and thus potentially impacted an entire community.

Finally, a possible threat to the program was that the blood pressure checks were being conducted in a place of business that functioned on a very tight schedule. While there were times during the week that are slower than others, the weekends typically moved very quickly. Sometimes barbers did not have time to collect blood pressures on the busier days, which limited the amount of data collected for analysis. Ultimately, the

barbers' main focus was to earn money, it is likely that when time was of the essence, blood pressure checks lost priority. A comprehensive diagram of the SWOT analysis is available in Appendix F.

Congruence of Project to Organization Strategic Plan

The CDC oversees Healthy People 2020; there is an initiative to increase hypertension control by ten percent, which could lead to an anticipated 14,000 fewer hypertensive related deaths (CDC, 2016). This preventative clinical service has the greatest potential impact of any other measure in Healthy People 2020. A subset of Healthy People 2020, called Heart Disease and Stroke Prevention, contains 26 objectives, 16 of which are focused on blood pressure control. Overall, the goal is to aim for an increase in the rate of control from 43.7% to 61.2% (CDC, 2016). Clearly, hypertension is a leading health indicator that requires multi-system collaboration in order to achieve the greatest impact.

The CDC developed an executive summary covering African American men and hypertension. Within this summary, the top ten considerations for public health programs are listed. These considerations are geared towards the development and planning of system level interventions to control hypertension in black males (CDC, 2014). The considerations read more like guidelines and include consideration of psychosocial factors such as racism and limited access to care, historical distrust of health care professionals, and the importance of particular language usage and incorporation of familiar visual representation. The CDC also urges the use of non-traditional venues for the delivery of preventative measures such as barbershops and churches (CDC, 2014). Consistent with the literature, involvement of the community stakeholders and public

health leaders will allow for smoother implementation of system level programs. The CDC (2014) has recognized this fact and state that barbershops “offer ethnic and gender specific environment effective for fostering system level changes.” Such changes will also be better received if delivered by a trusted member of the community such as their barber or stylist.

Cost Benefit Analysis

The overhead for the project was minimal; the only costs were supplies such as blood pressure machines, copies of information pamphlets, and writing utensils. The barbers were functioning on a volunteer basis and clients are not compensated for participating in the program. There was no anticipated financial return from the program.

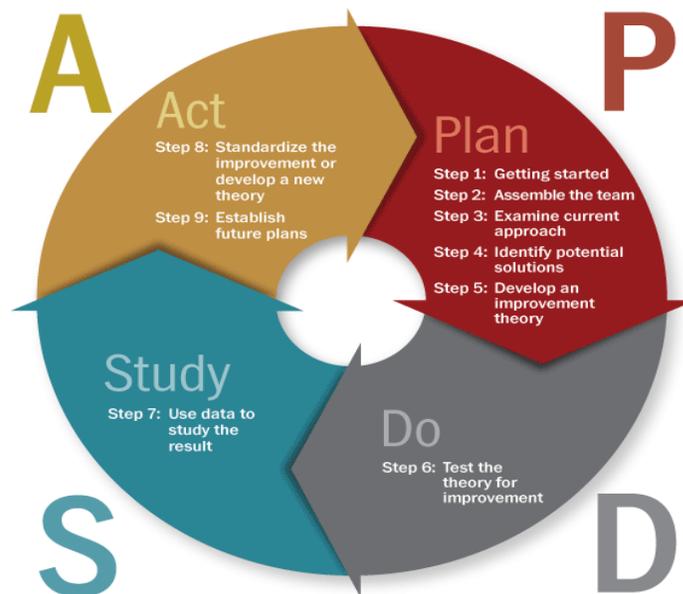
Guiding Framework

The guiding framework for this quality improvement project was the Plan, Do, Study, Act model (PDSA). In 1993 the PDSA cycle (Figure 1) evolved from the Deming Cycle, which was developed by engineer and statistician, Edward Deming (Moen & Norman, 2010). This cycle allowed for a scientific method of testing a change once introduced into a live work setting. The measurable change of this quality improvement project was an increase in identification and treatment of hypertension in African American males by testing blood pressures in the barbershop setting.

According to Moen and Norman (2010) the PDSA cycle consists of four steps that are repeated until the desired outcome is reached. The first step was determining the objective and details associated with the problem. For this quality improvement project the problem was the staggering rates of hypertension among African American males. The second step involved developing and carrying out a plan to improve the problem.

The plan in this project was to train barbers to take blood pressures on their black male clients and to refer those with hypertension to a healthcare provider. The third step was to analyze and then study the data and to summarize what was learned. In this quality improvement project, the data collected at the barbershops (blood pressure values and number of referrals) was analyzed by a collaborating freelance biostatistician and the outcomes were compared against the initial predictions. Finally, the last step was either adopting the change or starting the cycle again. The PDSA cycle provided an excellent, scientific measurement tool that was guided by data gathered from the project. The cycle allowed for ease of identifying where improvements and changes might need to be made in order for the initiative to function at its best.

Figure 1. PDSA Cycle



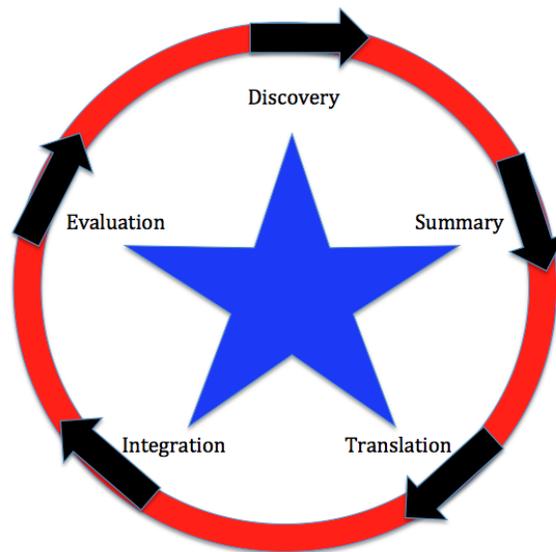
This PDSA model was retrieved from Tribal Evaluation Institute Resource Library (2016)

The framework for the project was the evidence-based nursing model named the ACE Star Model of Knowledge Transformation (see Figure 2). The model served as a guide for the organization of evidence-based approaches and concepts before the changes are placed into practice. Similar to the shape of a star, the model consists of five ‘points’

or stages of transformation. The first stage is discovery; during this time knowledge is gathered through traditional scientific research methods. The second stage is called evidence summary in which the research is condensed into a succinct problem statement. The third stage, translation, involves summarizing the information into steps or clinical practice guidelines that clinicians can incorporate into their practice. Next, the guidelines are actually implemented into practice and adopted by clinicians through the stage called integration. Finally, the last step is the process of outcome evaluation. The impact of the implemented practice on health outcomes, patient and provider satisfaction, economic analysis, efficacy, and health status are some of the areas evaluated (Stevens, 2012). This particular evidence-based model syncs well with this quality improvement project because it involves altering the traditional health delivery model and incorporating members of the community into the plan.

This project was guided by Lewin's three-step model for planned change. In order to maintain equilibrium, complex healthcare delivery systems must adapt to stay abreast of the consistently changing healthcare environment (Wojciechowski et al., 2016). Restraining forces and driving forces constantly push and pull one another resulting in a state of equilibrium. In this project, the restraining force was blood pressure screenings delivered by a healthcare provider in a clinic setting. The driving force was blood pressure screenings delivered by a barber in a barbershop. Step one is "unfreezing" the current methods and creating problem awareness. Step two, "changing", involves demonstrating the benefits of change and seeking alternative methods. The final step is "refreezing" which consists of integrating the new methods and stabilizing the new equilibrium (Wojciechowski et al., 2016).

Figure 2. ACE Star Model of Knowledge Transformation (Stevens, 2012)



Executive Summary of Proposal

In summary, African American males remain disproportionately affected by hypertension and hypertensive related consequences. This is due to a multitude of reasons, both historical and present day, and will require a complex, systemic approach to achieve desired improvements. While there is a great deal of literature on why African American males suffer from hypertension at such high rates, there is very little information about how to best reach and treat this population. Within the literature there were various themes noted including distrust of healthcare providers, lack of tailored community programs, barriers to healthcare, and barbershops as healthcare delivery venues.

Their clients often view barbers as a trusted member of the community and the barbershop is seen as a safe, familiar setting for African American males. Training barbers to take client blood pressures at the completion of services can aid in identifying

undiagnosed and undertreated hypertension in the black male community. Those identified with hypertension are then referred to a healthcare provider for treatment. Overall, this change in the traditional delivery of preventative health screenings could lessen the rates at which black males are affected by the deleterious effects of uncontrolled hypertension.

CHAPTER 4: RESULTS AND OUTCOMES

The Study Question

In African American males, over the age of 18, residing in Dallas County, do barber blood pressure screenings and referrals for hypertensive readings, positively effect blood pressure control amongst those screened, over a span of 45 days?

Phases of Study

The Plan-Do-Study-Act model (PDSA) served as a guide for the quality improvement project. The measurable change of the project was an increase in identification and treatment of hypertension in African American males by testing blood pressures in the barbershop setting. The PDSA model allowed for a scientific method of testing a change once introduced to a live work setting. The PDSA model consists of four-step cycle that is repeated until the desired outcome is reached (Moen & Norman, 2010). The first step, Plan, was to determine the objective and details associated with the problem and develop a plan. Do, the second step, was the actual implementation of the devised plan. The third step, Study, involved analyzing and dissecting the data collected at the barbershops. A freelance biostatistician collaborated with the nurse practitioner to compare the outcomes against the initial predictions. Finally, the last step was deciding how to act, adopting the change or starting the cycle again. The PDSA model allowed for a cyclical analytical method of identifying where improvements and changes might need to be made for the initiative to function at its best (Moen & Norman, 2010).

Plan- Approval of the Intervention. The DNP student successfully defended the project proposal on November 26, 2018. At that time, the necessary changes were identified by the overseeing chair and co-chair, and the student completed the required revisions. The project was then sent to the quality improvement committee overseen by

the university who determined that IRB approval was not necessary. The DNP student received approval to begin the collection of data on January 10, 2019.

Do-Data Collection. Three participating barbers, that serve primarily African American clientele, with shops in Dallas County, were educated on hypertension and how it specifically affects the black male. Each barber was then trained on how to properly take a blood pressure reading using an automated sphygmomanometer, how to determine proper cuff size, how to position the client, and how to differentiate between normal and abnormal values. The barbers were provided a log sheet and writing tools to keep track of readings and which clients are referred for evaluation. Any reading above 140/90 would result in a referral to a primary care provider for follow up. Data collection officially began on January 14, 2019. Barbers performed blood pressure checks on consenting African American male clients over the age of 18 over a span of 45 days. Each pressure taken was logged on the designated form as well as their age, previous referrals, and whether the client was on any antihypertensives.

Study- Analysis of Data. On March 1st, 2019 the data collection phase was completed. The data from all three barbershops was collected and compiled into an Excel spreadsheet. The compiled data was sent to the freelance biostatistician for analysis. The biostatistician and the DNP student collaborated to analyze the data utilizing a variety of statistical methods. The results were compared to their correlating objective to determine level of effectiveness of the intervention.

Act- Plan for Dissemination. The DNP student discussed the results with the participating barbers who unanimously decided to continue taking blood pressures on clients and providing education about the dangers on undiagnosed and uncontrolled

hypertension in black males. One of the barbers also plans to seek funding to expand the blood pressure program across Dallas. If this were to come to fruition, the DNP student has offered to be of any and all assistance to aid in furthering the program. Finally, the DNP student will present the quality improvement project at the TWU Graduate Student Research Symposium on April 10th, 2019.

Defended DNP Scholarly Project. The final defense for the quality improvement project will be presented to the TWU DNP scholarly project committee on April 5th, 2019. The committee consisted of the Chairperson, Co-chairperson, and peer reviewer. Upon completion of the final defense, the committee determined any necessary changes to the project.

Measurements of Objectives

- To determine if blood pressures were taken on a minimum of 80 percent of African American male patrons, aged 18 and older, and if records were kept for subsequent readings.
- To determine if 100 percent of patrons with elevated blood pressures, greater than 140/90 mmHg, to a PCP or follow up and potential treatment.
- To determine if there was a statistically significant difference between pre and post pressures of those referred for elevated readings.

Descriptive Statistics for Patient Demographics. The data was collected exclusively from African American males aged 18 and older. Barbers were trained to bypass collecting data on clients who smoked cigarettes directly prior to entering the shop. Also, clients in renal failure with fistulas and or graphs in either upper extremity did not participate in the blood pressure program. Other data collected included the age,

systolic pressure, diastolic pressure, previous barber referral and whether or not the patient is on any anti-hypertensive medication. The project was conducted in 45 days with a total of 456 blood pressures collected. The data dictionary for the descriptive variable is located in Appendix G.

Four hundred and fifty-six individual records were recorded at three different barbershops. Note that the same individuals are likely included multiple times, but due to anonymous reporting we cannot match these individuals from one visit to the next. We will refer to those records as “individuals,” but it should be understood that this means one individual at one visit to the barbershop. Figures 1 and 2 are frequency tables that indicate the number of individuals who participated at each barbershop, and the ages of the individuals, respectively. Frequency tables are appropriate for summarizing categorical data, such as locations or age groups.

Figure 1. Frequency Table of Individuals by Barbershop

Location	Frequency	Percent
Carter's	173	37.9%
Chauncey's	119	26.1%
Vibes	164	36.0%
Total	456	100%

Figure 2. Frequency Table of Age Groups of Individuals

Age Group	Frequency	Percent
18-30	57	12.5%
31-45	196	43.0%
46-59	143	31.4%
60+	60	13.2%
Total	456	100%

From Figure 1, it can be seen that the numbers of individuals at each barbershop are relatively similar; the largest group (Carter’s) makes up 37.9% of the records in the data,

and the smallest group (Chauncey’s) makes up 26.1% of the records in the data. From Figure 2, the most common age group for the individuals was 31-45 (making up 43.0% of individuals); 18-30-year-olds and individuals aged 60 or older were the least common, making up 12.5% and 13.2% of the records, respectively.

Figures 3 and 4 are summaries of systolic and diastolic blood pressure, respectively. They show the summaries by age group and overall. The summary statistics included are appropriate for continuous variables, which means they are numeric and there are many possible values between the lowest and highest end of the range.

Figure 3. Summary Statistics of Systolic Blood Pressure, by Age Group and Overall

Age Group	N	Mean	Median	Std. Deviation	Minimum	Maximum
18-30	57	128.74	127	13.73	108	158
31-45	196	142.92	140	21.32	101	198
46-59	143	152.58	149	21.66	102	208
60+	60	148.78	149	21.19	100	201
Combined	456	144.95	141.5	21.85	100	208

Figure 4. Summary Statistics of Diastolic Blood Pressure, by Age Group and Overall

Age Group	N	Mean	Median	Std. Deviation	Minimum	Maximum
18-30	57	74.42	77	10.04	54	99
31-45	196	77.11	80	14.65	31	113
46-59	143	80.99	83	14.36	39	120
60+	60	79.08	80.5	13.02	51	110
Combined	456	78.25	80	13.98	31	120

From figure 3, it can be seen that systolic pressure tends to be become higher as age group increases, although the 60+ age group has a slightly lower average systolic blood pressure than the 46-59 age group. The variability in blood pressure is also somewhat lower in the youngest age group (18-30) than in the older age groups, looking at the

standard deviations. From Figure 4, there is also some increase in diastolic blood pressure as the age groups increase, though the 60+ age group again does not have the highest diastolic blood pressures. There does also appear to be less variability in diastolic blood pressure in the youngest age group.

Figure 5. Two-way Frequency Table of Blood Pressure Status by Age Group

Age Group		Blood Pressure Status	
		Normal/Controlled	Not Normal/Controlled
18-30	Count	43	14
	% within Age Group	75.4%	24.6%
31-45	Count	89	107
	% within Age Group	45.4%	54.6%
46-59	Count	47	96
	% within Age Group	32.9%	67.1%
60+	Count	20	40
	% within Age Group	33.3%	66.7%
Combined	Count	199	257
	% within Age Group	43.6%	56.4%

Overall, 43.6% of individual have normal/controlled blood pressure, while 56.4% do not. Within the age groups, the percentage with normal/controlled blood pressure is 75.4% for the 18-30-year-old age group, and this decreases across the age groups to 32.9% for the 46-59-year-old age group, and 33.3% for the 60+ age group.

Statistical Methods and Analysis

Ethical Implications. The project was reviewed by the university Quality Improvement Committee and met the criteria for a quality improvement project. This made the project exempt from review by the IRB. The project introduced little to no harm

to the participating barbers or the clients and all information was de-identified. The DNP student made no contact with the clients; the barber performed all blood pressure checks, client education, and referrals for further evaluation.

Method of Evaluation. The Mann-Whitney U test is designed to compare average values of a continuous variable, the blood pressure, across two different, independent groups of individuals. For all intents and purposes, the two groups were treated as independent because the individuals themselves could not be matched on different occasions. This test also required that the blood pressures within each group were normally distributed. That means that most values should be close to the average value, and there should be fewer values as we get further from the average in either direction. Examination of the blood pressure data indicated that the systolic blood pressures are “right skewed,” meaning many values were low but a few are quite high relative to the others, and diastolic blood pressures were “left skewed” showing that many are relatively high but a few are very low compared to those. Figures 1a and 1b are histograms that show this for the larger group of individuals, those who did not report a previous referral. Values along the horizontal axis with taller bars above them mean more individuals have blood pressures near that value.

Figure 1a. . Histogram of Systolic Blood Pressure for Individuals Not Previously Referred (demonstrating “right skew”)

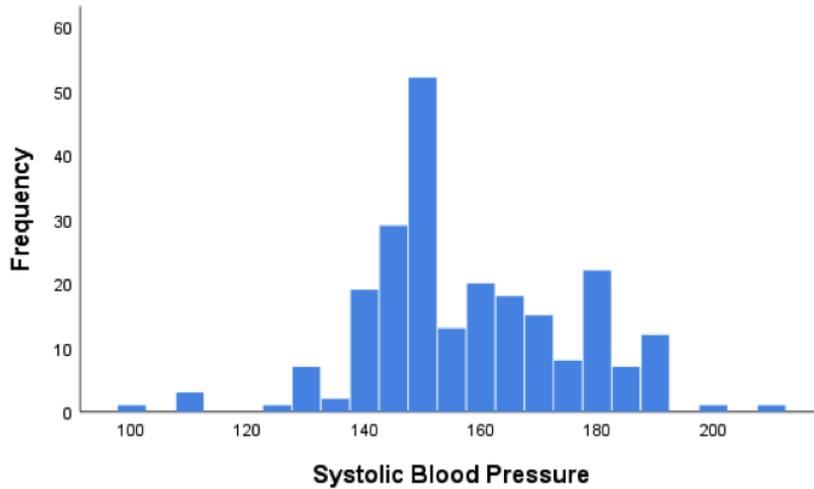
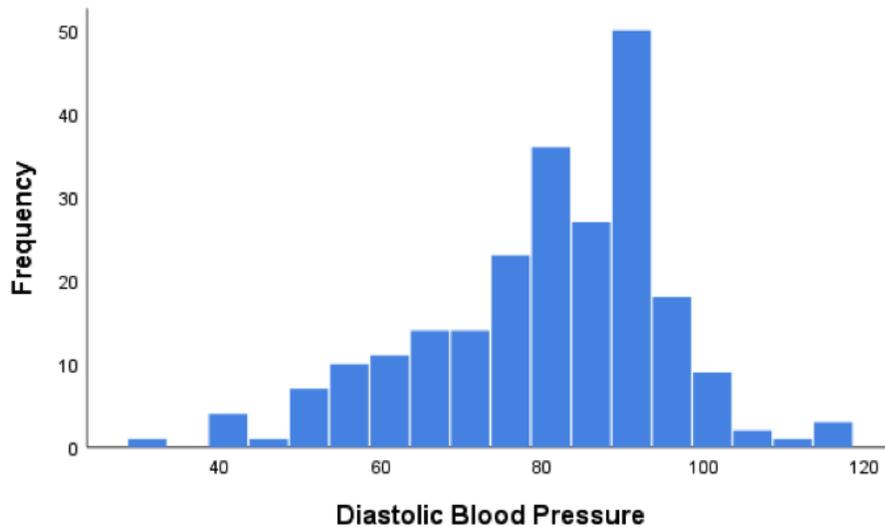


Figure 1b. Histogram of Diastolic Blood Pressure for Individuals Not Previously Referred (demonstrating “left skew”)



Therefore, because the blood pressures were not normally distributed, the most appropriate test was the Mann-Whitney U test. This test can also be used for continuous outcomes, and is meant to compare two independent groups, but can be used when there

is not a normal distribution. It is considered a test of medians, rather than means. Results of the Mann-Whitney U test are in Figure 8. Finally, the proportion of individuals with normal/controlled blood pressure between participants who are not on blood pressure medication, and participants who are on blood pressure medication were compared. The test used to determine whether these percentages were significantly different is a chi-square test. This is appropriate for comparing percentages across two independent groups. The results of the chi-square test are given in Table 10.

Instruments Used to Assess Effectiveness. Repeat blood pressures using the same machine, by the same barber, at the same location were used to assess the effectiveness of barber provided blood pressure checks. The information logged by the barbers included whether or not the client had been previously referred for an elevated blood pressure reading, if the subsequent readings improved, and if they were started on medications. Essentially, this allowed the DNP student to determine if clients took heed to the information provided by the barber based on their blood pressure reading.

Validity and Reliability of Instruments. The DNP student calibrated the automated blood pressure cuffs by performing a manual blood pressure check and comparing the result with that of the automated cuff. All readings between the manual cuff and automated cuff fell within 5mmHg of one another.

Methods to Ensure Quality. During the training portion of the project, the DNP student mandated return demonstration of the proper methods to check a blood pressure. Each participating barber was required to correctly perform three blood pressure checks witnessed by the DNP student prior to logging any data. The collected data was kept confidential by use of a cover sheet over the log and by placing completed logs in the

designated closed location within the shop. The DNP student collected completed data logs weekly. At that time, any issues or questions were addressed.

Data Analysis and Statistical Methods. Data were analyzed using IBM SPSS Statistics v. 25 with the Mann-Whitney U test and the Chi-Square test using multiple variables. Variables analyzed included age group 1 (18-30 years), age group 2 (31-45 years), age group 3 (46-59 years) age group 4 (60 + years), diastolic pressure (*dia*), systolic pressure (*sys*), previous referral (*prevref*), and use of antihypertensive medications (*med*). There were two situational components analyzed: the first situation was when a client was told they had a high reading for the first time, and the second was when a client was told they had a high reading for the second time, after being referred by the barber. A “high” reading was any computed value greater than 140/90.

Expected versus actual outcomes. The expected outcome was multifaceted. Overall, increased awareness of how widespread hypertension in black males has become was completed as expected. Information on the pathophysiology, statistics, and consequences was spread by word of mouth and by pamphlets created by the DNP student. The barber notifying the client of the results of each reading completed the identification of undiagnosed and uncontrolled hypertension. Most importantly, those with elevated readings (greater than 140/90) were instructed to seek further evaluation by a primary care provider (PCP). Those without a PCP were provided a list of nearby available providers. The final layer of the outcomes was to identify a decrease in the average systolic and diastolic blood pressures amongst those who were referred for elevated readings. This outcome was met in part, as a statistically significant difference was not observed in systolic pressures but was observed in diastolic pressures.

Quality Indicators and Resources. Current statistical data and information pertaining to the current state of hypertension among black males was gathered from the Centers for Disease Control (CDC). The CDC is arguably the foremost entity of demographics of disease and therefore served as a quality indicator. Resources included the university QI project committee that provided round the clock advising. The DNP student also utilized a biostatistician as a resource to ensure accurate analysis and interpretation of the data.

Barriers. There were several barriers encountered during the data collection phase of the project. First, there were numerous clients who declined having their blood pressure checked. One was quoted “I already know it’s high”, and opted to feign ignorance. Next, the cuff was not able to properly fit on obese clients resulting in inaccurate readings. Finally, during peak times, in order to remain on schedule the barbers chose to forego taking blood pressures, as their main goal was to earn a living.

Chapter 4 Summary

This chapter summarized the results and outcomes of the project. Despite the barriers encountered, the DNP student was able to gather ample data for statistical analysis. The findings from the analysis allowed the objectives to be measured and the research question to be answered. Quality, validity, and reliability were ensured by calibration of the machines and constant feedback from the DNP scholarly committee. Finally, the project was deemed quality improvement and therefore did not require IRB review.

CHAPTER 5: DISCUSSION

Interpretation of Findings

Two statistical analyses were performed. The first compared the blood pressure of individuals who have not previously been referred but have blood pressure that is not normal/controlled to the blood pressure of individuals who have previously been referred. The second compared the percent of individuals with normal/controlled blood pressure between those who did and did not report being on blood pressure medication. Figures 6 and 7 provided a summary of blood pressures for two groups of individuals: those whose blood pressure was not normal/controlled and had not yet been referred (meaning they should receive a referral), and those who had previously been referred to a physician due to their high blood pressure reading. From Figures 6 and 7, it was evident that both systolic and diastolic blood pressure values were, on average, slightly higher in the group of patients who had previously been referred. Median blood pressures were also higher in this group. In order to determine whether this difference was statistically significant (meaning not likely to be due to random differences in the individuals, but clearly related to the referral), the Mann-Whitney U test, Wilcoxon W test, and the Z test were performed. The Mann-Whitney U, the Wilcoxon W, and the Z test are all different versions of the same information (Figure 8). These were not interpreted directly; they are all standardized versions of the difference in the distributions in the blood pressures of the two groups. The part that was interpreted was the p value. The p value for systolic blood pressure was 0.792; this means that if there were no true difference in the median blood pressures of the two groups, there would still be a 79.2% chance we would see a difference in this sample as big as that in Figure 6. That is not considered a very small

chance, especially when compared to the typical level of significance of 0.05, so it was concluded there was not a statistically significant difference in median systolic blood pressures between the two groups at the 0.05 level of significance. However, the p value for diastolic is 0.008, which is quite small, and is also less than 0.05. Referring to Figure 7, the median blood pressure was actually larger for the group that received a previous referral, and so it was concluded that the median blood pressure in the previously referred group was significantly higher than in the group that required referrals at the 0.05 level of significance.

Figure 6. Summary Statistics of Systolic Blood Pressure by Group

Group	N	Mean	Median	Std. Deviation	Minimum	Maximum
Not referred/not controlled	231	157.92	154	17.601	100	208
Previously referred	34	160.29	157	21.696	115	201

Figure 7. Summary Statistics of Diastolic Blood Pressure by Group

Group	N	Mean	Median	Std. Deviation	Minimum	Maximum
Not referred/not controlled	231	80.45	82	14.971	31	116
Previously referred	34	86.91	90	14.798	39	120

Figure 8. Results of Mann-Whitney U Tests

Blood Pressure	Mann-Whitney U	Wilcoxon W	Z	p
Systolic	3817	30613	-0.264	0.792
Diastolic	2818.5	29614.5	-2.658	0.008

Figure 1. Median Systolic Blood Pressure by Group

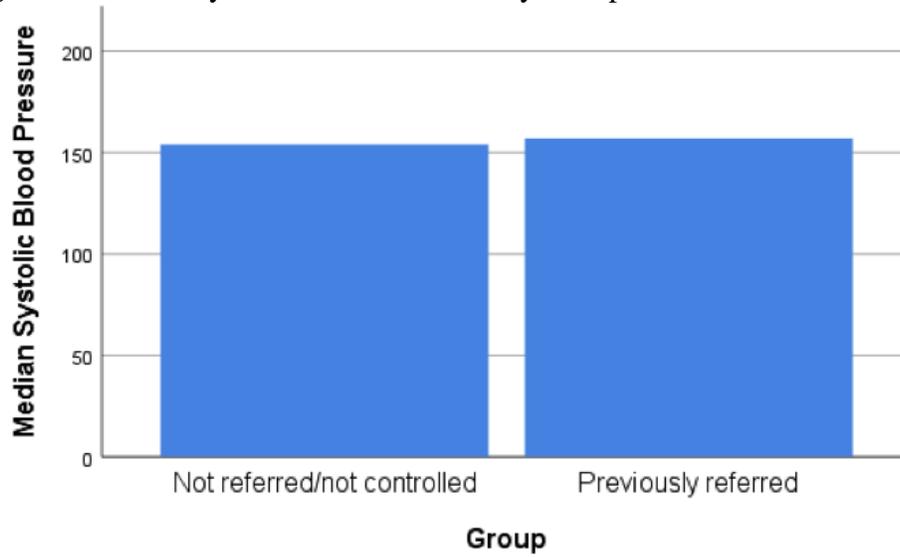
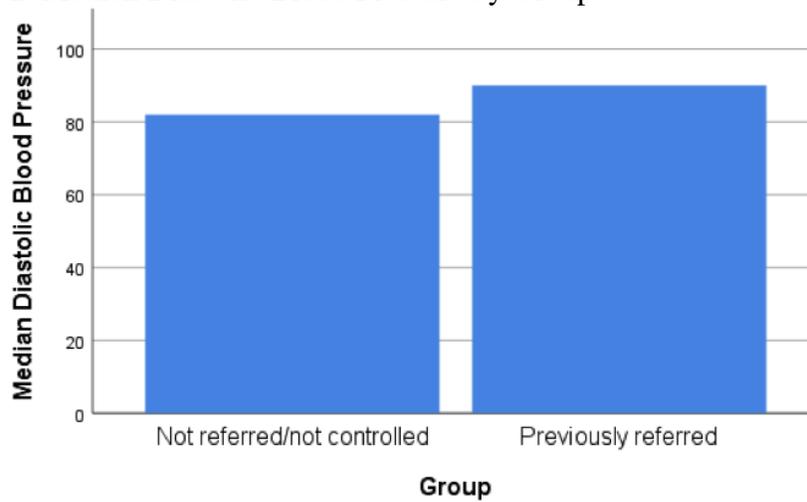


Figure 2. Median Diastolic Blood Pressure by Group



The final comparison compared the proportion of individuals with normal/controlled blood pressure between participants who were not on blood pressure medication, and participants who were on blood pressure medication (Figure 9).

Figure 9. Distribution of Blood Pressure Status by Medication Status

Medication Status	Blood Pressure Status			Total
	Normal/Controlled	Not Normal/Controlled		
No	Count	174	184	358
	% within No	48.6%	51.4%	
Yes	Count	25	73	98
	% within Yes	25.5%	74.5%	

Figure 9 indicates that of the 358 individuals who were not on blood pressure medication, 48.6% had normal blood pressure; of the 98 individuals who were on blood pressure medication, 25.5% had controlled blood pressure. The percentage was clearly lower among those who were on blood pressure medication.

The test used to determine whether these percentages were significantly different (that is, they represent a true difference related to medication status) was the chi-square test (Figure 10).

Figure 10. Results of the Chi-Square Test

Pearson χ^2	df	p
16.682	1	<0.001

In Figure 10, the chi-square (or χ^2) statistic is 16.682; this is a standardized version of the difference in the percentages shown in Table 9, and as before is not interpreted directly. The degrees of freedom (df) were equal to 1 because there was only one comparison made (those who report having medication versus those who do not). The p value of < 0.001 indicated the difference between the two groups is highly statistically significant. We concluded that the percentage of individuals with normal or controlled blood pressure was lower for those who report being on blood pressure medication at the 0.05 level of significance.

Figure 3. Bar Plot of Blood Pressure Status versus Medication Status

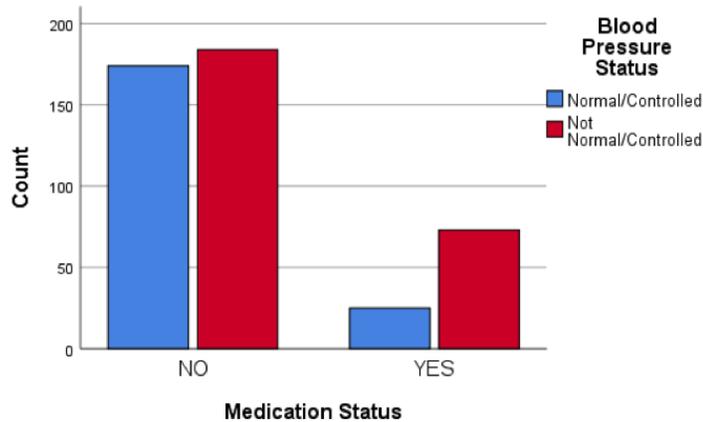


Figure 3 is a side-by-side bar plot that shows the difference between the group that reports being on medication versus the group that does not; the results showed the difference between the normal/controlled and not normal/controlled groups was much bigger in the group that reported being on medication.

Lastly, the results of the voluntary questionnaire supported the notion that the barbershop provides ample, repeated opportunities for basic health screenings to be performed on black males. On average, the respondents visited the barbershop 34 times per year while they only visited a healthcare provider 3.7 times per year. If blood pressures were checked at each visit to the barbershop, that would result in 30 more opportunities to be made aware where they stand in regards to blood pressure. One hundred percent of respondents answered 'YES' to questions 5, 6, and 7 in the questionnaire. This indicates an overall positive stance on the potential educational and life saving benefits of the program. Lastly, question number eight was presented on a Likert scale asking how the client felt about having their blood pressure taken by their barber versus their healthcare provider. While 40 percent were neutral on the subject, 60

percent either agreed or strongly agreed that they prefer to have their blood pressure screened by their barber as opposed to their personal healthcare provider.

Limitations of Study

The scheduling of clients and the flow of services might be too hectic at times in order to obtain blood pressures on each client. This can also result in fewer data points for analysis. Also, the barber is working with one sized cuff, which could lead to erroneous pressures. Furthermore, a patient history is not being taken, if not disclosed by the client, the barber would have no way of knowing if the patient has a disorder that would alter a true reading. In addition, the time frame of the project only allowed for a short amount of time for the client to address their elevated readings. If the project lasted several weeks longer, the client would have more time to schedule an appointment, which would potentially yield a different outcome. Finally, the three participating barbers were located within the same salon suites. While each suite is independently owned, this arrangement limited diversity of the black male clientele.

Recommendations

If the study were to be repeated in the future, there should be a greater distance between the participating barbers. This would result in the clientele spanning the county and therefore generate a greater variety of data. Also, extending the time frame to 90 days would allow those with elevated blood pressure readings more time to schedule appointments with their PCP. This could potentially result in greater overall control of blood pressure of those who were referred for follow up. Finally, utilizing a brand of automated sphygmomanometer with the capability to change the size of the cuff would

allow the larger clients to have a more appropriately sized cuff thereby increasing the accuracy of the readings.

DNP Role Consideration and Implications

The DNP Essentials identified within the studies are essentials II, III, VI and VII. Essential II covers combining nursing science with “the complex needs of human beings” while aiming for quality improvement (DeCapua, 2016). Essential III focuses on research leading to scholarly evidence based practice initiatives. Essential VI involves the marriage of the expertise and innovations of multiple professions to birth a mutually beneficial innovation. Lastly, Essential VII covers the design of clinical practices targeting the overall health improvements of specific populations.

- Essential II focuses on leadership and organizational science resulting in quality improvement. The DNP is to seamlessly combine a variety of organizational systems to generate and sustain quality changes. The DNP can perform an in depth analysis of the current model and identify which policies might have a negative impact on the organization and be capable of correcting those procedures. Ideally, such changes can result in overall gains for the organization at the variety of levels.
- Essential III sheds light on how the DNP masterfully works off the foundation of evidence-based research. For this study, the research identified a deficit in the delivery and access to a particular group of people. There was also evidence that population-targeted delivery models have shown to be successful in improving the health outcomes of said group. The DNP uses this knowledge as the vehicle that maneuvers around the barriers that were found in the research.

- Essential VI highlights the benefit of collaborating with other disciplines to reach a common goal. The DNP often thinks outside the box and utilizes the strengths of professions to best serve the patient. This study could only take place with the collaboration of the DNP and the barbers. Doing so provided a vital health screening to a very vulnerable and high-risk group.
- Essential VII aims to emphasize the utilization of a variety of health statistics and data to promote the prevention of disease within a targeted group. The DNP synthesizes “the psychosocial dimensions and cultural impacts related to population health” (DeCapua, 2016). This study required the blending of African American historical culture, current health statistics, and barriers to access of healthcare to design and implement the intervention.

Plan for Dissemination

The DNP student allowed the barbers to keep all supplies used in the intervention in hopes that blood pressures checks would continue. Clients will be able to have their blood pressure checked upon request, which will continue to foster awareness of hypertension among African American males. Also, the DNP student will present the intervention at the TWU Graduate Student Research Symposium on April 10th, 2019.

Chapter 5 Summary

In summary, there were two major findings: the first was those who had received a previous referral had a higher median diastolic blood pressure than those who had not previously received a referral but did not have normal/controlled blood pressure. There was not a significant difference in systolic blood pressures. The second was those who were on blood pressure medication were less likely to have a normal/controlled blood

pressure. However, these results should be interpreted with caution. This does not indicate that the referral was the cause of the higher diastolic blood pressure, or that the medication was the cause of having a greater percentage of non-normal/controlled blood pressure.

Even if there were no other caveats to the study, it is possible that some individuals did not follow up on their referral as instructed, meaning their blood pressure may have continued to increase over time, making the median higher as a group when compared to those who had not been previously referred. We also do not know how frequently individuals visited the barbershop (how often an individual was counted in the data set), and therefore do not know if referrals always occurred as instructed. As far as medication is concerned, it is clear that reporting a blood pressure medication does not mean that the individual's risk of having uncontrolled blood pressure has approached that of the rest of the population. It is highly unlikely that the blood pressure medication increases blood pressure, but any of the following could be true: (a) Those on medication have clearly had blood pressure control problems in the past, and still may be a higher risk group than those who are not on medication (b) those of medication may not be taking their medication properly or at all, (c) and blood pressure medication may be effect for some individuals than others.

CONCLUSION

For decades hypertension has been synonymous with black males, medically speaking. Clearly, is a multitude of reasons as to why this disease still disproportionately affects African American males. For minority groups especially, targeted healthcare delivery models have proven to be beneficial in terms of desired outcomes. Utilizing the barbershop, ergo taking advantage of the historical reverence and emotional safety of the setting, to perform blood pressure screenings specifically targets the black male.

There was a substantial amount of literature on black males and their long-standing history of hypertension. Collectively, there were repeating themes noted: a lack of trust, social barriers, and a lack of tailored programs. Also, several manuscripts documented the efficacy of the barbershop location for a variety of health related screenings.

The project was relatively inexpensive and would not be difficult to replicate. Surprisingly, all participating barbers planned to continue performing blood pressures screenings on interested clients. The data was on par with the current state of hypertension amongst black males in the United States. Data showed that 53 percent of participating clients had an initial reading greater than 140/90. However, the data did not show a statistically significant difference in systolic blood pressures pre and post referral, but did so for diastolic pressure. Perhaps lengthening the study would allow for more time to follow up, initiate medication, and therefore result in lower pressures overall.

The lack of statistical significance in systolic pressures does not completely discredit the intervention. The screenings were a catalyst for conversation about medical conditions plaguing the black male community. Clients and barbers were educated on

hypertension and went on to share their newly acquired knowledge with others. There were even a handful of reported cases where medication changes were made to pre-existing regimens, which resulted in lower blood pressures and a reduction in unwanted side effects. Overall, the Barbershop Blood Pressure Program made a difference in many ways not capable of being analyzed. This mode of targeted healthcare delivery can be used across the country and ultimately save lives.

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Man04

Appendix A

Barber Education Tool

What is hypertension?

- Blood pressure is the force exerted by the blood against the walls of blood vessels. Blood pressure readings are the numerical representation of the level of work of the heart and the resistance of the blood vessels. Stage I hypertension is classified as any reading greater than 140/90 mmHg.

Category	Systolic	Diastolic
Normal	<120	<80
Pre-Hypertension	120-139	80-89
Stage I	140-159	90-99
Stage II	160<	100<
Emergent*	180<	110<

* Seek medical attention at the nearest emergency room

What are some of the risk factors for developing hypertension?

- Risk factors for developing hypertension include a diet high in sodium, made gender, African American ethnicity, high stress levels, obesity, smoking, and genetic make up.

What are some of the complications of uncontrolled hypertension?

- Some of the complications of uncontrolled hypertension include stroke, heart attack or heart failure, kidney failure, loss of vision, and impotence.

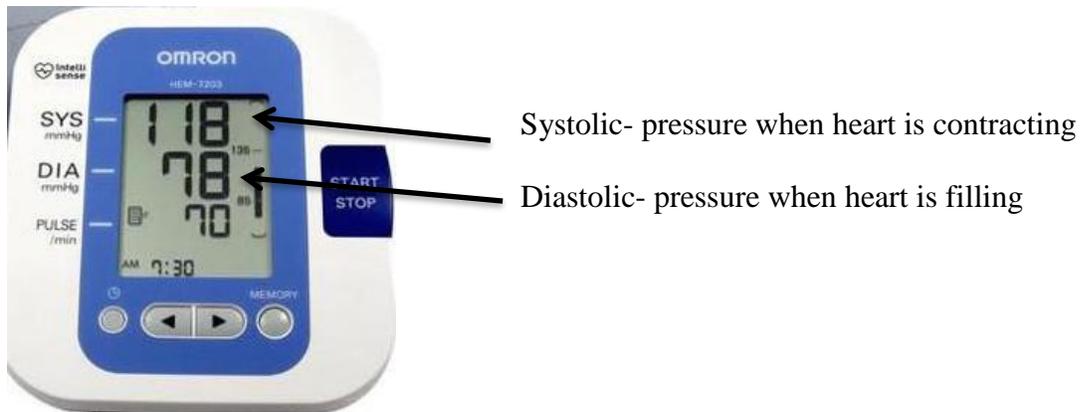
African American Hypertension Statistics

- 43 % of African American males have high blood pressure
- African Americans are three times more likely to develop hypertension than whites
- African Americans are more likely to develop hypertension at younger ages and have more severe complications

Taking Blood Pressures

- ✓ Educate and obtain consent from the client
- ✓ Best if the client has not had caffeine or smoked prior to getting blood pressure taken
- ✓ Best to take blood pressure **AFTER** services are complete
- ✓ Client needs to be sitting upright in chair with legs *uncrossed* and feet resting on footrest or floor
- ✓ Client will need to roll up their sleeve, do not take blood pressure through clothing
- ✓ Client needs to remain still and refrain from talking while blood pressure is being taken.





- Position cuff 1 ½ inches above bend of elbow
- Align tubing with brachial artery
- Cuff should be snug, but allow enough room for one finger breadth



Don't forget...

- Reiterate the importance of maintaining a normal blood pressure
- Give client hypertension handout
- Stress the importance of aiming for healthy lifestyle practices
- Make sure to record blood pressure on wallet card for client to keep
- Refer for follow up with physician if blood pressure is abnormal

Appendix C

Wallet Sized Blood Pressure Card

Blood Pressure Log		
Name		
Date	B/P	Notes

Blood Pressure Readings Reference		
Category	Systolic	Diastolic
Normal	<120	<80
Pre-Hypertension	120-139	80-89
Stage I	140-159	90-99
Stage II	160<	100<
Emergent*	180<	110<

* Seek medical attention at the nearest emergency room

Appendix D

Hypertension Education Pamphlet

43%
of African American males have hypertension.

-Scientists are unsure of why African Americans have three times the chance of developing hypertension in comparison to Caucasians.

Risk Factors For Hypertension

- Diet (Excess Sodium)
- Stress
- Male Gender
- Obesity
- Genetics
- African American Race

High Blood Pressure

Hypertension = B/P greater than 140/90

Blood pressure is the amount of force that the heart exerts on the blood vessel walls.

Blood Pressure



Symptoms include:

- Shortness of breath • Headache
- Chest pain • Blurred vision
- Ringing in ears

... or sometimes no symptoms at all!

Uncontrolled hypertension can lead to:

- Stroke
- Heart Attack
- Kidney Failure
- Loss of Vision
- Impotence



Appendix E

Post Program Questionnaire

- 1) How often do you visit the barbershop? _____ times per year
- 2) How often do you visit the doctor? _____ times per year
- 3) Do you have a history of or take medications for hypertension? YES NO
- 4) During one of your visits, did you have your blood pressure taken by the barber?

YES-answer questions below

NO-proceed to question #5

- a. Did you have any elevated readings?
 - b. If so, were you referred?
 - c. Did you follow up?
 - d. Were you started on medications?
 - e. Have your blood pressure readings improved?
- 5) Did you feel having your blood pressure taken at the shop was helpful?
 - 6) Did you learn anything about high blood pressure and how it specifically affects African American males?
 - 7) Do you think this program can help save lives?
 - 8) Use the scale below to answer the following question:

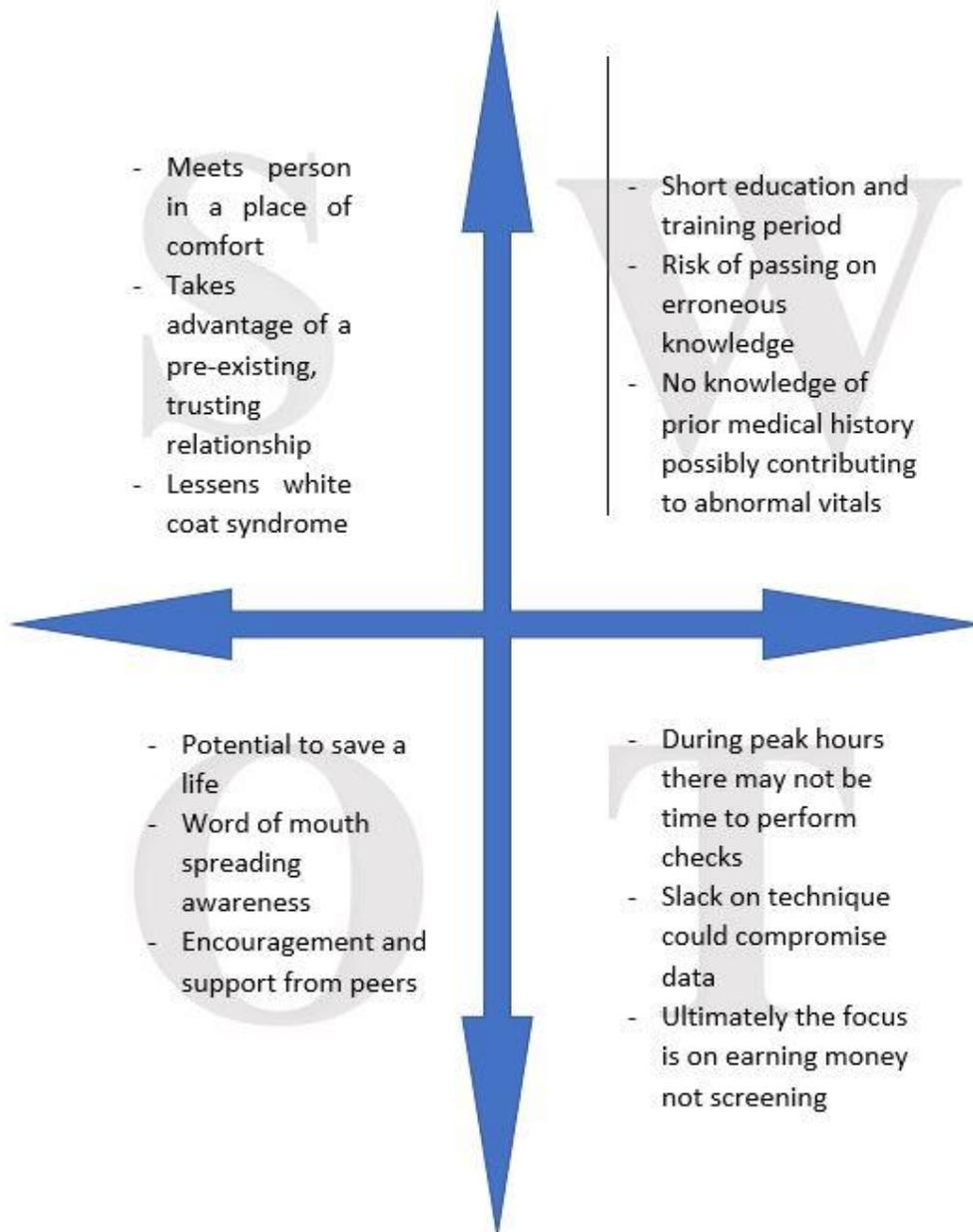
I prefer having my blood pressure screenings done by my barber rather than my doctor.

Strongly Agree Agree Neutral Disagree Strongly Disagree

A horizontal line with five square markers at regular intervals, corresponding to the response options listed above.

Appendix F

SWOT Analysis



Appendix G

Data Dictionary & Codebook

Data Dictionary	
<i>sys</i>	Systolic BP
<i>dia</i>	Diastolic BP
<i>age1</i>	18-30 years
<i>age2</i>	31-45 years
<i>age3</i>	46-59 years
<i>age4</i>	60 + years
<i>prevref</i>	Previous Referral
<i>med</i>	On BP Meds

Appendix H

Nearby Clinic List

VIP Healthcare

Dr. Keith Rigsby
 601 S. Clay Street # 104
 Ennis TX
 972.875.6600

Healthcare Associates of Texas

910 N. Main
 Euless TX
 817.358.5800

Minute Clinic in CVS

5500 N. MacArthur Blvd
 Irving TX
 972.518.1325

Superior Healthcare

7108 Envoy Ct.
 Dallas TX
 972.268.6112

Irving Interfaith Community Clinic

1302 Lane Street
 Irving TX
 469.800.1000

Texas Health Family Care

8230 Walnut Hill Bldg. 3 #600
 214.361.0946

Central Park Health Clinic

1700 W. Pioneer
 Irving TX
 972.254.0911

Methodist Family Center Kessler Park

1222 N. Bishop # 300
 214.941.1353

Medical Surgical Clinic of Irving

Dr. Dennis Pangtay MD
 2021 N. MacArthur Ste. 350
 Irving TX
 972. 253. 2555

WellMed at Oak Cliff

129. N. 9th Street
 Dallas TX
 214.941.0032