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Improving Hypertensive Therapy Outcomes Among African Americans

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2019

Abstract

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MSN, New York University, 2009

BSN, William Paterson University, 1995

Proposal Submitted in Partial Fulfillment

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Abstract

The effects of nonadherence to prescribed blood pressure medication adversely impacts African Americans (AA) in comparison to their European American counterparts. The associated health consequences of uncontrolled hypertension include heart failure, stroke, and renal dysfunction. And the treatment of the complications negatively impacts quality of life and contributes to increased health care costs. To address the problem at 1 clinic, a quality improvement (QI) project was developed by the clinic nursing staff, but the project had never been evaluated. The project included blood pressure measurements assessed among AA patients before and after implementation of a 4-item Morisky Medication-Taking Adherence Scale (MMAS) and education by the nurses. The purpose of this project was to evaluate whether the use of the MMAS and education improved blood pressure control in the AA hypertensive patients. This QI evaluation project was guided by Johnson's medication adherence model and the Kolkaba comfort theory. Deidentified results of 3 months of patient blood pressures taken before and 3 months after the QI project was implemented were obtained from the site for statistical analysis. A paired sample t test was used to determine if a difference in blood pressure existed between the 2 groups, before and after implementation ($n = 33$) of the teaching and the MMAS. Results indicated a statistically significant ($p < .05$) decrease in blood pressures after implementation of the QI project. The findings of this project may positively influence social change by improving adherence to blood pressure medication and thereby improving healthcare outcomes for AA patients.

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Dedication

Thank you, Jesus, for the agape love you have for me. You continue to keep me in ways that no other can.

To my parents Buford (pop) and the late Sarah Sullivan (mommy). Mommy, I wish you were here. Thank you both for any prodigious values that you have imparted. You entrusted me with your sacrifices over the years. It is a testament not only of your parenting style which I interminably endeavor to emulate, but also of your love for me without which none of this could have been possible. To my baby girl Saraiah Troy Riley. My precious princess, you are an amazing gift from God who is "DESTINED FOR GREATNESS"!   To my sweetheart for life Pete, I love you. My time away from you and Saraiah during this odyssey has not been in vain. I love you both beyond infinity. Grama' (Mrs. Levenia Washington), at 99 years young and counting you continuously exude strength and faith unmatched by anyone I know. You are a prayer warrior whose soul is anchored in the Lord. It is because of you that Psalms 121 is near and dear to me. Thank you for your wisdom. To my siblings, Michele, Bernard, my twin brother Troy, my nieces and nephews and friends, thank you all for supporting me. To my special uncles Herb and Ted, thank you for being there for me. To my other prayer warriors, Pastor McCarly Thompson (first Lady Thompson), Mother Johnson, Mother (Ma') Bell, Mother Brannon and the entire New Jerusalem Cod-Ckmi family, thank for praying for me.

 To the countless others not mentioned here who have directly or indirectly supported me during this academic mission, thank you all !!!

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Dr. Janice Long, I am thankful to you for your endless guidance and support. You demonstrate excellence in mentorship. Thank you, Dr. Nia Medder, for taking me under your wings. Your gracefulness and ability to share knowledge is unparalleled. Thank you also to my Walden University tutors Jennifer L. Krou (MS Word) and Dr Zin Htway (SPSS).

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Section 1: Overview of the Evidenced-Based Project

Introduction

Hypertension (HTN) is among the leading causes of cardiovascular morbidity, occurring in one-third of the United States population (Bandi, Goldmann, Parikh, Farsi, & Boden-Albala, 2017). The incidence of HTN is disproportionately higher among African Americans compared to all other ethnic groups; 45% and 33% respectively as well as within disparate communities (Centers for Disease Control and Prevention [CDC], 2016). The focus of this DNP project was on antihypertensive medication nonadherence among adult African Americans with uncomplicated HTN. According to the CDC (2016), medication nonadherence increases both morbidity and mortality with a cost of $100 billion to $289 billion annually. Poor adherence to prescribed pharmacologic interventions to control HTN is found higher among minorities, such as African Americans compared to European Americans (Braverman & Dedier, 2009). The resultant effects of antihypertensive therapy nonadherence contribute to significantly higher incidences of heart attacks, heart failure, initial strokes, and renal disease (CDC, 2016).

This topic is evidence of a real-world concern based on its impact on the fiscally overburdened healthcare system in the United States. The knowledge gained from this project can contribute to the body of nursing science because of its significance in healthcare and improved patient outcomes (Grove, Burns, & Gray, 2013). Additionally, positive social change can transpire evidenced by the application of current evidence-based findings in practice that leads to improved patient interventions and outcomes, as well as a secondary effect of reduced health care costs.

Section 1 will (a) introduce the practice problem of blood pressure medication nonadherence and its significance to the field of nursing, and (b) identify the practice-focused question and the approach used in this doctoral project.

Problem Statement

The relationship between uncontrolled HTN and medication nonadherence adversely impacts morbidity in African Americans as well as the overall costs of healthcare (CDC, 2017). Antihypertensive therapy nonadherence can also result in psychosocial deterioration, such as decreased productivity and increased incidence of depression (Luga & McGuire, 2014). The World Health Organization categorized potential reasons for nonadherence into five broad groupings: health system, condition, patient beliefs, therapy effect, and socioeconomic factors. Thereby, making medication nonadherence a problem for patients, healthcare providers and healthcare systems (Ho, Bryson, & Rumsfeld, 2009). To efficiently intervene in the issue of medication nonadherence in this population, leaders in healthcare must consider the etiologies associated with decisions that are unfavorable to medication adherence.

For this DNP project, I evaluated the effectiveness of a quality improvement (QI) project that focused on strengthening the quality of nursing practice. To do this, I obtained deidentified data collected and provided by the clinical site on medication nonadherence, and the before and after results of the intervention that focused on improving adherence.

Purpose

Research has shown that African Americans have higher rates of medication nonadherence compared to other ethnic groups (CDC, 2016). Numerous studies have been conducted on both intentional and unintentional aspects of medication nonadherence, which have yielded suboptimal results or interventions. Data have also shown the need to address reasons for medication nonadherence and to develop interventions that would avoid this adverse pattern of behavior (Ndumele, Shaykevich, Williams, & Hicks, 2010). Although the QI intervention has been in place at the clinical site, there has been no evaluation of its effectiveness. The purpose of this DNP project was to evaluate the effectiveness of a practice change that incorporated the use of an adherence assessment tool as part of a QI effort to improve medication treatment regime adherence for adult African American patients diagnosed with hypertension. The outcome of this project could be used to develop new patient interventions and enhance healthcare policies by modifying behaviors exhibited by providers and patients. This purpose mirrors that of the intent of a QI evaluation project for the Walden University DNP student. According to the Walden University Manual for Quality Improvement Evaluation Projects, "gaining insight into the effectiveness of an organization's practice change" is among the purposes of a QI project (Walden University, 2017).

Nature of the Doctoral Project

The location for the DNP project was an internal medicine clinic that provides medical and social services to Medicaid patients in a metropolitan area in the northeastern United States. This prime location presented the opportunity for

accomplishing the DNP project because of its location and because of the population it serves. According to a recent health survey conducted by the local area department of health, there are currently more than 2 million adults in the region diagnosed with hypertension. The prevalence of hypertension is 1.6 times higher (35%) among African Americans adults when compared to European Americans (23%).

Additionally, African Americans who reside in very high poverty areas have a higher prevalence of hypertension when compared to African Americans in low poverty areas (NYC.gov, 2017).

This healthcare disparity places African Americans at a disproportionately higher risk for cardiovascular disease including stroke, renal dysfunction or failure, and cardiac diseases such as arrhythmias and myocardial infarction (Ferdinand et al., 2017). According to the CDC (2016), high blood pressure costs the nation $46 billion each year. This total includes the cost of health care services, medications used to treat high blood pressure, and missed days of work resulting from medication nonadherence.

Sources of evidence for this project included peer-reviewed articles, professional journals and professional healthcare websites, such as the American Heart Association and the CDC. Sources of evidence for the project after obtaining Walden IRB approval included medical providers, nursing staff members, and deidentified data from the electronic medical record. The approach to this DNP project was guided by the *Walden University Manual for Quality Improvement Evaluation Projects*.

The purpose of this DNP project was to evaluate a QI initiative at the local site whose focus is on improving medication adherence. Specifically, the project focused on

identifying reasons for antihypertensive medication nonadherence among African Americans within underserved areas and on providing the evidence for strategies that can promote adherence among this population.

The perceptions held by patients on the need to take their prescribed antihypertensive medications, the rituals that contribute to medication compliance, as well as the perceived effectiveness of the therapy, are significant influences to be considered. They can be used by nurses in practice to increase medication compliance.

Significance

Gaining knowledge for antihypertensive medication nonadherence can influence key stakeholders such as nurses, physicians, healthcare administrators and those with the higher influential power to change health care policies at the local, state and national levels; for example, the stakeholders can develop improved interventions and strategies (Viswanathan et al., 2012). Additionally, governmental healthcare agencies at the national level can support endeavors that promote medication adherence interventions by policies and financial resources. In doing so, national healthcare agencies can increase public awareness of medication adherence for all citizens, develop and implement evidence-based interventions for medication adherence, and provide training and guidance for all healthcare providers so they can deliver effective adherence interventions (Final Report Summary – ABC; Ascertaining barriers for compliance, 2013). As a result of the newer interventions and healthcare policies—which positively impact, for example, out of pocket costs of medications, enhanced prescription drug coverage, and patient and provider education—African Americans may benefit from improved

morbidity and mortality associated with uncontrolled hypertension. This DNP project is expected to contribute to the improvement of nursing practice by translating evidence to practice at this clinical site and by evaluating the effectiveness of a QI initiative. Furthermore, the fiscal burden of providing care for this preventable condition is lessened. Concurrently, the added benefit of positive social change by improving health outcomes among members of a diverse population can be accomplished.

Summary

Section 1 provided a brief synopsis of the physiologic and economic impact associated with antihypertensive medication nonadherence as it pertains to African Americans who reside in underserved areas within a large metropolitan area of the northeastern United States.

This QI evaluation effort has aided healthcare providers in developing new interventions aimed at improving patient outcomes by addressing the knowledge gap regarding reasons for antihypertensive medication nonadherence. Section 2 will provide a literature review of current knowledge about blood pressure medication nonadherence, the conceptual model for the project, its significance to professional nursing practice, and the role of the DNP student in pursuing this topic.

Section 2: Background and Context

Introduction

Medication nonadherence is found in disproportionately higher rates among African Americans when compared to other ethnic groups. The associated morbidity and mortality rates and healthcare costs are also higher (CDC, 2017). Reasons for medication nonadherence are varied and can be socially and culturally influenced. The intentional and non-intentional factors associated with blood pressure medication nonadherence are additional contributory aspects. This necessitates the development of interventions that can reverse the impact of blood pressure medication nonadherence among this population. This DNP project sought to answer the following question.

Does the use of a medication adherence assessment tool influence treatment regime compliance among adult African American patients diagnosed with hypertension in urban settings?

The purpose of this DNP project was to evaluate the effectiveness of a QI project conducted by the local clinical site, which focused on improving medication adherence among African Americans diagnosed with hypertension. For this DNP project, I analyzed deidentified data that was provided to me by the staff at the clinical setting.

Concepts, Models, and Theories

Mary Jane Johnson's medication adherence model (MAM, 2002) and the Catherine Kolkaba comfort theory were used as the theoretical frameworks for this DNP project. The medication adherence model was founded upon the following cognitive theories: the health belief model, social learning theory, the theory of reasoned action,

and the self-regulation model (Johnson, 2002, p. 183). Intentional and unintentional nonadherence are concepts identified in the model but reflected as purposeful actions or patterns of behavior. The MAM considers the following assumptions:

- People are interested in maintaining their health.

- People value their health.

- Hypertension is detrimental to health and well-being.

- Prescribed medications for blood pressure control are in the best interest of patients with hypertension.

The framework is appropriate to address the practice-focused question because it examines the cognitive thought processes that influence nonadherence, variables such as the perceived need for compliance, the perception of medication efficacy and safety, routines used when taking medications, and how people view health (Johnson, 2002).

Comfort theory is a middle range theory developed by Catherine Kolkaba in the early 1990s. It was founded on the concept of comfort and is universally applicable to patients, nurses, and institutions (Smith & Parker, 2015). When applied in practice, comfort theory (which includes technical interventions, comfort food for the soul, and coaching) obligates the provider to provide holistic care to patients while simultaneously catering to the professional well-being of the provider as well as to institutional contentment. The theory claims that when nurses furnish comfort interventions, the increased comfort experienced by patients and families steers them engage in health-seeking behaviors. comfort theory can also be employed to develop interventions to promote medication adherence. From a theoretical perspective, the comfort theory and

the MAM provided an opportunity for the enhancement of nursing scholarship on what is already known about the experiences and perceptions of blood pressure medication nonadherence. It is also noteworthy to clarify some of the terminology used in this DNP project. Given the impact of medication nonadherence on hypertension inclusive of but not limited to increased hospitalizations, increased morbidity and inherent mounting healthcare expense, interventions that can be developed and applied in practice should take into account the perceptive reasoning behind noncompliance as demonstrated by patients with hypertension.

The terms noncompliance and nonadherence are often used interchangeably, and they are recognized as a descriptive of suboptimal therapy. It is essential to have an understanding of the subtle yet compelling differences between these terms. According to Hugtenburg, Timmers, Elders, Vervloet, and Van Dijk (2013), "compliance can be defined as the extent to which the patient follows the recommendations of the prescriber. Adherence is the extent to which medication intake behavior corresponds with the recommendations of the health care provider" (p. 376). The WHO defines adherence as "the extent to which the persons' behavior (including medication-taking) corresponds with agreed recommendations from a healthcare provider" (Kenreigh, & Wagner 2005). The Donabedian Model for Quality of Care was employed to aid in the evaluation of this DNP project. Created by an expert in the field of QI, Dr. Avedis Donabedian, this triad model is composed of structure, process, and outcomes as its foundation. "Structure is defined as the settings, qualification of providers and administrative systems through which care takes place. Process refers to the components of care and Outcome pertains to

recovery, restoration of function and survival" (Ayaninan & Markel, 2016, p. 206). This DNP project relied primarily on the outcome component of the model as it focuses on the impact on the patient and demonstrates the result of the improvement work and whether it has achieved the aim set inclusive of but not limited to enhanced patient knowledge and improved health status (Kobayashi, H., Takemura, Y., & Kanda, K, 2011).

Definition of Terms

African American is defined as "an American of African and black African decent" ("Merriam-Webster Dictionary," 2018).

Hypertension is the" force of blood pushing against blood vessel walls. It is measured in millimeters of mercury. High blood pressure means the pressure in your arteries is higher than it should be" ("American Heart Association," 2017).

The most unambiguous definition of *nonadherence* is by the American Heart Association: "not taking medication as directed" (Heart.org, 2018).

Relevance to Nursing Practice

According to the Centers for Disease Control and Prevention (2016), high blood pressure costs the nation $46 billion each year. This total includes the cost of health care services, medications to treat high blood pressure, missed days of work resulting from medication nonadherence, and associated morbidity. African Americans are more likely than their European American counterparts to have uncontrolled hypertension, and their cardiovascular health and socioeconomic burdens are disproportionately higher (Lewis, 2012). The American Heart Association (AHA) forecasted the continued increased prevalence of cardiovascular health disparities among non-Hispanic Blacks.

Furthermore, the AHA projected a ten percent increase in the prevalence of hypertension over the next decade. The direct health care costs associated with hypertension by the year 2030 is expected to surpass 200 million dollars among all cardiovascular diseases (heart failure, stroke, cardiomyopathy, pulmonary heart disease, dysrhythmias, and coronary heart disease), making hypertension the most expensive component of all CVD (Heidenreich et al., 2011).

A qualitative study by Lewis, Askie, Randleman, and Shelton-Duston (2010), identified medication nonadherence in low-income African Americans that reside in an urban city. The study explored the behavioral, normative and control beliefs associated with nonadherence to antihypertensive medications in African Americans diagnosed with hypertension. The result of this study revealed a need for further studies to examine patient beliefs about medication adherence. The perceptions held by a patients need to take their prescribed antihypertensive medications, the behavioral beliefs which contribute to medication compliance, as well as the perceived effectiveness of the therapy, are significant influences to be considered for use by nurses in practice to increase medication compliance (Lewis et al., 2010).

This DNP project sought to evaluate the effectiveness of a QI initiative aimed at positively impacting blood pressure medication nonadherence among African Americans. The project aimed to show that the QI initiative can be effective in reducing nonadherence among this ethnic group. In doing so, the associated adverse effects of increased morbidities such as renal failure with or without subsequent renal replacement

therapies, heart failure or stroke and increased health care costs may also be realized (Ndumele et al., 2010).

Various medication adherence assessment tools have been used as it pertains to hypertension as well as for other chronic conditions treated with prescribed pharmacologic agents. Among some of the commonly used adherence assessment tools are the Self-Efficacy for Appropriate Medication Use Scale (SEAMS), the Hill-Bone Compliance Scale, Morisky's Medication Adherence Scale, or the Brief Medication Questionnaire. The most notable among these is the 8-Item Morisky's Medication Adherence Assessment tool which is frequently used due to its "higher validity and reliability in patients with chronic diseases and ability to assess adherence among a variety of chronic conditions" (Lam & Fresco, 2015). The Morisky Green Levine 4-item adherence assessment tool was used in this QI program at the clinical site. The Morisky Green Levine tool is a 4-item medication adherence questionnaire used to assess self-reported medication adherence.

It functions to facilitate the identification and addressing of problems and barriers to adequate compliance. The tool has a relatively high measure of internal consistency of (0.61) which reflects its reliability (Morisky, Green, & Levine, 1986), thereby making it an appropriate selection for use. This doctoral project advanced nursing practice by addressing the need to further assess behaviors and beliefs as barriers to blood pressure medication adherence among low-income African Americans.

Local Background and Context

In 2015, the Department of Health and Mental Hygiene in a large metropolitan area estimated that 65% of the adult population reported having hypertension. African Americans were found to have a prevalence of hypertension 1.5 times higher than that of European Americans 1.6 times higher compared to Asian/ Pacific Islanders, and African American women were found to have a prevalence 2.1 times higher compared to that of Whites and Asian/ Pacific Islanders (Department of Health and Mental Hygiene, 2016). Reasons for blood pressure medication nonadherence among African Americans are multifaceted. Such constraints create challenges for healthcare providers to develop effective interventions to improve health outcomes. Interventions directed at behavior modification can be purposefully fashioned when a provider knows why nonadherence occurs within this population. This QI evaluation project took take place in a clinic setting which provides primary and mental health care services to adult patients with Medicaid insurance.

Greater than 95% of patients who receive care in this clinic setting are of a minority background, primarily Blacks and Hispanics with a low socioeconomic and health literacy status. The clinic is located within an academic medical center in a large metropolitan area of the northeastern United States. Because the Morisky four- item tool used can assess self-reported medication adherence, and functions to facilitate the identification and addressing of problems and barriers to adequate compliance, this DNP project sought to evaluate its effectiveness on adherences after implementation. As a resultant, newly created or augmented interventions which subsume these revelations can

be implemented leading to reduced healthcare costs and improved patient outcomes by decreasing associated morbidity and mortality of uncontrolled hypertension.

Role of the DNP Student

As an adult nurse practitioner with an extensive clinical background in critical care, cardiology and community health nursing, I see firsthand that patients with uncontrolled hypertension are found to have multifactorial difficulties in maintaining adherence to prescribed blood pressure medications.

The consequences of uncontrolled hypertension such as arrhythmias, strokes, myocardial infarctions, heart failure are among the many comorbid conditions I treat daily in the outpatient setting. This DNP project has empowered me with a deepened awareness of the need for African Americans to improve their blood pressure medication adherence.

The role of the DNP student for this project was to evaluate the effectiveness of the QI project at a clinical site, subsequently facilitating improved interventions aimed at increasing adherence to blood pressure medications among African Americans. As a patient and institutional advocate, I hope that this evaluation has served to improve patient outcomes and positively influence system and policy changes which support medication adherence for African Americans with hypertension. Additionally, I am hopeful that this evaluation project will have a significant impact on reversing the health disparities thereby contributing to real social justice for members of this population.

Summary

Section 2 provided information which reflects the need to incorporate reasons for adverse behavior and perceptions held which support blood pressure medication nonadherence into health care interventions among African Americans in the urban setting.

The theoretical frameworks, the role of the DNP student as well as its relevance to nursing practices were introduced and discussed. The analysis of collected evidence for this DNP project will be presented in Section 3.

Section 3: Collection and Analysis of Evidence

Introduction

Hypertension is prevalent among one-third of the United States population, and it is among the leading causes of cardiovascular morbidity (Bandi, Goldmann, Parikh, Farsi, & Boden-Albala, 2017). The CDC (2016) cited medication nonadherence as a contributory factor in higher incidences of heart attacks, heart failure, initial strokes, and renal disease. African Americans have been found more likely to be nonadherent with prescribed blood pressure medications compared to Whites (Braverman & Dedier, 2009), placing this segment of the population at a higher risk for associated health complications. The relationship between uncontrolled hypertension and medication nonadherence adversely impacts the health status of African Americans. Reasons for medication nonadherence in this population are to be taken into consideration when devising interventions because they directly influence this unfavorable behavior. The unintentional and intentional factors of blood pressure medication nonadherence are socially and culturally influenced. Therefore, it is appropriate to regard these elements as essential components when developing interventions that can reverse nonadherent behaviors.

Practice-Focused Question

Understanding one's convictions about hypertension as a chronic disease and its treatment are components of health that are indispensable to the development of interventions directed at improving nonadherence. A qualitative study that sought to illuminate minority patients' beliefs about hypertension further highlighted this

knowledge gap (Kronish, Leventhal, & Horowitz, 2012). According to Kronish et al. (2012), there is a need to "address the discordances between lay and clinical beliefs about asymptomatic conditions" (p. 43). Additionally, a qualitative study conducted by Gagnon et al. (2017) revealed that low-income African American women in New York City with negative beliefs about medication were more likely ($p < .01$) to be nonadherent to blood pressure medication compared to those with positive views of medication. The recognition of patient beliefs enables the clinician to mitigate the relationship between blood pressure medication and nonadherence through interventions that augment behaviors conducive to adherence, resulting in improved patient outcomes. The practice-focused question was as follows: Does the use of a medication adherence assessment tool influence treatment regimen compliance among adult African American patients diagnosed with hypertension?

The purpose of this DNP project was to evaluate the effectiveness of a QI practice change that was implemented at a local clinical site and had not yet been evaluated. The practice change incorporated the utilization of an adherence assessment tool as part of the QI effort to improve medication treatment regime adherence for adult AA patients diagnosed with hypertension. The DNP evaluation project aimed to assist the site in determining the need to continue the use of the medication adherence assessment tool as a part of the routine practice for patients treated at the site. The QI initiative and the DNP evaluation project featured the goals of improving healthcare outcomes among AA diagnosed with hypertension and the subsequent reduction of its associated healthcare costs.

Sources of Evidence

For this DNP project, deidentified data from a clinical QI initiative conducted by a local clinical site was evaluated. This DNP project intended to determine the effectiveness of a medication adherence assessment tool implemented at the site by determining whether the AA patients were compliant to their antihypertension medications and if that reduced blood pressure.

The QI initiative began in August 2018. Deidentified data was collected by the facility between May and July 2018. The same deidentified data was collected by the facility after the initiative was in place between October 2018 and January 2019. The Morisky Green Levine 4-item Medication-Taking Adherence Scale (MMAS) was used in this QI project at the clinical site. The Morisky Green Levine tool is a 4-item medication adherence questionnaire used to assess self-reported medication adherence. It functions to facilitate the identification and addressing of problems and barriers to adequate compliance and assess barriers to adherence and medication-taking behaviors. This tool is appropriate in that it has a 93% sensitivity and 53% specificity in "very low-income minority patients treated for hypertension seeking routine care in a clinic setting and has been validated in other chronic conditions as well" (Lam & Fresco, 2015, p. 6). The Morisky Green Levine 4-item medication adherence tool was used as a conduit through which extracted perceptions favorable to medication nonadherence could be obtained to aid in the quality of health outcomes of patients with hypertension.

For this DNP evaluation project, peer-reviewed articles and other findings published by the CDC, WHO, and the American Heart Association was employed.

Additionally, after obtaining Walden University's IRB approval, deidentified data collected by the clinical site was be provided to for the DNP student for analysis. Specifically, deidentified data about age, gender, and blood pressure data from 33 patient records was provided from three months before the implementation of the QI initiative and for 3 months after the initiative was in place. Additionally, a summary of the data from the Morisky Green Levine tool was provided for inclusion in the analysis. This DNP evaluation project helped to explain the benefit of using a medication adherence QI initiative to improve hypertension among African Americans in an urban area.

The collection and analysis of this essential data was used to determine if the intervention was effective in reducing nonadherence and may be used by the administration to determine the need to continue the practice of the medication adherence assessment tool at the site.

Participants

Because this QI project was already in place, and after IRB approval was obtained for this project, the site provided deidentified data from thirty- three ($n = 33$) patient records where the Morisky Green Levine 4- item Medication-Taking Adherence Scale was used. This prime location presents the opportunity for accomplishing the DNP evaluation project because greater than 95% of patients who receive care in this clinic setting are of a minority background, primarily Blacks and Hispanics with a low socioeconomic and health literacy status, with the overwhelming majority are among those who have been diagnosed and are being treated for hypertension at the site. Hence, this targeted population at this location was relevant to the practice focused question

because of its potential to influence improved interventions and enhance medication adherence.

Procedures

The site chose the Morisky Green Levine tool for use in the QI initiative. The tool is a 4-item medication adherence questionnaire used to assess self-reported medication adherence. It functions to facilitate the identification and treatment of problems and barriers to adequate compliance and to assess barriers to adherence and medication-taking behaviors. The Morisky Green Levine tool is appropriate in that it has a 93% sensitivity and 53% specificity in "very low-income minority patients treated for hypertension seeking routine care in a clinic setting and has been validated in other chronic conditions as well" (Lam & Fresco, 2015, p. 6).

This DNP evaluation project aligned with The American Association of the Colleges of Nursing essential foundational competencies for all DNP students. This project aligned with essentials I, II, VI, VII and VIII. This project also aligned with the Institute of Medicine's call for nurses to take a greater role in America's increasingly complex healthcare system (Institute of Medicine, Committee on Quality of Health Care in America [IOM], 2001). Furthermore, this DNP evaluation project synchronously aimed to improve practice within the organization and improve health outcomes among a population impacted by the chronic condition of hypertension.

Protections

To ensure the ethical protection of participants, the blanket ethics IRB approval for QI Evaluation projects as directed by the Walden University Quality Improvement

Manual was obtained. The blanket IRB approval provided the DNP student with "access to deidentified patient records, operational records pertaining to staff training and delivery of care, meeting minutes, digital/audio/video recordings created by site, training materials, protocols, manuals, reports, agreements, questionnaires that were collected under auspices of site as part of QI operations, and other internal documents that the site had released to the student for use in the doctoral project" (*Walden University Quality Improvement Manual*, 2015). Once IRB approval was obtained, a convenience sample of deidentified patient data of those participating in the QI initiative was provided to the DNP student for evaluation.

Analysis and Synthesis

The site QI initiative included using a paper-based format of the 4 item Morisky Green Levine tool administered to patients by front line clinical staff members at the clinical site as part of the QI initiative. Blood pressure measurements were assessed and documented following the site clinical blood pressure measurement protocol by the clinical staff, and these data in addition to the results of the 4 item adherence assessment tool data was provided to the student for analysis in this DNP project.

After obtaining IRB approval, the deidentified data obtained from the site was entered into a spreadsheet within the SPSS statistical analysis software version 25. The analysis began at that point. Frequency distributions and central tendencies were used in the analysis as well as a paired sample *t* test to determine if a difference in blood pressure exists between the pre and post implementation groups (Terry, 2015, p. 201). Content

analysis was used to quantify the reasons for nonadherence to blood pressure medications.

Summary

Section 3 provided an outline of the methods by which the data collection and analysis of evidence was used to determine if a medication adherence assessment tool can influence treatment regime compliance among African American adults diagnosed with hypertension in the urban setting with subsequently controlled hypertension.

After IRB approval was obtained, an evaluation of blood pressure measurements was provided by the site. Data included deidentified data from the two time points - before and after the implementation of the QI program- to determine if the program is effective. Statistical analysis and project significance were determined using the SPSS statistical analysis program. Based on the evaluation of the effectiveness of the QI project which utilizes a medication adherence assessment tool, this QI evaluation project can be used to improve healthcare outcomes, and organizational processes through the development or enhancement of newer interventions and health policies. Results of the data analysis, findings, implications for care outcomes and recommendations will be addressed in Section 4.

Section 4: Findings and Recommendations

Introduction

The relationship between uncontrolled HTN and antihypertensive medication nonadherence contributes to adverse health in African Americans as well as to the overall costs of healthcare (CDC, 2017). This racial and healthcare disparity places African Americans at a disproportionately higher risk for cardiovascular disease. Numerous studies have been conducted on both the willful and inadvertent aspects of medication nonadherence, which have yielded suboptimal results or interventions. As a resultant, there remains a need to address reasons for medication nonadherence and develop interventions that will discontinue and or reverse the associated deleterious effects (Ndumele, Shaykevich, Williams, & Hicks, 2010). This QI DNP project sought to answer the following question: Does the use of a medication adherence assessment tool influence treatment regime compliance among adult African American patients diagnosed with hypertension in urban settings? Deidentified data collected by the clinical site included information from patient records, department staff meetings, and associated training; all was provided to the DNP student. A spreadsheet within the SPSS statistical analysis software, version 25, was used to organize the collected deidentified data. Frequency distributions, central tendencies as well as a paired-sample *t* test were used in the analysis to determine if a difference in blood pressure existed between the pre- and post-implementation groups

Findings and Implications

Data from a convenience sample of African American patients ($n = 33$) who were treated in the local clinic where the QI project took place, were provided to the DNP student. One hundred percent of the participants answered all four questions on the 4-item medication adherence assessment tool. Data were provided in aggregate form, both before and after the intervention.

Frequency statistics showed that the sample population was 42% male and 58% female, with a mean age of 55 years (median age 54; range of 28–83). Seventy-two percent reported that they forgot to take their blood pressure medications. Eighty-four percent reported they have problems remembering to take their blood pressure medication. Eighty-two percent admitted they sometimes stop taking their blood pressure medications when they felt better, and 76% reported they stopped taking their blood pressure medication when they felt worse (see Tables 3-6). The result of the paired sample t test, as shown in Table 1, showed that the mean blood pressure readings were 140/80 and 133/72 before and after the QI implementation, respectively.

Table 1

t Test (paired sample statistics)

	Mean	*n*	Std. Deviation	Std. Error Mean
Pair 1 Post Sys_BP	133.33	33	13.263	2.309
Pair 1 Pre_SysBP	139.5	33	15.048	2.620
Pair 2 Post Dias_BP	72.24	33	6.260	
Pair 2 Pre Dias_BP	79.85	33	9.909	1.725

The mean differences of both the systolic and diastolic blood pressures [SBP mean difference = -6.515, *SD* = 8.920, 95% *CI* and DBP mean difference = -7.606, *SD* = 10.52, 95% *CI*] were statistically significant at the .05 level of significance (SBP *t* = -4.196, *p* = .000 and DBP *t* = -4.151, *p* = .000) 3 months after implementation of the QI initiative.

Table 2

Paired Sample Correlations

	n	Correlation	*Sig*
Pair 1			
Post_SysBP & Pre_SysBP	33	.809	.000
Pair 2			
Post_DiasBP & Pre_DiasBP	33	.214	.231

Table 3

Frequency Table, Morisky Medication-Taking Adherence Scale, MMAS (4-items)

Q1. Do you ever forget to take your anti-hypertension medication?

	Frequency	Percent
Yes	24	72.7
No	9	27.3
Total	33	100

Table 4

Frequency Table, Morisky Medication- Taking Adherence Scale- MMAS (4-items)

Q2. Do you ever have problems remembering to take your anti-hypertension medication?

	Frequency	Percent
Yes	28	84.8
No	5	15.2
Total	33	100.0

Table 5

Frequency Table, Morisky Medication- Taking Adherence Scale- MMAS (4-items)

Q3. When you feel better, do you sometimes stop taking your anti-hypertension medicine?

	Frequency	Percent
Yes	27	81.8
No	6	18.2
Total	33	100.0

Table 6

Frequency Table, Morisky Medication- Taking Adherence Scale- MMAS (4-items)

Q4. Sometimes if you feel worse when you take your antihypertension medication, do you stop taking it?

	Frequency	Percent
Yes	25	75.8
No	8	24.2
Total	33	100.00

The null hypothesis which suggested that there was no significant difference in the mean systolic and diastolic blood pressures of African American three months after implementation of the QI initiative is rejected. The result of this QI evaluation showed the benefits of utilizing a medication adherence tool to improve blood pressure medication adherence. Correspondingly, improved institutional contentment, the reduction in healthcare costs, and positive social change can be enhanced.

Recommendations

Identifying a patient's perception of nonadherence of prescribed blood pressure medication is essential to improving adherence. These perceptions can be integrated to facilitate improved holistic interventions aimed at increasing adherence to blood pressure medications among African Americans. Although the evaluation showed a statistically significant improvement of the mean blood pressures, due to the small sample size of the population the results may be not be clinically significant. As such, the DNP student recommends that the QI initiative be implemented not only at other clinics at the site

where patients with hypertension seek healthcare services, but to also include patients with various ethnic backgrounds.

Strengths and Limitations of the Project

Limitations of this QI initiative was the small sample ($n = 33$). Also, the QI initiative was implemented at a single clinical setting and only included a convenience sample of African Americans. Therefore, the results may not be considered generalizable to a larger mixed-race population of people with uncontrolled hypertension. However, the major strengths of the QI initiative were its success in showing improved systolic, and diastolic blood pressure results in African Americans after implementation evidenced by a reduced mean systolic and diastolic blood pressure. Moreover, the result of the QI initiative evaluation can be utilized to advocate for policy change at the institutional level that promotes the integration of a patient's perception into primary and secondary preventions that positively affect health outcomes. Lastly, the added benefit of reducing health care cost resulting from improved adherence and a decrease in the number of clinic visits for uncontrolled hypertension can positively impact social change by improving health and quality of life for disparate populations.

Section 5: Dissemination Plan

Dissemination Plan

Having conducted this evaluation at a large academic facility allows for sharing knowledge among the various established layers of nursing professionals at the micro and macro levels at the site. Plans for dissemination of this QI evaluation result to the facility would be undertaken using the following forums which target nurses, healthcare professionals, policy makers and consumers (Grove, Burns, & Gray, 2013, p 619). First, the findings would be relayed directly to the unit where the evaluation occurred in the form of a brief power point presentation during one of their weekly staff meetings. Likewise, the same power point presentation would be used for knowledge dissemination to the Nurse Practitioner Professional Practice Committee (NP-PPC) which I currently co-chair with the senior director of advanced practice nursing at the facility at one of the monthly meetings. Consecutively, the conclusions would also be shared on the internal website that is used by over 500 clinical, administrative and executive level advanced practice professionals currently employed at the facility. As and invited speaker and moderator at a local cardiology symposium during nurse practitioner week November 2019, the plan for external dissemination of the findings would include the same PowerPoint presentation that would be downloaded to a flash drive given to all participants. In addition to this, the findings would be illustrated in a poster presentation for review at the symposium thereby allowing for external dissemination and having the potential to impact global health (Christenbery & Latham, 2012).

Analysis of Self

As I reflect upon my educational journey over the last four years, I am delighted by the abundance of knowledge gained. The ability to apply evidence into practice through effective leadership is both personally and professionally rewarding. As an advanced practice provider, I have increased confidence in my propensity to influence change among African Americans with hypertension through scholarship. The result of this evaluation has provided me with knowledge about perceptions and behaviors favorable to nonadherence as well as advanced academic capabilities. When combined with my expertise and clinical background, this knowledge empowers me to exercise leadership skills that will resonate, promote and optimize patient outcomes favorable to blood pressure adherence among a disparate population at the organizational and local levels. Having experienced the role of a project manager has benefited me with by broadening my insight on the potential to shape health policies at the state level which is among one of the many long term goals I have envisaged. The challenges and results of this DNP journey have cultivated my appreciation for and comprehension of the foundational DNP essentials established by The American Association of the Colleges of Nursing (AACN, 2006) because it subsumed all eight competencies.

Summary

The result of this DNP evaluation project substantiates the utilization of a medication adherence assessment tool to influence treatment regime adherence among African American adults diagnosed with Hypertension. The cognitive thought processes used by patients about blood pressure medication non- adherence can be employed by

providers to create and adjust interventions that not only meet the needs of patients. Additionally, they may also be used to shape new policies within institutions. The statistical significance revealed makes the implementation noteworthy in that cardiovascular health outcomes can improve while simultaneously reducing cost making the tool practical and pertinent for use in clinical settings where patients diagnosed with hypertension are treated.

  As a patient and institutional advocate, I was pleased to see that the evaluation of this QI initiative improved patient outcomes. Organizational health policies may be adjusted to positively influence system changes which support medication adherence by using evidence-based findings guided by nursing theory. Additionally, I am hopeful that this DNP quality evaluation project will have a significant impact on reversing the health disparities thereby contributing to real social justice for African Americans with hypertension as well as advancing nursing science.

References

Ayaninan, J. Z., & Markel, H. (2016, July 21). Donabeian's Lasting Framework for

Health Care Quality. *New England Journal of Medicine, 375*(3), 205-207.

Bandi, P., Goldmann, E., Parikh, N. S., Farsi, P., & Boden-Albala, B. (2017). Age-related

differences in antihypertensive medication adherence in Hispanics: A cross-

sectional community-based survey in New York City, 2011-2012. Retrieved from

https://www.cdc.gov/pcd/issues/2017/16_0512.htm

Braverman, J., & Dedier, J. (2009). Predictors of Medication Adherence for African

American Patients Diagnosed with Hypertension. *Ethnicity & Disease*, *19*, 396-

400.

Centers for Disease Control and Prevention. (2016). High Blood Pressure Facts.

Retrieved from https://www.cdc.gov/bloodpressure/facts.htm

Centers for Disease Control and Prevention. (2017). High Blood Pressure. Retrieved from

https://www.cdc.gov/bloodpressure/facts.htm

Ferdinand, K., Yadav, K., Nasser, S. A., Clayton-Jeter, H. D., Lewin, J., Cryer, D. R., &

Senatore, F. F. (2017). Disparities in hypertension and cardiovascular disease in

blacks: the critical role in medication adherence. *Journal of Clinical

Hypertension*, *19(10)*, 1015-1024. https://doi.org/10.1111/jhc.13089

Final Report Summary - ABC (Ascertaining barriers for compliance: Policies for safe,

effective and cost-effective use of medicines in Europe). (2013, September 04).

Retrieved from https://cordis.europa.eu/result/rcn/55891_en.html

Gagnon, M. D., Waltermaurer, E., Martin, A., Friedenson, C., Gayle, E., & Hauser, D, L.

(2017). Patient beliefs have a greater impact than barriers on medication adherence in a community health center. *The Journal of the American Board of Family Medicine. 30*(3), 331-336.

Grove, S. K., Burns, N., & Gray, J. R. (2013). *The Practice of Nursing Research Appraisal, Synthesis and Generation of Evidence* (7th ed.). St. Louis, Missouri: Elsevier Saunders.

Heart.org. (2018). Hypertension Guideline Resources. Retrieved from https://www.heart.org/en/health-topics/high-blood-pressure/high-blood-pressure-toolkit-resources

Heart.org. (2018). Medication Adherence – Taking Your Meds as Directed. Retrieved from http://www.heart.org/HEARTORG/Conditions/More/ConsumerHealthCare/Medication-Adherence---Taking-Your-Meds-as-Directed_UCM_453329_Article.jsp

Heidenreich, P. A., Trogdon, J. G., Khavjou, O. A., Butler, J., Dracup, K., Ezekowitz, M. D., ... Woo, Y. (2011). Forecasting the future of cardiovascular disease in the United States-a policy statement for the American Heart Association. *Circulation*, *123*, 933-944.

Ho, M. P., Bryson, C. L., & Rumsfeld, J. S. (2009). Medication Adherence Its Importance in Cardiovascular Outcomes. *Circulation*, *119*, 3028-3035.

Hugtenburg, J. G., Timmers, L., Elders, P. J., Vervloet, M., & Van Dijk, L. (2013). Definitions, variants, and causes of nonadherence with medication: a challenge for tailored interventions. Retrieved from

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3711878/

Hypertension in New York City: disparities in prevalence. (2016). Retrieved from

https://www1.nyc.gov/assets/doh/downloads/pdf/epi/databrief82.pdf

Institute of Medicine, Committee on Quality of Health Care in America. (2001). *Crossing*

the quality chasm: A new health system for the 21st century. Washington, DC:

Government Printing Office.

Johnson, M. J. (2002). The Medication Adherence Model: A Guide for Assessing

Medication Taking. *Research and Theory for Nursing Practice*, *16*(3), 179-192.

Kang H. (2013). The prevention and handling of the missing data. *Korean Journal of*

Anesthesiology, *64*(5), 402-6.

Kenreigh, C, A, & Wagner, L, T. (2005). Medication adherence: a literature review.

Medscape Pharmacists, 6(2).

Kobayashi, H., Takemura, Y., & Kanda, K. (2011). Patient perception of nursing service

quality; an applied model of Donabedian's structure-process-outcome approach

theory. *Scandinavian Journal of Caring Sciences*, *25*(3), 419-425.

Kronish, I.M., Leventhal, H., & Horowitz, C. R. (2012). Understanding minority patients'

beliefs about hypertension to reduce gaps in communication between patients and

clinicians. *The Journal of Clinical Hypertension, 14*(1), 38-44.

Lam, W. Y., & Fresco, P. (2015). Medication Adherence Measures: An Overview.

BioMed Research International. https://doi.org/ 10.1155/2015/217047

Lewis, L. M. (2012). Factors associated with medication adherence in hypertensive

blacks. *Journal of Cardiovascular Nursing*, *27 (3)*, 208-219.

https://doi.org/10.1097/JCN.0b013e318215bb8f

Lewis, L. M., Askie, P., Randleman, S., & Shelton-Dunston, B. (2010). Medication adherence beliefs of community dwelling hypertensive African Americans. *Journal of Cardiovascular Nursing*, *25(3)*, 199-206.

Luga, A. O., & McGuire, M. J. (2014). Adherence and health care costs. *Risk Management and Healthcare Policy, 7*, 35-44.

Merriam-Webster Dictionary. (2018). In *Dictionary*. Retrieved from www.merriam-webster.com/dictionary/African-American

Morisky, D. E., Green, L. W., & Levine, D. M. (1986). Concurrent and Predictive Validity of a Self-reported Measure of Adherence. *Medical Care, 24*(1), 67-74.

Ndumele, C. D., Shaykevich, S., Williams, D., & Hicks, L. S. (2010). Disparities in Adherence to Hypertensive Care in Urban Ambulatory Settings. *Journal of Health Care for the Poor and Underserved*, *21*, 132-143.

NYC.gov. (2017). Community Needs Assessment Report. Retrieved from https://www1.nyc.gov/assets/doh/downloads/community-health-assessment-plan-pdf.

Smith, M. C., & Parker, M. E. (2015). *Nursing Theories and Nursing Practice* (4th ed.). Philadelphia PA: F.A. Davis Company.

Smith, M. C., & Parker, M. E. (2015). *Nursing Theories & Nursing Practice* (4th ed.). Retrieved from: http://mwaks.net/files/LIB/HEALTH/NURSING/files/Nursing.

Terry, A. J. (2015). *Clinical Research for the Doctor of Nursing Practice.* (2nd ed.). Burliington, MA: Jones & Bartlett Learning.

Viswanathan, M., Golin, C. E., Jones, C., Ashok, M., Blalock, S. J., Wines, R., Lohr, K.

(2012). *Annals of Internal Medicine. 157*(11), 785-795.

Walden University Doctor of Nursing Practice: Overview. (2015). Retrieved from

http://academicguides.waldenu.edu/doctoralcapstoneresources/dnp

What is high blood pressure? (2017). Retrieved from https://www.heart.org/idc/groups/heart-

public/@wcm/documents/downloadable/ucm_300310.pdf