Utilizing a Team-Based Approach to Improve Hypertension Management in a Medical Home Practice

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Acknowledgements & Dedication

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Abstract

***Background*:** Hypertension is one of the leading causes of heart disease in the United States. Currently, there are about 80 million Americans who have a diagnosis of hypertension. As the rates of patients diagnosed with hypertension continues to raise, across the U.S, mortality rates have increased.

Problem: Heart Disease is the leading cause of death in the State of Michigan. Since 2015, thirty-three percent of the states total population has a diagnosis of hypertension. Healthcare providers in a medical home model practice in Michigan do not use a standardized approach to educating patients about hypertension and heart disease. The objective of this project was to standardize evidence-based hypertension management using evidence-based education tools and a team-based care approach in a medical home practice.

Methods: The quality improvement project was guided by the Logic Model. The population studied included a convenience sample of voluntary participants, specifically the healthcare providers in a medical home practice in Detroit, Michigan. Pre and post evaluation of quality improvement.

Intervention: A team-based approach was utilized to standardize management and education of patients with hypertension. Each provider received a pre-survey and attended a two-hour hypertension education training based on evidence-based practice. Practice patients diagnosed with hypertension received standardized hypertension education from the providers. Each healthcare provider received a post intervention survey.

Results: The intervention was DNP student led and completed with 100% healthcare provider participation (n=5). Pre and post intervention surveys were used to assess impact of

standardizing health care provider management of hypertension. Responses from the survey were used to determine effectiveness of the intervention.

Conclusion: This project resulted in a recommendation for team-based approaches to improve hypertension management in medical home practices and for future standardized practice implementation initiatives.

Keywords: Team-based care, hypertension, blood pressure, Inter-professional collaboration

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Introduction and Clinical Significance

Heart disease is one of the leading causes of mortality in the United States. According to the Centers for Disease Control & Prevention (CDC), it affects greater than 60 million people nationwide and has contributed to more than 2000 deaths daily (CDC, 2016). One of the major risk factors and leading cause for the development of heart disease is uncontrolled hypertension. Hypertension, also known as the "silent killer" has contributed to more than half a million deaths nationwide (CDC, 2016). It is a chronic disease that can be very challenging for clinicians to manage. Currently, there are about 80 million Americans who have a diagnosis of hypertension. The increasing prevalence of hypertension and associated complications has become a growing health concern across the nation. As the rates of patients diagnosed with hypertension continues to rise across the U.S, incidentally mortality rates have increased. This growing problem has resulted in collaboration of healthcare leaders and government researchers to implement programs to help improve chronic disease management.

Currently in the State of Michigan, heart disease is the leading cause of death. Since 2017, there has been greater than 25,000 deaths related to heart disease in Michigan. Detroit is a major city with a population of greater than 600,000 and one of the poorest cities in Michigan. According to the Michigan Department of Health, more than 2000, residents from the city of Detroit have died from heart disease or complications from a heart disease related illness in 2017. Seventy-eight percent of Detroit residents are African American. Amongst the national population, African Americans have the highest incidence of heart failure and heart disease than any other race. A study by the American Heart Association, (AHA) found that "23%" of African Americans die from cardiovascular disease annually. Hypertension and its complications have been identified as a major cause of mortality among the African American population.

Problem Statement

Hypertension is a chronic disease that can be particularly challenging for clinicians to manage. According to a study by Kravetz & Walsh (2016) one out of three adults has been diagnosed with hypertension and it has become the most treated condition in primary care clinics across the nation. Uncontrolled hypertension and inadequate management of the disease can increase risk of mortality and lead to the development of heart disease, heart failure, stroke, and kidney disease. Since 2015, the rates of people diagnosed with hypertension in Michigan have increased to thirty-three percent of the states' total population. To address hypertension and prevent complications, targeted interventions are needed to improve health outcomes. The Centers for Disease Control and Prevention (CDC) suggests the use of a team-based approach or model for improving management of hypertension. The team-based approach requires the collaboration of the care team, patient, and family members to essentially manage the patient's hypertension. A study by Kravetz & Walsh (2016) found that using a team-based approach in the management of hypertension was highly effective in lowering systolic blood pressure of participants and improving overall health outcomes of patients diagnosed with hypertension.

Organizational Gap Analysis

A patient centered medical home model private practice group in Metro-Detroit, Michigan lacked a standardized evidence-based team approach to hypertension management.

Purpose Statement

The purpose of this DNP project was to standardize and implement evidence-based hypertension management using a team-based approach in a medical home practice. This DNP project will attempt to answer the following PICOT question: (P) Among healthcare providers

caring for patients 18 or older diagnosed with hypertension, (I) how does the utilization of a team-based approach (C) compared to standard home care teaching (O) improve patient knowledge, medication adherence and prevent hospitalization (T) within three months.

Specific Aims

The specific aims of this DNP project included the following: implementing the use of the team-based approach to standardize hypertension management, an educational intervention for patients diagnosed with hypertension and evaluating healthcare providers' perception of patient health outcomes using a pre and post implementation survey.

Theoretical Framework

The Logic model was selected as a conceptual framework for this DNP project because of its efficacy and usefulness in guiding clinicians for planning and implementation of evidence-based practices. Hayes, Parchman & Howard (2011) defines the Logic Model as a "graphic/textual representation of how a program is intended to work and links outcomes with process of theoretical assumptions of the program"(p.6).The logic model facilitates teamwork among clinicians and is useful for project planning, implementation and outcome evaluation. In this DNP project, the logic model was used as a framework for implementing the use of a team-based approach to standardize hypertension management in a medical home practice.

Theory

The earliest version of the Logic model was developed in the late 1960's. Since then, the model has been widely adapted by several organizations for project planning and evaluation. The purpose of the Logic model is "to provide stakeholders with a roadmap describing the sequence of related events connecting the need for the planned program with the desired results" (Kellogg

Foundation, 2004). The logic model reinforces team-based care as health teams must collaborate to meet project goals. A study by Goeschel, Weiss, & Pronovost, (2012) found that logic model was a valuable tool that can be used to outline project ideas and increase communication between team-members. In clinical practice, the logic model can be used to guide evidence-based practices changes. Furthermore, the Centers for Disease Control and Prevention recommends the use of the of the Logic model for public health program planning and evaluation.

Application of Theoretical Underpinning

The Logic model was utilized in this DNP project as a framework for implementing the use of a team-based approach to standardize hypertension management in a medical home practice. The logic model examines the inputs, outputs, and outcomes of an intervention (see Appendix A).

Situation: In this DNP project a medical home practice in Detroit, lacked standardization of hypertension management.

Priority: Consistent patient education is a requirement of the medical home model.

Inputs: The inputs for this project included funding, identification of costs for patient education materials, cost of training for clinicians and required time allotment of both staff and patients. The DNP student developed a two-hour hypertension education curriculum that aligned with the American Heart Association guidelines to standardize practice for clinicians.

Outputs: The DNP student facilitated a student-designed pre and post survey and patient education brochure in alignment with the American Heart Association. The DNP student facilitated virtual training for clinicians and actively engaged patients.

Outcomes: Medical home practice will have standardized hypertension management. Clinicians will have increased knowledge of hypertension guidelines and continue to implement team-based care approach when managing patients with hypertension. Patient will have increased knowledge of hypertension, increased medication adherence and reduced hospitalization.

Literature Review

The databases explored were Google Scholar, PubMed and CINAHL. The following key words and combination of these words was used to obtain articles, team-based care, hypertension, collaboration, hypertension management and panel management. A Google search was also completed to gather publicly available statistical information from the Centers for Disease Control & Prevention (CDC) and the American Heart Association (AHA). The literature search produced more than 1000 articles. The following limiters were applied to find articles that met the criteria for this review; academic journals, scholarly and peer reviewed- articles with a date range from year 2015 to 2020. Inclusion criteria included scholarly research articles pertaining to team-based care, hypertension, and inter-professional collaboration, communication, management. Searches using these key words yielded 1000+ articles, with 46 reviewed and 14 articles further evaluated and graded using the Melnyk's level of evidence nursing tool. The level of evidence of the articles ranged from level I through level IV and was all high or good quality (See Appendix C).

The literature review revealed that the prevalence of hypertension is increasing nationwide. An analysis of studies in the review suggests that contributing factors to uncontrolled hypertension include patient knowledge deficit, poor compliance to medication regimen, nonadherence to recommended lifestyle modifications and inadequate provider management (Boonysai, et al 2017). To improve hypertension management, multiple studies

suggest the implementation of multi-level interventions that target both patient and health care providers (Mills, et al.2018) Interventions, like enhanced patient education and team-based care were found to improve blood pressure control and increase medication adherence (Proia, et al. 2015). Necessary elements that emerged from the literature review involved; providers must use consistent information regarding Hypertension to educate patients; Team-based care is optimal for ongoing patient support; and continued provider/ patient interaction and follow up visits reduces hospitalizations.

Hypertension

Hypertension also known as high blood pressure and is one of the most prevalent chronic diseases being treated in primary care clinics today. According to a study by Carey, Mutner, Bosworth & Whelton (2018) hypertension affects greater than 70 million people world-wide. Hypertension is diagnosed as having a systolic blood pressure and diastolic blood pressure of greater than 130/80 (American Heart Association, 2017). There are two types of hypertension, primary and secondary. Primary hypertension is most prevalent and often caused by poor diet and lack of or minimal exercise, while secondary hypertension is caused by genetics, primary aldosteronism, renal disease, endocrine disorders and drug and alcohol use (Carey, et.al 2018). Because there are no specific signs and symptoms of the disease, hypertension is often referred to as the "silent killer" (AHA, 2017). Hypertension is a modifiable risk factor for the development of heart disease. Carey, et.al (2018) found that a combination of genetics, environment and social determinants contribute to the development of hypertension. Predisposing factors that affect the development of hypertension include genetics, age, race/ethnicity and gender. Socioeconomic factors like finances, lack of insurance coverage, smoking and environmental lifestyle can also increase risk factors for development of

hypertension and affect clinical management. Environmental factors are defined as “obesity, consumption of an unhealthy diet, excessive dietary sodium, inadequate dietary potassium, insufficient physical activity and consumption of alcohol” (Carey, et.al (2018) p.1281). Unfortunately, patients with hypertension can become chronically ill and experience serious complications if the disease is poorly managed. Some of the complications of uncontrolled hypertension are chest pain, irregular heartbeat, stroke, myocardial infarction, congestive heart failure, renal disease. Prolonged uncontrolled hypertension can lead to permanent damage of target organs, heart, brain, kidneys, liver and cause premature death.

Hypertension and its growing prevalence have sparked worldwide initiatives to improve health outcomes for patients with cardiovascular disease. The World Health Organization (WHO) estimates that there are more than a billion people who have a diagnosis of hypertension. In fact, the World Health Organization has established global targets for a 25 % reduction of hypertension prevalence by year 2025, (WHO, 2019). In efforts to address this growing problem, the World Health Organization and the Centers for Disease Prevention & Control collaborated to launch the Global Hearts Initiative in 2016. The Global Hearts Initiatives is a program with specific aims to improve hypertension control by early prevention, early treatment and implementation of the following five strategies, “Healthy-lifestyle counselling, Evidence-based treatment protocols, Access to essential medicines and technology, Team-based care, and Systems for monitoring (WHO, 2019).

Currently, “forty- five percent” of the American population has a diagnosis of hypertension (CDC, 2020). In 2017, the American Heart Association and American College of Cardiology (AHA/ACC) published new guidelines that define “ high blood pressure to be anyone with a systolic blood pressure (SBP) ≥ 130 mm Hg or diastolic blood pressure (DBP) ≥

80 mm Hg" (CDC, 2020). The previous diagnostic guidelines were blood pressure of 140/90.This new guideline lowers the criteria for hypertension diagnosis and provides recommendations for early initiation of treatment. The American Heart Association has established tools and evidenced-based clinical guidelines for healthcare teams to improve clinical management, developed programs to improve patient awareness and self-management of hypertension. The American Heart Association recommends early intervention, treatment and disease prevention of with a combination of blood pressure screenings, cholesterol screenings, lifestyle modifications and medication management. To treat hypertension, the American Heart Association recommends combination of both non-pharmacologic interventions, like patient education on dash diet, exercise, smoking cessation, and antihypertensive medications. The American Heart Association provides a variety of tools that focus on treatment, lifestyle modifications, medication algorithms and clinical frameworks such as Target BP and Measure accurately, act rapidly and Partner with patients (MAP) to help both clinicians and patients improve health outcomes.

Team-based care

Education is a major part of the care that healthcare providers deliver to patients. A study by Ribeiro, et al. (2015) found that educational interventions from healthcare providers can positively impact patient health beliefs, promote behavior changes, and influence adherence to treatment plans. As the rates of patients diagnosed with hypertension continue to rise nationally, interventions to improve patient health outcomes must be implemented. The Centers for Disease Control & Prevention and the Community Preventive Services Task Force (CPSTF) recommend team-based care to improve hypertension control.

According to the National Academy of Medicine, team-based care is defined as "the provision of health services to individuals, families, and or their communities by at least two health providers who work collaboratively with patients and their caregivers to the extent preferred by each patient to accomplish shared goals within and across settings to achieve coordinated, high- quality care" (Schottenfeld, et al.2016). Team-based care is an approach that requires the collaboration of a care team, patient and family members to essentially manage the patient's hypertension. Benefits of team-based care include improved patient health outcomes like blood pressure control and medication adherence. A study by Jacob et al. (2015) found that team- based care was effective in improving quality of life and reducing population morbidity and mortality rates.

Multiple studies have found that team-based care is an effective approach to improving cardiovascular health. Team-based care can be implemented in a variety of settings such as primary care clinics, hospitals, private practice, ambulatory and community health centers (Proia, et al. 2015) to implement team-based care in a clinic or practice, the first step is to form a care team and specify roles and responsibilities. The care team may include the patient, the patient's primary care provider, and other professionals such as nurses, nurse practitioners, medical assistants, pharmacists, dietitians, social workers, and community health workers.These roles and responsibilities of the care team are coordinated and shared amongst the health care team members. Some of the roles may include medication management; patient follow-up; and adherence and self-management support (CPSTF, 2017). According to the Community Preventive Services Task Force (2017) team-based care aims to do the following:

- Facilitate communication and coordination of care among team members
- Enhance team members' use of evidence-based guidelines

- Establish regular, structured follow-up mechanisms to monitor patients' progress and schedule additional visits as needed
- Actively engage patients in their own care by providing them with education about hypertension medication, adherence support (for medication and other treatments), and tools and resources for self-management (including health behavior change)

Several studies have found that team-based care interventions are cost effective, improve blood pressure control, and improve healthcare team engagement.

Provider to Patient Communication

Team-based care is a vehicle for improving communication between patients and their healthcare providers. A study by Proia et. al (2015) found that team-based care actively engaged patients, enhanced patient knowledge regarding their hypertension diagnosis and self management. The team-based approach requires health care team members to build relationships with patients, enhance communication styles such as motivational interviewing and become active listeners. According to the Agency for Healthcare Research and Quality (2016) proper implementation of team-based care helps care teams provide culturally competent care, builds relationships and improves physician- patient communication. Wen & Schulman (2014) found that team-based care not only improves patient-provider communication but also improves clinical decision making, increases healthcare access and reduces healthcare cost.

Team-based care promotes effective communication between members of the healthcare team and patients. The team-based care approach requires healthcare teams to collaborate, increase communication between team members, increase patient communication and patient engagement. When implementing team-based care, members of the team may share roles to

actively engage patients by scheduling follow visits and, increasing patient education on medication adherence, diet and lifestyle modifications. Additionally, a study by Lu et al.,(2015) found that hypertension education facilitated by healthcare providers lead to increased patient hypertension related knowledge, medication adherence and controlled diet .The implementation of team-based care has been linked to improved patient health outcomes.

Critical Appraisal

Melnyk's level of evidence nursing tool was used to grade the 14 articles selected to answer the PICOT question. The level of evidence of the articles ranged from level I through level IV and was all high or good quality. Hypertension is a chronic disease that affects millions of people world-wide. Kravetz & Walsh (2016) reported that one out of three adults have hypertension. As the number of patients diagnosed with hypertension continues to rise, some clinicians face challenges with clinical management of this chronic disease. The growing prevalence of this disease and increased mortality rates have led to the development of global initiatives to partner with patients to prevent hypertension and improve both clinical and self-management of the disease.

A study by Mills et al., (2018) compared the effectiveness of multilevel implementation strategies to achieve blood pressure control. The authors reported that major barriers to hypertension management at the patient level included poor adherence to medications, treatment plans and limited health access and resources. Other barriers that affected blood pressure control was lack of adherence to clinical guidelines and lack of performance standards by the clinicians. Price Haywood et al., (2017) also found that organizational culture, staff availability, health technology and access to internal and external resources can create barriers for managing chronic diseases. Mills et al., (2018) concluded that implementation of multi-level strategies such a

health coaching, self-monitoring of blood pressure, healthcare provider training and team-based care improved blood pressure control.

Brunstrom et al., (2020) assessed the association of physician education and feedback on hypertension management and control. The physicians received an educational intervention designed to improve knowledge and clinical management of hypertension. The authors reported that 38% of the participants achieved hypertension control post intervention. The authors suggested that educational interventions that target physicians and healthcare teams are linked to reductions in systolic blood pressure and blood pressure control.

Lu et al., (2015) examined the effect of community-based health education strategies on the management of hypertension patients with low economic status. Results of the study concluded that interactive patient education programs were linked to significant reduction in blood pressure of the participants post intervention. The authors reported that participants had improved hypertension related knowledge, medication adherence, increased physical activity and monitored their salt intake. The authors highlighted that targeted interventions that focused on both patients and healthcare providers were needed to further improve health outcomes of patients with hypertension.

Kuhmmer, et.al (2016) conducted a study that compared the effectiveness of a multidisciplinary program based on group and individual care versus group only care. The authors reported that patients with hypertension who received the group intervention versus personalized education achieve blood pressure control post intervention. Kuhmmer et al., (2016) reinforces the need for multilevel interventions to improve health outcomes for patients with hypertension.

Egan (2018) found that the Measure, Act Rapidly, Partner with Patients protocol (MAP) was a successful framework for improving hypertension. Implementation of this framework requires clinicians to use the team-based approach. The authors reported that more than 80% of the participants achieved blood pressure control within the first six months of the twelve-month intervention.

Khan et al., (2018) conducted a quality improvement project to evaluate experiences and blood pressure outcomes from multiple physician practices. The authors utilized the MAP protocol as a framework for improving care for patients with hypertension. The authors evaluated patient levels of engagement, blood pressure and satisfaction of the care teams. The authors reported that participants in 8 out 10 clinics had a mean reduction in blood pressure. The authors also reported that 75% of the care team was satisfied with the intervention.

The Centers for Disease Control & Prevention regard team-based care as a strategic initiative to improve blood pressure control. Derington et al., (2019) reviewed the effectiveness of team-based initiatives, cost effectiveness and associated challenges with implementation of team-based initiatives. Results of the study found that team-based care can be implemented in various clinical settings and is effective in lowering blood pressure and achieving controlled blood pressure than usual care. The authors reported that the American College of Cardiology /American Heart Association endorses the incorporation of team-based care as part of management for patients with hypertension (Derington et al., 2019)

Team-based care is a coordinated care model that involves the collaboration of different healthcare professionals. According to Santschi, et al., (2017) team-based care should be implemented by an interprofessional team that includes a physician, nurses and community pharmacists. Team-based care teams who include pharmacists are highly recommended by the

U.S Community Preventative Services taskforce (Santschi, et al., 2017). The author reports that community pharmacists play an effective role in hypertension management; they are a valuable addition to the health care team and are easily accessible to patients.

Kennelty, Polgreen & Carter (2019) conducted a systematic review of team-based strategies that included pharmacists to improve hypertension. The authors report that the addition of pharmacists to a care team improves blood pressure and overall costs of care. Pharmacists have the capacity to evaluate barriers to medication adherence like medication costs, lack of insurance coverage and recommend changes to hypertensive medications and dosages.

Price-Haywood et al. examined the effect of pharmacy collaborative care of patients with hypertension and diabetes in a medical home practice. The authors reported that 70% of the patients with poorly controlled blood pressure achieved control post intervention. Results of the study concluded that team-based care that involved pharmacists was an effective intervention that improved health access and blood pressure control.

A study by Bartolome et al., (2016) examined the use of team-based care to reduce racial disparities among African Americans with hypertension. The authors found that African Americans had lower blood pressure control than Caucasians. The intervention incorporated the use of team-based care, culturally tailored communication tools and hypertension medical management specific to African Americans. The authors reported that, the blood pressure of 81% of African American participants improved in comparison to the Caucasian participants post intervention. The authors reported that team-based care was an effective approach in closing the care gap of African Americans with Hypertension.

Kravetz & Walsh (2016) evaluated the effectiveness of team-based approach on blood pressure management in a busy primary care setting. The care team was comprised of clinicians who had various levels of training like, physicians, nurses, and health technicians. The authors reported that team members were able to address patient needs and provide preventative care. Post team-based care intervention, 62 % of patients had lower systolic blood pressure when compared to the usual group. The authors report that there was a significant decrease in the participant's blood pressure and patients were found to have an increase in medication compliance and maintained recommended lifestyle changes.

Hypertension is a chronic disease that can be challenging for both clinicians and patients to manage. Treatment of hypertension can be very costly for patients. According to the Agency for Healthcare Research and Quality (AHRQ) national costs for hypertension treatment exceed 43 billion dollars annually in the United States (Zhang et al., 2017). The cost of hypertension care has created a financial burden on the already strained U.S healthcare system. A study by Jacob et al., (2015) evaluated whether team-based care intervention for blood pressure control was cost beneficial or cost effective. The authors reported that the rising costs of care are due to increased medical expenditures, reduced worksite from medical absences and premature death. It was found that team-based care was not only effective in improving blood pressure control but also cost-effective. The authors report that team-based care interventions were linked to increased quantity and quality adjusted life years (QALY) and significant reduction in morbidity & mortality rates.

Proia et al., (2015) examined the effectiveness of team-based care in improving the quality of hypertension management. Results of the study confirmed that team-based care interventions increased the proportion of people with controlled blood pressure by reducing both

systolic and diastolic blood pressures. The authors reported that team-based care interventions facilitate clinician adaptation of a patient-centered approach and improves clinical decision making. The authors suggest that interventions aimed at improving hypertension care should target both provider level barriers and patient level barriers.

An analysis of the studies in this review concludes that team-based care has been proven effective in improving health outcomes for patients with hypertension. At the patient level, the team-based care approach has been found to increase blood pressure control, significantly reduce systolic and diastolic blood pressures, increase medication adherence, and reduce hospitalizations. Healthcare teams have also benefited from the team-based care interventions. Team-based care was found to facilitate team collaboration, defines team roles and care coordination, and improves clinician well-being. Team-based care also was found to improve cultural competence, improve team-member communication, and improves provider-patient communication.

Extraction Table

An extraction table was utilized to summarize the evidence for utilizing a team-based approach to standardize hypertension management in a medical home practice (see Appendix B).

Method

Implementation Model

The Logic model was utilized in this DNP project as a framework for implementing the use of a team-based approach to standardize hypertension management in a medical home practice. The logic model examines the inputs, outputs, and outcomes of an

intervention. The logic model also facilitates teamwork among clinicians and is useful for project planning, implementation, and outcome evaluation. (See Appendix A).

Project Design

The project design is an uncontrolled, pre and post intervention quality improvement project that is aimed to standardize hypertension management and improve health outcomes of patients with hypertension. The PICOT question for this project is: *Will implementation of a team-based approach to standardize hypertension management in a medical home practice improve patient knowledge, medication adherence and prevent hospitalization.* Participation in this project is voluntary for healthcare providers who make up a convenience sample of participants (n=5). A letter of invitation was distributed to each healthcare provider in the practice. A pre and post intervention survey was distributed to participants.

Sample & Setting

This project targeted healthcare providers in physician led medical home practice in Metropolitan Detroit, Michigan. The clinic provides primary care services to homebound patients living in Metro-Detroit. Ninety percent of the patients in the practice are residents of the city of Detroit. The target participants are those who received the education intervention are professional nurse practitioners and physicians. They collectively care for patients, both males and females ranging from 18 to 100 years of age with a diagnosis of hypertension. A convenience sample of five healthcare providers (n=5) received the hypertension education intervention and in turn were able to apply what they learned while providing care and hypertension education to 35 patients.

Instruments and Data Collection Process

The healthcare providers voluntarily completed the student-designed Hypertension Quality Improvement Pre-Survey prior to the educational intervention (See Appendix F). The survey included demographics of the participants and consisted of three questions to assess the healthcare providers' perception of their patient's knowledge of hypertension, medication compliance and current standard of care. The same pre-survey was also utilized at eight weeks during the intervention for an ongoing assessment. The post-survey was completed at twelve weeks post intervention.

Action Plan

The logic model depicts the course of action for this DNP quality improvement project (see Appendix A). The aim of this project is to utilize a team-based approach to standardize the hypertension management in a medical home practice. The action plan consisted of a letter of invitation being distributed to practice staff. A distribution of a student-designed pre-survey and instructions was given to voluntary participants. The educational intervention included a two-hour virtual training of evidenced- based practices and recommended hypertension guidelines from the American Heart Association (See Appendix G). The DNP student facilitated the clinician education on team-based care to standardize the management of hypertension in the medical home practice. The distribution of a patient education brochure in alignment with the American Heart Association hypertension guidelines was given to participants and patients. An ongoing assessment was conducted at eight weeks, and then a post intervention survey was given to participants at twelve weeks.

Stakeholders and Facilitators to Implementation

This DNP project was implemented at a medical home practice in Metro-Detroit. The clinic provides medical services to homebound patients with 90 % of the patients living the city

of Detroit. To standardize the management of patients with hypertension a team-based approach was utilized. Team-based care is an approach that requires the collaboration of a care team, patient, and family members to essentially manage a patient who has been diagnosed with hypertension. The key stakeholders in this DNP project are the patients and their families. A study by Jacob et al. (2015) found that team- based care was effective in improving quality of life and reducing population morbidity and mortality rates. The other stakeholders of this project are the nurse practitioners, physicians, and nurses. Facilitators to this project included the physicians, nurse practitioners and nurses. The project was supported by the medical assistants and practice staff.

Anticipated Barriers to Implementation

Several studies have found that team-based care has been linked to optimal patient outcomes. However, there are barriers that exist when formulating teams to manage the care of chronically ill patients. A study by Smith et al., (2018) found that barriers to implementation of team-based care include workforce issues like poor staffing ratios, limited access to electronic health records (EHRS) and financial cost. Smith et al., (2018) also highlighted that like lack of training, and mindset of the health care team could create fundamental barriers. According to Melnyk (2015) prior to implementation of evidence- based practice, an organization must assess its readiness to change, identify barriers, assign a mentor to facilitate and motivate the health care team for successful implementation of new evidence-based practices. Anticipated barriers for this project was the level of patient participation, level of healthcare provider participation, change in employment of self or others assisting with project. In this project, one barrier to implementation was startup time. There was a delay in initial startup due to staff vacations and delays in processing and delivery of patient education brochures.

Outcome Measures

The purpose of this DNP project was to standardize and implement evidence-based hypertension management using a team-based approach in a medical home practice. To evaluate outcomes of this project, the instrument selected was a student- designed pre and post survey. The pre and post survey was distributed to evaluate the healthcare provider's perception of their patient health outcomes. The questions on the pre and post survey focused on the following aims of the project: improve patient knowledge on hypertension, improve medication compliance and reduce hospitalization. Participants received the pre-survey prior to project implementation and at week eight of the project. Participants completed the post survey at the end of the project. Descriptive statistics was used to represent quantitative analysis of the results (see Appendix L). The data collected from the pre and post survey was analyzed to determine if the healthcare providers perceived any improvement in their patient's knowledge, medication compliance and reduction in hospitalizations post intervention (See Appendix L).

Implementation Process

Each participant received a pre-survey and two-hour hypertension education training prior to the patient interaction and then completed post intervention surveys. To meet clinical objectives of the project, the clinicians in the practice received training validated and endorsed by the American Heart Association. The training was also used to standardize the education process and materials for hypertensive patients in the practice. Random patients received, individual health counseling on treatment plan with emphasis on lifestyle modifications, and a hypertension education brochure developed by the DNP student (See Appendix I). Practice patients also received a prescription for an automated wrist blood pressure cuff for self-

monitoring. The patients were also educated on the use and proper positioning of self-monitoring wrist blood pressure cuff. The participant's perceptions of outcomes were measured by use of survey/questionnaire method. To specifically measure and evaluate healthcare provider's perspective of patient knowledge a survey/questionnaire both pre and post intervention was completed by all project participants. (See Appendix G).

Ethical & Legal Implications

The Lourdes University Internal Review Board (IRB) approval was obtained prior to initiating the DNP project (see Appendix C). An application for an expedited review was submitted and approved by the IRB. All participants were protected by the Health Insurance Portability and Accountability Act of 1996. Additionally, the DNP student and practice staff conducted this project following the *Standards of Care* for practice in a medical home practice. All information collected as part of evaluating the impact of this project was aggregated data from the project participants and did not include any potential patient identifiers. There were no associated risks to patients participating in this project.

Timeline

The Logic model was used as a framework for this DNP project to standardize the hypertension management in a medical home practice (See Appendix A). Implementation of a team-based approach requires the collaboration of the care team, patient, and family members to essentially manage the patient's hypertension. The timeline for implementation of the project was twelve weeks. A timeline table was created for a twelve-week process (See Appendix J). Week one consisted of the DNP student distributing letters of invitation to practice clinicians. Week two consisted of the DNP student facilitating clinician education and distributing the Hypertension Quality Improvement Pre-survey. The clinicians met with their patients for the

education session and distribution of hypertension education brochure in week three and four. A redistribution of the pre-survey was given to participants at eight weeks for ongoing follow up and to check efficacy of the project. The DNP student distributed the Hypertension Quality Improvement Post-survey at project completion deadline of twelve weeks

Evaluation Process

This intervention was completed with by a convenience sample of five healthcare providers. These five providers serviced thirty-five patients post education intervention. Pre and post- surveys were used to assess the provider's perceptions of the impact of standardizing health care provider management of hypertension the first question on the pre-survey assessed the health care provider's perception of their patient's knowledge of their hypertension diagnosis. The second question assessed health care providers 'perception of their patient's medication compliance. The third question assessed the healthcare provider's perception of current standard of care in relation to preventing patient hospitalization or hospital readmissions. Responses from the post-survey were used to determine the effectiveness of the intervention. Descriptive statistics was the tool used to analyze the data collected from the surveys. The intervention was measured by the changes in percentages of the data collected. A successful change would show higher percentages in patient knowledge of hypertension, medication adherence and reduction in hospitalization or readmissions.

Results

This intervention was completed with a convenience sample of five healthcare providers in the medical home practice. The age of the participants ranged from 35-64 years old. The demographics of the participants are as follows, one physician, two nurse practitioners and two registered nurses. The educational level of the participants ranged from associate degree to

doctorate level. To analyze data from the pre and post survey, the DNP student attempted to use the Wilcoxon Signed Ranked Test. The DNP student was unable to utilize the Wilcoxon Signed Ranked test due to small sample size. Descriptive statistics was used to analyze data collected in this quality improvement project (see Appendix L). Outcomes were measured by healthcare provider self-report using a pre and post survey.

A pre and post survey approach was used to survey healthcare providers on their perception of their patient's hypertension knowledge, medication compliance and hospitalizations. Survey participation was voluntary. All the five participants completed the pre and post surveys. The questions on the pre and post survey focused on the following aims of the project:

Aim 1 # - Improve patient knowledge on hypertension.

Aim 2 # - Improve medication compliance.

Aim 3 # - Reduce hospital readmissions

Prior to the intervention the pre-survey was distributed to participants. Results of the pre-survey for Question # 1. *Do you think your patients who are diagnosed with hypertension demonstrate knowledge of hypertension?* -Results of the survey revealed that 60 % of the participants reported that their patients demonstrated knowledge of their hypertension while 40% reported that their patients did not demonstrate knowledge of hypertension.

Question #2 - *Do you feel that your patients diagnose with hypertension are compliant with medication regimen?* 100 % of participants felt that their patients were non-compliant with taking their medications.

Question # 3 - *Do you feel that your current standard of care prevents hospitalization or hospital readmission for patients diagnosed with hypertension?* – Pre-Survey responses showed that 60%

of participants reported that their current standard of care prevents hospitalization while 40 % disagreed.

At eight weeks the pre-survey was redistributed to participants. Results of the survey showed improvement in patient knowledge from 60 % to 80 %. Results of question #2, showed no reported improvement in medication compliance. Results of question # 3 showed improvement, 80 % of participants felt that their standard of care prevented hospitalization or hospital readmissions. The post-implementation survey was distributed at project completion of twelve weeks. After participant education and use of standardized guidelines the health care providers reported that there was 100 % improvement of patient knowledge of hypertension in the post implementation survey. The participants also reported that there was significant change patient medication compliance. Post intervention, 100 % of the healthcare providers reported that their patients had improved medication compliance in comparison to 0% pre-intervention. Post intervention, 100% of the participants agreed that patient education helped avoid hospital readmissions (See Appendix L).

Discussion

The Logic model was utilized to guide evidence-based practice change in this quality improvement DNP project. The specific aims of this DNP project included the following: implementing the use of the team-based approach to standardize hypertension management, an educational intervention for patients diagnosed with hypertension and evaluating healthcare providers 'perception of patient health outcomes using a pre and post implementation survey. A comparison of the pre- survey and post-survey results revealed significant improvement in patient outcomes after the implementation of standardized guidelines and participant education. (See Appendix L). More specifically, it was found that healthcare providers felt that their

patient's knowledge of hypertension increased from 60 % to 100 % post intervention. Perception of medication compliance also significantly increased from 0 % to 100 % post implementation. Lastly 100% of the healthcare providers reported that patient education helped avoid hospital readmissions (see Appendix L).

Implementation of this project required a team-based approach. The DNP student received support from the office staff (medical assistants, medical students) to implement the project. The DNP student and office staff did not participate in the survey in order not to skew the results. Participants of the project reported appreciation of care standardization. The results of this project reinforced that team-based care is an effective tool in promoting optimal patient outcomes. The strengths of the evidence-based project are the following: the DNP student was able to facilitate evidence-based practice change, there was 100 % participation from health care providers at the medical home practice and the implementation of team-based approach was used to standardize hypertension management in the medical home practice. Medical students will complete education and adopt a standardize practices that are now a provider's norm. The DNP student was able to implement the evidence-based project with minimal costs, reinforcing that team-based care is cost effective. Limitations of the project included the following: there was a small sample size, there were only five healthcare providers who participated in the project and there was a delay in initial time for project implementation. The DNP student had to delay project initial start time due to holiday and pre-scheduled employee vacations. The project only evaluated the perceptions of the healthcare providers and did not evaluate the perceptions of patients. Future studies may need to regard perceptions of patients, families and/ or caregivers.

Significance for Nursing & Implication for Practice

Nurses are the largest group of healthcare providers in the United States and play a pivotal role in the delivery of healthcare. Nurses usually have the first encounter with patients and can identify patient needs. Patient factors such as, age, acuity of illness, comorbidities, race, mental health, and socioeconomic status can influence health behaviors and the ability to self-manage chronic diseases. A major professional responsibility of nursing is to educate and advocate for patients and their families.

The purpose of this DNP project was to standardize and implement evidence-based hypertension management using a team-based approach in a medical home practice. The DNP student utilized the logic model as a framework to lead change and collaborate with interprofessional team members to improve health outcomes of patients with hypertension. Numerous studies have found that team-based care actively engages patients and clinicians, enhances patient knowledge regarding their diagnosis and improves self-management. (Proia et. al, 2015). Team-based care promotes meaningful patient -provider relationships and promotes healthcare team bonding. An analysis of studies found that engaging patients in their own care can significantly improve health outcomes. Clinicians, who employed team-based care within their practice, were found to have patients who had significant reductions in blood pressure, improved medication compliance and overall reductions in risk for hospitalizations.

The DNP project was endorsed by the physician that led the practice and supported by the entire interprofessional team at the medical home practice. Adaptation of the team-based approach has the capacity to increase practice revenue, improved patient care and help patients avoid hospitalization. To continue sustainability of the quality improvement project at the medical home practice, the following measures can be taken: all clinicians in the practice should receive training and required education to continue standardization of hypertension management;

clinicians can be resurveyed at six months post intervention and then surveyed at one-year post intervention for ongoing evaluation.

Conclusion

Hypertension is a chronic condition that can be overwhelming to manage for patients and clinicians. To address hypertension and prevent complications, this project supports implementation of standardized education on hypertension, team-based approaches to patient management, and provider to patient communication just as analysis of the research studies suggested. Lu et al. (2015) highlighted that interventions that target both patients and clinicians are needed to improve health outcomes of patients. The Centers for Disease Control &Prevention suggests the use of a team-based approach or model for improving management of hypertension. The team-based approach requires interprofessional collaboration, patient, and family members to essentially manage the patient's hypertension. Several studies have found that team-based care improves patient -provider communications, engages patients and clinicians, enhances patient knowledge regarding their diagnosis and improves self-management (Proia et. al, 2015). The purpose of this DNP project was to standardize and use evidence-based hypertension management using a team-based approach in a medical home practice. The Logic model was utilized by the DNP student as a framework to plan and lead evidence-based practice change. A comparison of the pre- survey and post-survey results in this DNP project revealed significant improvement in patient outcomes after the implementation of standardized guidelines and participant education. More specifically, it was found that healthcare providers felt that their patient's knowledge of hypertension increased from 60 % pre-intervention to 100 % post intervention. Participant perception of medication compliance also increased significantly from 0 % to 100 % post implementation. Lastly 100% of the healthcare providers reported that patient

education helped avoid hospital readmissions pre-intervention. Results of this nurse led project reinforces that standardized team-based care improves health outcomes of patients with hypertension and can be sustained with a training plan for onboarding students and new hires to the practice.

References

American Heart Association (2017) What is High Blood Pressure, Retrieved from: https://www.heart.org/-/media/data-import/downloadables/f/9/8/pe-abh-what-is-high-blood-pressure-ucm_300310.pdf

American Heart Association (2013) African Americans & CVD-2013 Statistical Fact Sheet, Retrieved from: http: http://www.heart.org/idc/groups/heart-public/@wcm/@sop/@smd/documents/downloadable/ucm_319568.pdf//

Bartolome, R. E., Chen, A., Handler, J., Platt, S. T., & Gould, B. (2016). Population Care Management and Team-Based Approach to Reduce Racial Disparities among African Americans/Blacks with Hypertension. *The Permanente journal*, *20*(1), 53–59. https://doi.org/10.7812/TPP/15-052

Boonyasai, R. T., Rakotz, M. K., Lubomski, L., Daniel, D. M., Marsteller, J. A., Taylor, K. S., Cooper, L. A., Hasan, O., & Wynia, M. K. (Accepted/In press). Measure accurately, act rapidly, and Partner with patients: An intuitive and practical three-part framework to guide efforts to improve hypertension control. *Journal of Clinical Hypertension*. https://doi.org/10.1111/jch.12995

Brunström, M., Ng, N., Dahlstrom, J., Lindholm, L. H., Lönnberg, G., Norberg, M., Nyström, L., Weinehall, L., & Carlberg, B. (2020). Association of Physician Education and Feedback on Hypertension Management with Patient Blood Pressure and Hypertension Control. *JAMA network open*, *3*(1), e1918625. https://doi.org/10.1001/jamanetworkopen.2019.18625

Carey, R.M., Mutner, P., Bosworth, H.B., Whelton, P.K., (2018) Prevention and Control of Hypertension. *Journal of The American College of Cardiology.*72 (11)1278-1293.Retrieved from: https://doi.org/10.1016/j.jacc.2018.07.008

Centers for Disease Prevention and Control (2016) "High Blood Pressure Facts" Retrieved from: https://www.cdc.gov/bloodpressure/facts.htm.112.9673566

Centers for Disease Prevention and Control (2020) "High Blood Pressure Facts" Retrieved from: https://www.cdc.gov/bloodpressure/facts.htm

City of Detroit (2018) Heart Disease Death Facts: Retrieved from: https://www.mdch.state.mi.us/pha/osr/chi/CRI/CriticalInd/Crilhd.asp?TableType=Heart%20Disease&CoName=City%20Of%20Detroit%20Health%20Department&CoCode=09C.L.,

Community Preventive Services Task Force. Cardiovascular Disease: Team-Based Care to Improve Blood Pressure Control [Internet]. 2016 Apr [cited 2017 June 12]. Available from: https://www.thecommunityguide.org/findings/cardiovascular-disease-team-based-care-improve-blood-pressure-control

Derington, C. G., King, J. B., Bryant, K. B., McGee, B. T., Moran, A. E., Weintraub, W. S., Bellows, B. K., & Bress, A. P. (2019). Cost-Effectiveness and Challenges of Implementing Intensive Blood Pressure Goals and Team-Based Care. *Current hypertension reports*, *21*(12), 91. Retrieved from: https://doi.org/10.1007/s11906-019-0996-x

Egan, B. M., Sutherland, S. E., Rakotz, M., Yang, J., Hanlin, R. B., Davis, R.A., & Wozniak, G. (2018). Improving Hypertension Control in Primary Care with the Measure Accurately,

Act Rapidly, and Partner with Patients Protocol Results at 6 and 12 Months. *Hypertension* 72:1320–1327 Retrieved from: https://doi.org/10.1161/HYPERTENSIONAHA.118.11558.

Goeschel, C. A., Weiss, W. M., & Pronovost, P. J. (2012). Using a logic model to design and evaluate quality and patient safety improvement programs. *International Journal for Quality in Health Care, 24*(4), 330-337. https://doi.org/10.1093/intqhc/mzs029

Hayes, H., Parchman, ML, Howard, R. A logic model framework for evaluation and planning in a primary care practice-based research network (PBRN). Journal of the American Board of Family Medicine: JABFM. 2011 Sep-Oct; 24(5):576-582. DOI: 10.3122/jabfm.2011.05.110043.

Jacob, V., Chattopadhyay, S. K., Thota, A. B., Proia, K. K., Njie, G., Hopkins, D. P., Finnie, R., Pronk, N. P., Kottke, T. E., & Community Preventive Services Task Force (2015). Economics of Team-based Care in Controlling Blood Pressure: A Community Guide Systematic Review. *American Journal of Preventive Medicine, 49*(5), 772–783. https://doi.org/10.1016/j.amepre.2015.04.003

Kennelty, K. A., Polgreen, L. A., & Carter, B. L. (2018). Team-Based Care with Pharmacists to Improve Blood Pressure: A Review of Recent Literature. *Current hypertension reports, 20*(1), 1. https://doi.org/10.1007/s11906-018-0803-0

Khan, T., Yang, J., Barkowski, L., Tapper, B., Lubomski, L., Daniel, D., & Wozniak, G., (2018).A hypertension control quality improvement pilot program: Experiences and blood pressure outcomes from physician practices. *International Journal of Healthcare.4 (1).*Retrieved from: https://doi.org/10.5430/ijh.v4n1p42

Kravetz, J.D., & Walsh, R.F., (2016). Team-Based Hypertension Management to Improve Blood Pressure Control. *Journal of Primary Care & Community Health*.7 (4) 272-275. Retrieved from doi: 10.1177/2150131916645580.

Kuhmmer, R., Lazzaretti, R. K., Guterres, C. M., Raimundo, F. V., Leite, L. E., Delabary, T. S., Caon, S., Bastos, G. A., & Polanczyk, C. A. (2016). Effectiveness of multidisciplinary intervention on blood pressure control in primary health care: a randomized clinical trial. *BMC health services research*, *16*(1), 456. https://doi.org/10.1186/s12913-016-1703-0

Lu, C., Tang, S., Lei, Y. *et al.* (2015) Community-based interventions in hypertensive patients: a comparison of three health education strategies. *BMC Public Health* **15,** 33 (2015). https://doi.org/10.1186/s12889-015-1401-6

Melnyk, B. M., & Fineout-Overholt, E. (2011). *Evidence-based practice in nursing & healthcare: A guide to best practice*. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins.

Melnyk, B., & Fineout-Overholt, E. (2015). Making the Case for Evidence-Bases Practice and Cultivating a Spirit of Inquiry. (pp.3-21). Philadelphia, PA: Wolters Kluwer.

Mills, K. T., Obst, K. M., Shen, W., Molina, S., Zhang, H. J., He, H., Cooper, L. A., & He, J. (2018). Comparative Effectiveness of Implementation Strategies for Blood Pressure Control in Hypertensive Patients: A Systematic Review and Meta-analysis. *Annuals of internal medicine*, *168*(2), 110–120. https://doi.org/10.7326/M17-1805

Price-Haywood, E. G., Amering, S., Luo, Q., & Lefante, J. J. (2017). Clinical Pharmacist Team-Based Care in a Safety Net Medical Home: Facilitators and Barriers to Chronic Care Management. *Population health management*, *20*(2), 123–131. https://doi.org/10.1089/pop.2015.0177

Proia, K. K., Thota, A. B., Njie, G. J., Finnie, R. K., Hopkins, D. P., Mukhtar, Q., Pronk, N. P., Zeigler, D., Kottke, T. E., Rask, K. J., Lackland, D. T., Brooks, J. F., Braun, L. T., Cooksey, T., & Community Preventive Services Task Force (2014). Team-based care and improved blood pressure control: a community guide systematic review. *American journal of preventive medicine, 47*(1), 86–99. https://doi.org/10.1016/j.amepre.2014.03.004

Ribeiro, C. D., Resqueti, V. R., Lima, I., Dias, F. A. L., Glynn, L., & Fregonezi, G. A. F. (2015). Educational interventions for improving control of blood pressure in patients with hypertension: a systematic review protocol. *BMJ Open*, *5*(3). Doi: 10.1136/bmjopen-2014-006583

Santschi, V., Wuerzner, G., Chiolero, A. *et al.* Team-based care for improving hypertension management among outpatients (TBC-HTA): study protocol for a pragmatic randomized controlled trial. *BMC Cardiovasc Disord* **17,** 39 (2017). https://doi.org/10.1186/s12872-017-0472-y

Schottenfeld, L., Petersen, D., Peikes, Di, Riccardi, R., Burak, H., McNellis, R., Genevro, J. (2016) Creating Patient-Centered Team-based Primary Agency for Healthcare Research and Quality. Retrieved from:https://primarycaremeasures.ahrq.gov/team-based-care/Home/About?TopicId=9

Smith, C. D., Balatbat, C., Corbridge, S., Dopp, A. L., Fried, J., Harter, R., Landefeld, S., Martin, C., Opelka, F., Sandy, L., Sato, L., & Sinsky, C., (2018). Implementing optimal team-based care to reduce clinician burnout. *NAM Perspectives.* Discussion Paper, National Academy of Medicine, Washington, DC. Retrieved from: https://nam.edu/implementing-optimal-team-based-care-to-reduce-clinician-burnout. Doi: 10.31478/201809c

U.S. Census Bureau (2018) “Detroit Census Quick Facts “Retrieved from: https://www.census.gov/quickfacts/fact/table/detroitcitymichigan/PST045218

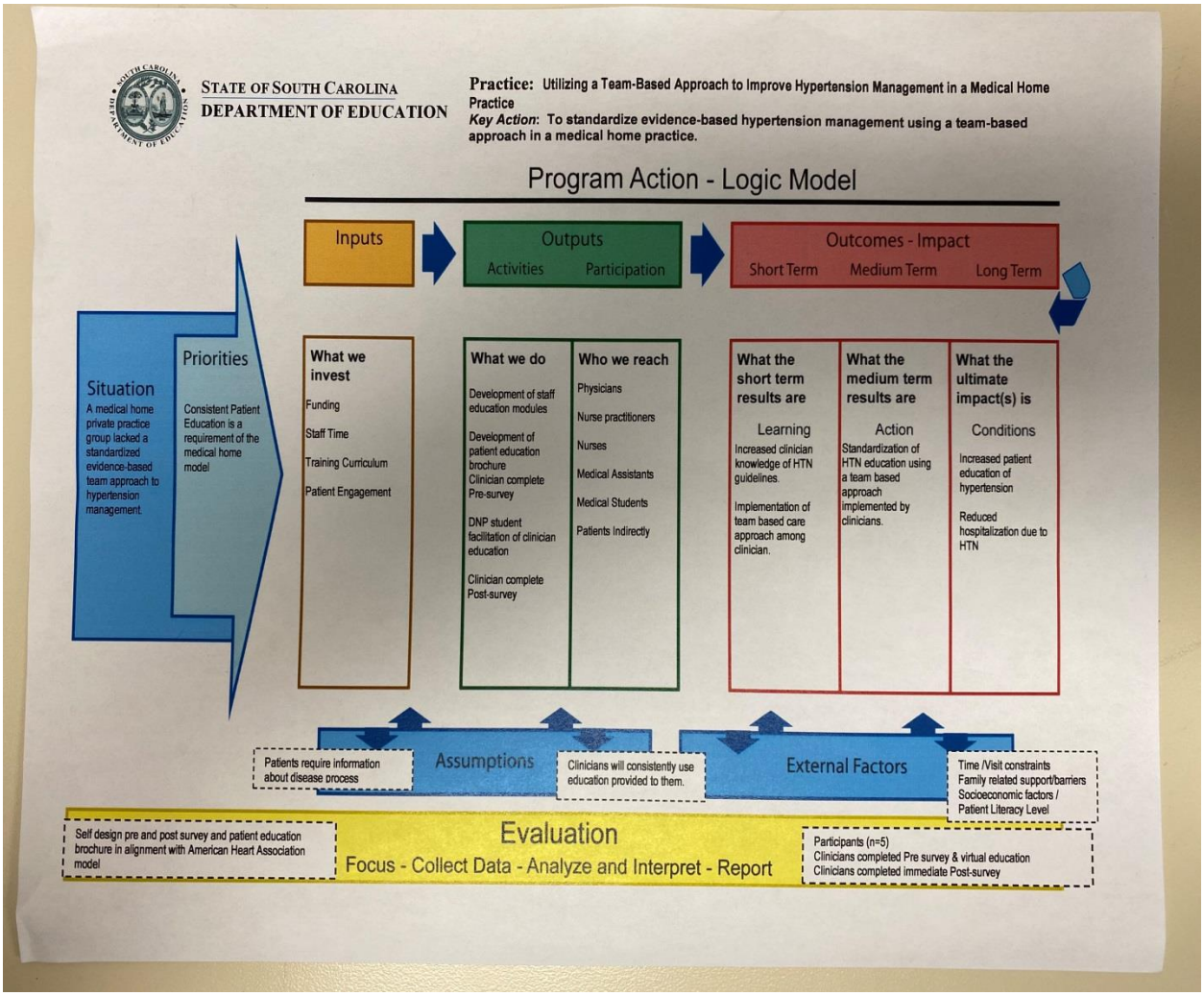
Wen, J., & Schulman, K. A. (2014). Can team-based care improve patient satisfaction? A systematic review of randomized controlled trials. *PloS one*, *9*(7), e100603. https://doi.org/10.1371/journal.pone.0100603

WK Kellogg Foundation. Logic model development guide. Battle Creek, MI: WK Kellogg Foundation, 2004. Retrieved from: httpss://www.wkkf.org/knowledge-center/resources/2006/02/WK-Kellogg-Foundation-Logic-Model-Development-Guide.aspx

World Health Organization (2019) Hypertension Fact Sheet, Retrieved from: https://www.who.int/news-room/fact-sheets/detail/hypertension.

Zhang, D., Wang, G., Zhang, P., Fang, J., & Ayala, C. (2017). Medical Expenditures Associated with Hypertension in the U.S., 2000-2013. *American journal of preventive medicine*, *53*(6S2), S164–S171. https://doi.org/10.1016/j.amepre.2017.05.014

Appendix A


STATE OF SOUTH CAROLINA
DEPARTMENT OF EDUCATION
Practice: Utilizing a Team-Based Approach to Improve Hypertension Management in a Medical Home Practice
Key Action: To standardize evidence-based hypertension management using a team-based approach in a medical home practice.
Program Action - Logic Model
Inputs
Outputs
Activities
Participation
Outcomes - Impact
Short Term
Medium Term
Long Term
Situation
A medical home private practice group lacked a standardized evidence-based team approach to hypertension management.
Priorities
Consistent Patient Education is a requirement of the medical home model
What we invest
Funding
Staff Time
Training Curriculum
Patient Engagement
What we do
Development of staff education modules
Development of patient education brochure
Clinician complete Pre-survey
DNP student facilitation of clinician education
Clinician complete Post-survey
Who we reach
Physicians
Nurse practitioners
Nurses
Medical Assistants
Medical Students
Patients Indirectly
What the short term results are
Learning
Increased clinician knowledge of HTN guidelines.
Implementation of team based care approach among clinician.
What the medium term results are
Action
Standardization of HTN education using a team based approach implemented by clinicians.
What the ultimate impact(s) is
Conditions
Increased patient education of hypertension
Reduced hospitalization due to HTN
Assumptions
Patients require information about disease process
Clinicians will consistently use education provided to them.
External Factors
Time /Visit constraints
Family related support/barriers
Socioeconomic factors / Patient Literacy Level
Evaluation
Focus - Collect Data - Analyze and Interpret - Report
Self design pre and post survey and patient education brochure in alignment with American Heart Association model
Participants (n=5)
Clinicians completed Pre survey & virtual education
Clinicians completed immediate Post-survey

Appendix B- The Extraction Table

Title	Paper (author, year)	Country of Study	Sample size	Study Design	Purpose	Findings	Limitations	Future Research Considerations	Melnyk Level of Evidence
Community-based Interventions in hypertensive patients a comparison of three health education strategies	Lu et al. (2015)	China	360 patients	RCT	To evaluate community based health education strategies in the management of hypertension patients in China	Interactive participatory health education strategy are helpful in improving patient outcomes. Significant increase in BP control across the groups. Group 3 had most improvement of normal BP from 41% at baseline to 86% post intervention. Participants had improved medication adherance, hypertension knowledge,reduced salt intake and participation in regular exercise.	Trial was not blinded to participants. Self reported data may be prone to inaccurancies.	No further research considerations.	Level 2
Team-based Hypertension Management to Improve Blood Pressure Control	Kravetz, J., Walsh, R., (2016)	United States of America	2 clinics, 665 patients	Cohort Study	To measure the effectiveness of a team-based approach to blood pressure management in a busy primary care setting	Team based approach, effective in BP management. TBC patients had significant reduction in BP, 4 months post intervention. 62 % TBC participants had lower SBP compared to 41% usual care group.	Study did not quantify lifestyle changes or medication compliance. Study did not measure changes in tobacco use, BMI, medication possession ration or alcohol use.	This study can provide a framework for implementation of team-based care for hypertension in the patient-centered medical home.	Level 4
Economics of Team-based Care in Controlling Blood Pressure	Jacob et al. (2015)	United States of America	31 studies	Systematic Review	To determine whether team-based care for BP control is cost beneficial or cost effective.	TBC interventions lead to reduced systolic and diastolic BP. TBC increases the number of patients with BP control. TBC was found to be cost effective. TBC reduces morbidity & mortality increases quanitity and quality of years lived.	Some results of the study were generalizable. Associated costs of interventions was not always reported. Limited study populations lead to an overestimation of relationship between SBP & QALYs.	Futher research is needed to show variations in TBC model.	Level 1
Cost Effectiveness and challenges of Implementing intensive blood pressure goals and team-based care	Derington, et al. (2019)	United States of America	42 studies, 144,220 participants	Meta-Analysis	To review the effectiveness, cost effectiveness and implementation of challenges of intensive blood pressure control and team-based initiatives.	TBC is more effective in lowering BP and controlling BP than usual care. TBC is more cost effective than usual care and can be delivered or implemented in a wide variety of models.	Percieved constraints on office space and staffing. Time constraints limited the ability to measure and treat blood pressure for many clinics.	Future research could incorporate patient-reported outcomes and measure the impact of technology on patient engagement, acceptance and satisfaction.	Level 1
Team-based Care and Improved Blood Pressure Control.	Proia, et al. (2015)	United States of America	71 studies	Systematic Review	To assess whether team-based care is effective in improving BP control and preventing Cardiovascular Disease.	Hypertension care interventions need to target both patient and providers. Team based approach decreases mortality and morbidity. TBC improves BP control, medication adherance anf patient satisfaction. TBC can be implemented in a variety of settings.	Significant differences in patient demographics of intervention and comparison groups. Possible contamination within groups. Inadequate description of populations and implemented interventions.	Further studies is needed to evaluate TBC models that incorporate minorities, low SES populations, health care providers and community health workers.	Level 1
Improving Hypertension Control in Primary Care with the Measure Act Rapidly and Partner with Patients Protocol	Egan et al, (2018)	United States of America	16 community based health clinics	Quasi-experimental, pre-versus, post	To evaluate the 6 month MAP framework in 16 family medicine clinics and then withdraw practice facilitation and determine whether HTN control persisted at 12 months,	81% of patients in the study, blood pressure was controlled at 6 months. 74% of patients BP was control at 1-6 month visit and 7-12 month visit. BP control was higher in whites than blacks	Loss of Follow up visits. 20% of patients had BP control at baseline, had no followup visits of MAP.	Future MAP studies will aim to further enhance HTN control by 6 to 12 months. Future studies should adopt recent blood pressure guidelines from the American Heart Association.	Level 3

Population Care Management and Team-based Approach to Reduce Racial Disparities Among African Americans/Blacks with Hypertension	Bartolome, R., Chen, A., Handler, Platt, S., Gould, B., (2016)	United States of America	5044 patients	Case Control study	To describe a population care management team-based approach to improve BP control for large populations and to explain how a culturally tailored, patient centered approach can address this racial disparity.	BP control rates post intervention improved for 81 % for Blacks and 84% for Whites. Successful implementation of multilevel approach found to reduce health disparities.	Relative contributions of individual interventions and best practices could not be quantified.	Further studies should reflect a multilevel approach on hispanics.	Level 4
Association of Physician Education and Feedback on Hypertension Managment with Blood Pressure and Hypertension Control.	Brunstrom et al. (2020)	Sweden	108 Cohorts studies, 283,079 patients.	Cohort study	To assess the association of education and feedback to primary care physicians with population level-sbp and hypertension control rates.	37% of participants achieved BP control compared to control group. Overall population SBP decreased in the study. Education approach was found to improve SBP levels and HTN control.	no limitations due to collection of BP in real world setting.	Education intervention wa found to improve hypertension control. The authors suggest that simular strategies can be adopted to reinforce the implementation of clinical practice guidelines for HTN management.	Level 4
A Hypertension Control Quality Improvement pilot program: Experiences and blood pressure outcomes from physician practices	Khan et al. (2018)	United States of America	10 ambulatory clinics	Quality Improvement pilot program	To expand the literature on HTN control improvement collaborations and present learnings from the implementation of Improving Health Outcomes:Blood Pressure (IHO BP)	IHO:BP program associated with increased BP control. 3/10 practices BP control increased to 75 %. 8/10 practices had mean SBP of 125mmhg. BP control rate higher for participants than comparison group.	Study included small number of PCP or healthcare center. Care team experiences were generalizable. Site Implementation of EBP tools decreased as program progressed.	Future considerations: the program should allow participants to implement tools & interventions based on need and forego high performance practices or sites.	Level 4
Team-based care for improving hypertension among outpatients (TBC-HTA):study protocol for a pragmatic randomized controlled trial	Santschi, et al. (2017)	Switzerland	110 patients	RCT	To evaluate the effect of team-based care interprofessional intervention, involving nurses, community pharmacists and physicians on BP control of hypertensive outpatients compared to usual care in routine clerical practice.	This is a 3 year ongoing study. Prospective results will inform policy makers on implementable strategies for clinical practice.	Small study, 2 clinics. Results of study at completion may be generalized.	No further research considerations offered.Results of study will inform policy makers on implementable strategies for clinical practice.	Level 2
Effectiveness of Multidisciniplinary Intervention on Blood Pressure control in primary healthcare a randomized clinical trial	Kuhmmer et al. (2016)	Brazil	11,000 patients	RCT	The purpose of this study is to compare the effectiveness of a multidisplinary program based on group and individual care versus group-only care, to promote blood pressure control in hypertension patients in primary health care.	Systolic BP decreased after 6months for both groups. Study found that there was simular effectiveness in the group intervention in comparison to a personalized education program in HTN patients to achieve BP control. Adults with uncontrolled BP had reduced BP post intervention.	The study was unable to determine the specific variables ,that caused a reduction in BP. The study found that variences in BP could have occurred because observational groups were correlated. Participants of the study, lived in the same neigborhoods, and visited the same places.	Further follow up is needed to evaluate the impact of interventions on clinical outcomes associated with biochemical profile and cardiovascular risk.	Level 2
Clinical Pharmacist Team-based Care in a Safety Net Medical Home: Facilitators & Barriers to Chronic Care Management	Price-Haywood et al. (2017)	United States of America	5044 patients	Retrospective Observational Study	To evaluate pharmacy collaborative care of HTN and Diabetes in Safety Net Medical Home that incorporated population, risk stratification, clinical decision support and medication dose adjustment protocols	Major Facilitators & Barriers to Implementation are performance monitoring and organizational culture. 70% of patients with poorly controlled blood pressure acchieved controll by the end of study.	Lack of fulltime clinical pharmacist. Limited telephone consultation. Insufficient tracking of medication adherance and medication dose adjustment.	Future studies should further examine implementation strategies that work best in specific settings to optimize the benefits of team-based care with clinical pharmacists.	Level 4
Comparative Effectiveness of Implementation Strategies for Blood Pressure Control in Hypertensive Patients: A Systematic Review and Meta-analysis	Mills et al. (2018)	United States of America	100 articles	Systematic Review	To assess the comparative effectiveness of 8 implementation strategies for blood pressure control in adults with hypertension.	Multilevel, multicomponent strategies followed by patient level strategies are most effective for BP control patients with hypertension. Team based care with physicians and non-physicians with medication titration produced significant reduction in patient SBP. Team based care strategies where HTN management strategies are shared by a team, was found to be most effective for control in our analysis. The combination of health coaching and BP monitoring significantly reduced BP among HTN patients.	Sparse data from low and middle income countries, few trials of some implementation strategies and possible publication bias. Few multi-level intervention trials with TBC, addressed system level barriers. Few clinical trials tested the effect of financial incentives on BP control.	Future studies should include multilevel interventions that address system level barriers, like lack of performance standards, leadership commitment and reimbursemenr of physician to patient health coaching.	Level 1
Team-based care with pharmacists to improve blood pressure: a review of recent literature.	Kennelty, K., Polgreen, L., Carter, B., (2019)	United States of America	Multiple Studies	Systematic Review	To examine team-based care strategies and involved pharmacists to improve blood pressure.	Analysis of multiple studies indicate that team-based care including pharmacists can improve bp management. Multiple studies highlight cost-effectiveness of teambased care with pharmacists. Little information available on factors that influence sustainability of team-based care.	Disparate methods in cost evaluations made it difficult to compare rsults across studies and reconcile different cost effective estimates. Publication bias may have occurred due to multiple studies reporting positive outcomes of team-based care.	Future work is needed to determine the best populations to target with team-based BP programs and how to implement and subsequently sustain team-based aproaches in diverse clinical settings. Implementation studies need to identify unmet clinical needs and address reimbursement and stakeholder engagement.	Level 1

Appendix C: Keeper Studies: Level of Evidence Table

Utilizing A Team-based Approach to Improve Hypertension Management in a Medical Home Practice													
Keeper Studies			Level of Evidence							Quality of Evidence		
Author (s)	Year	#	I	II	III	IV	V	VI	VII	High	Good	Low
Lu et al.	2015	1		X							X	
Kravetz & Walsh	2016	2				X					X	
Jacob et al.	2015	3	X							X		
Derington et al.	2019	4	X							X		
Proia et al.	2015	5	X									
Egan et al.	2018	6			X							
Bartolome et al.	2016	7				X					X	
Brunstrom et al.	2020	8				X					X	
Khan et al.	2018	9				X					X	
Santschi et al.	2017	10		X							X	
Kuhnmer et al.	2016	11		X							X	
Price-Haywood et al.	2017	12				X					X	
Mills et al.	2018	13	X							X		
Kennelty et al.	2019	14	X							X		

Appendix D – IRB APPROVAL LETTER

LOURDES
UNIVERSITY

Cadelia Nicholas
29252 Hunter Court
Brownstown, MI 48183

Re: IRB #19-27
Investigator: Nicholas, Cadelia, "Utilizing a Team-based Approach to Improve Hypertension Management in a Medical Home Practiced," Advisor: Shank, Heidi

December 6, 2019

Dear Ms. Nicholas,

Congratulations! Your research proposal, "Utilizing a Team-based Approach to Improve Hypertension Management in a Medical Home Practiced" was approved effective 12/6/19. The IRB determined that your research presents no more than minimal risk to subjects and involves only procedures listed in Expedited Review Category (7): Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies (45 CFR 46.110, Category 7).

The IRB on 11/27/19 received your Request to Waive Documentation of Informed Consent. Per 45 CFR 46.117(c), the IRB may waive the requirement for the investigator to obtain a signed consent form for some or all subjects if it finds that the research involves no more than minimal risk of harm and involves no procedure for which written consent is normally required outside of the research context.

The IRB has received a signed, hard copy of the final protocol. The approval period will end on 12/6/20. If you plan to continue research beyond the initial approval period, you must submit an application to the IRB for continuing review.

Please note that if you wish to make changes or alterations to your protocol, you must submit the proposed changes for IRB consideration. When you have completed your project, please complete a Project Closure Form, available on the IRB website. The IRB would also welcome a brief summary of your research results and conclusions. Upon completion of study, data should be kept for 3 years.

Respectfully,

Matthew E. Lancaster, Ph.D.
Chair, Institutional Review Board
Lourdes University

cc: Faculty Advisor

Appendix E- Letter of Invite

Letter of Invite:

Dear Clinicians:

Hello, my name is Cadelia Nicholas and a graduate student at Lourdes University. As part of my final project, I will be looking to implement an evidence based practice change to the current routine care of patients in the practice. The purpose of this project is to improve health outcomes for patients diagnosed with hypertension using a team-based approach. Because you are Clinician and employed at the medical home clinic, I am inviting you to participate in this quality improvement project.

Participation in the project will take approximately three months. If you would like to participate, I will ask that you:

1.) Complete a brief survey (approximately 10 minutes)
2.) Participate in required training and complete education module (approximately 2 hours)
3.) Discuss your experiences and complete a brief survey in 3 months (approximately 10 minutes)

Participation is voluntary and there are no consequences for choosing not to participate or withdrawing from the project. Confidentiality of all participants will be maintained; the data will be kept secure and all patients will be de-identified.

Any additional questions regarding the project can be redirected to me Cadelia Nicholas at 313-643-7000 or email cadelia2000@yahoo.com. Thank you for taking the time to assist me in my educational endeavor!

Sincerely,

Cadelia Nicholas, MSN, RN, AGPCNP-C
Lourdes University
Doctor of Nursing Practice Program
313-643-7000
Cadelia2000@yahoo.com

Appendix F- Pre-Survey

Hypertension Quality Improvement Project Pre-Survey

Please check the circle that corresponds with your response.

1. How old are you?	○ 18-24 ○ 25-34 ○ 35-49 ○ 50-64 ○ 65+
2. Gender?	○ Male ○ Female ○ Other
3. What is the highest level of education you have completed?	○ Some college credit, no degree ○ Trade/technical/vocational training ○ Associate degree ○ Bachelor's degree ○ Master's degree ○ Doctorate degree
4. What is your current job function?	○ Physician ○ Nurse Practitioner ○ Registered Nurse ○ Medical Assistant ○ Medical Student
Q1 Do you think your patients who are diagnosed with hypertension demonstrate knowledge of hypertension?	○ Yes ○ No
Q2 Do you feel that your patients diagnosed with hypertension are 100% compliant with medication regimen?	○ Yes ○ No
Q3 Do you feel that your current standard of care prevents hospitalization or hospital readmission for your patients diagnosed with Hypertension?	○ Yes ○ No
Thank you for your participation!	

Appendix G- Clinician Education

TARGET:BP

American Heart Association.

Clinician Instructions for Hypertension Education Training Modules: (2 hours)

- Go to the American Heart Association webpage at https://www.heart.org/
- Click on the Professionals Tab then chose the Target BP tab or access at: https://targetbp.org/tools-downloads/
- Choose the Tools & Downloads and select the following:

Module # 1: CME Course: **Act Rapidly – The Importance of Treating Your Patients' High Blood Pressure.**

To obtain 1 contact hour /CME credit: Register for the above course, complete course and take Post-test (80% pass rate) and print CME Certificate per instructions.

2) **Module # 2:** CME Course: **Target: BP Webinar – How to Improve Hypertension Control Through Team-based Care**

3.) Review Hypertension Education Packet

If you have any questions, feel free to contact:

Cadelia Nicholas at 313-643-7000 or cadelia2000@yahoo.com

Appendix H- Post Survey

Hypertension Quality Improvement Project Post-Survey

Please check the circle that corresponds with your response.

1. How old are you?	○ 18-24 ○ 25-34 ○ 35-49 ○ 50-64 ○ 65+
2. Gender?	○ Male ○ Female ○ Other
3. What is the highest level of education you have completed?	○ Some college credit, no degree ○ Trade/technical/vocational training ○ Associate degree ○ Bachelor's degree ○ Master's degree ○ Doctorate degree
4. What is your current job function?	○ Physician ○ Nurse Practitioner ○ Registered Nurse ○ Medical Assistant ○ Medical Student
Q1 Does your patient demonstrate improved knowledge of hypertension?	○ Yes ○ No
Q2 Does your patient demonstrate improved compliance with medication regimen?	○ Yes ○ No
Q3 Has your patient been hospitalized or re-hospitalized for hypertension or hypertension related complication in the past 30, 60 or 90 days?	○ Yes ○ No
Thank you for your participation!	

Appendix I- Patient Letter

Dear Patient,

Hello, my name is Cadelia Nicholas and I am a graduate student at Lourdes University. You are receiving this education packet because you have been diagnosed with hypertension. Currently, there are about 75 million Americans" who have a diagnosis of high blood pressure. Hypertension is a condition that sometimes produces no signs and symptoms and can lead to the development of heart disease, stroke, chronic kidney disease, heart failure and other comorbidities. Because of the nature of the disease, it is important that we provide you with some simple tools to help improve your health. This education packet includes current recommendations on how to improve your blood pressure from the American Heart Association and eating healthy diet recommendations from MyPlate.gov.

If you have any questions regarding this education packet, feel free to contact me at 313-643-7000 or email cadelia2000@yahoo.com.

Sincerely,

Cadelia Nicholas, MSN, RN, AGPCNP-C
Lourdes University
Doctor of Nursing Practice Program
313-643-7000

Measuring your Blood Pressure
TARGET:BP
Self-measured blood pressure
Using a wrist cuff to measure blood pressure
Recording your Blood Pressure
Making a blood pressure recording sheet such as the one above can help in tracking your blood pressure. Make sure to track it consistently.
Dieting Education
Vegetables
Vary your veggies
Fruits
Focus on fruits
Dairy
Get your calcium-rich foods
Grains
Make half your grains whole
Protein
Go lean with protein
Build a Healthy Plate
What's MyPlate All About?
HYPERTENSION EDUCATION PACKET
Blood Pressure
LOW
NORMAL
HIGH
CARE FOR U CLINIC
16250 NORTHLAND DR.
SUITE 312 SOUTHFIELD MI
48075
DR. CYNANE Y. ROBINSON
CADELIA NICHOLAS NP
PHONE: (248) 336-2850
FAX: (248) 336-2852
TOLL FREE: (877)-817-2273

What is hypertension

Hypertension is also known as high blood pressure. This means that the pressure in your arteries is higher than it should be.

Blood pressure is measured in systole and diastole. The systolic number is the pressure when the heart beats and the diastolic number is the pressure beteween the beats.

Blood Pressure	Systolic (Upper #)	Diastolic (Lower #)
Normal	Under 120	Under 80
Prehypertension	120-139	80-89
Hypertension (Stage I)	140-159	90-99
Hypertension (Stage II)	Above 160	Above 100
Hypertensive Crisis	Above 180	Above 110

Am I at Risk for HBP?

One should always make sure to get their blood pressure checked regularly and treated in the way that your doctor advises.

Risk Factors of HBP:

- Smoking and exposure to secondhand smoke
- Being obese and overweight
- High cholesterol
- Unhealthy diet (High Sodium, Low Potassium) and drinking too much alcohol
- Physical inactivity

Consequences of Hypertension

What can I do about HBP?

- Do not smoke and avoid secondhand smoke.
- Maintain a healthy diet and regular weight.
- Aim to consume 1,500mg/day of sodium (salt)
- Eat foods rich in potassium. Aim for 3,500 - 5,000 mg of diatary potassium per day.
- Limit alcohol intake to no more than one drink per day
- Be more physically active.
- Take your medications as ordered by your doctor.
- Work to keep blood pressure at a normal level.

Improving your Blood Pressure

How Can I Learn More?

Call 1-800-AHA-USA1 (1-800-242-8721) or visit ***heart.org*** to learn more about heart disease and stroke.

Appendix K- Implementation Timeline

Timeline

Activity	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Distribution of Invitation Letter	**X**											
Survey Distribution		**X**						**X**				**X**
Staff Education		**X**										
Staff Updates/ Meetings		**X**			**X**			**X**				
Patient Education Brochure/Letter			**X**	**X**								

Appendix L- Results Table

Results Table

	Pre-Survey			Survey (8w)			Post-Survey	
	YES	**NO**		**YES**	**NO**		**Yes**	**NO**
Q1	**60 %**	**40 %**		**80 %**	**20%**		**100%**	**0%**
Q2	**0 %**	**100 %**		**0%**	**100%**		**100 %**	**0 %**
Q3	**60 %**	**40 %**		**80%**	**20%**		**0 %**	**100 %**

Figure 1-PRE-SURVEY RESULTS

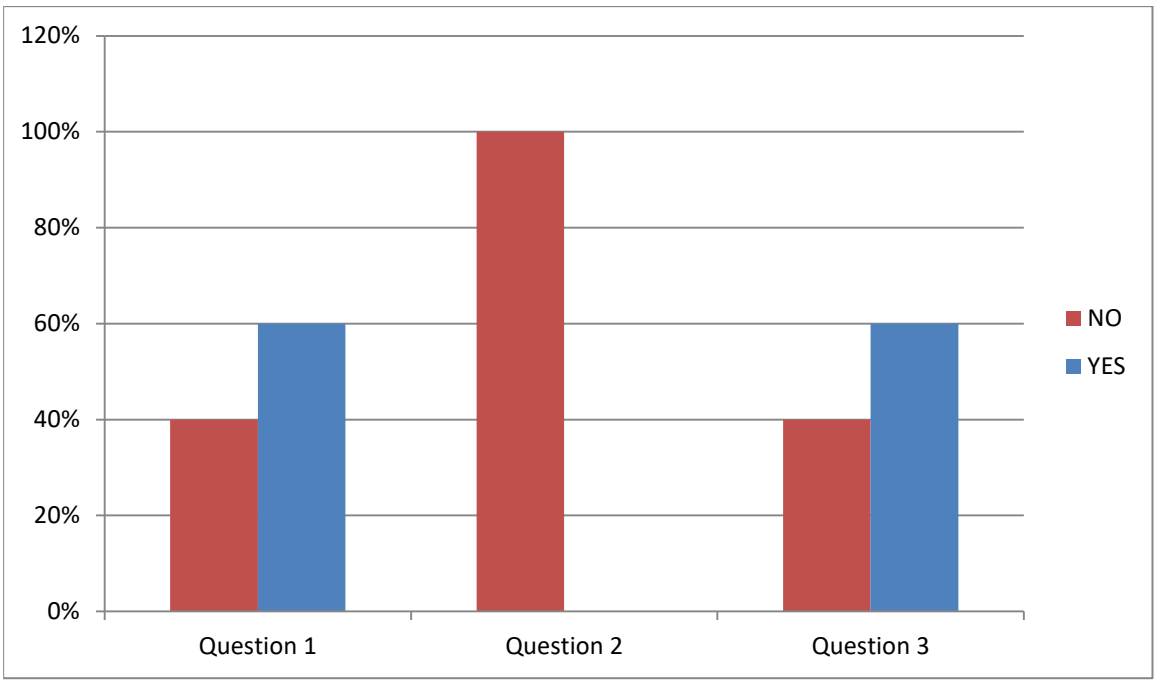


Figure 2 8wk -SURVEY RESULTS

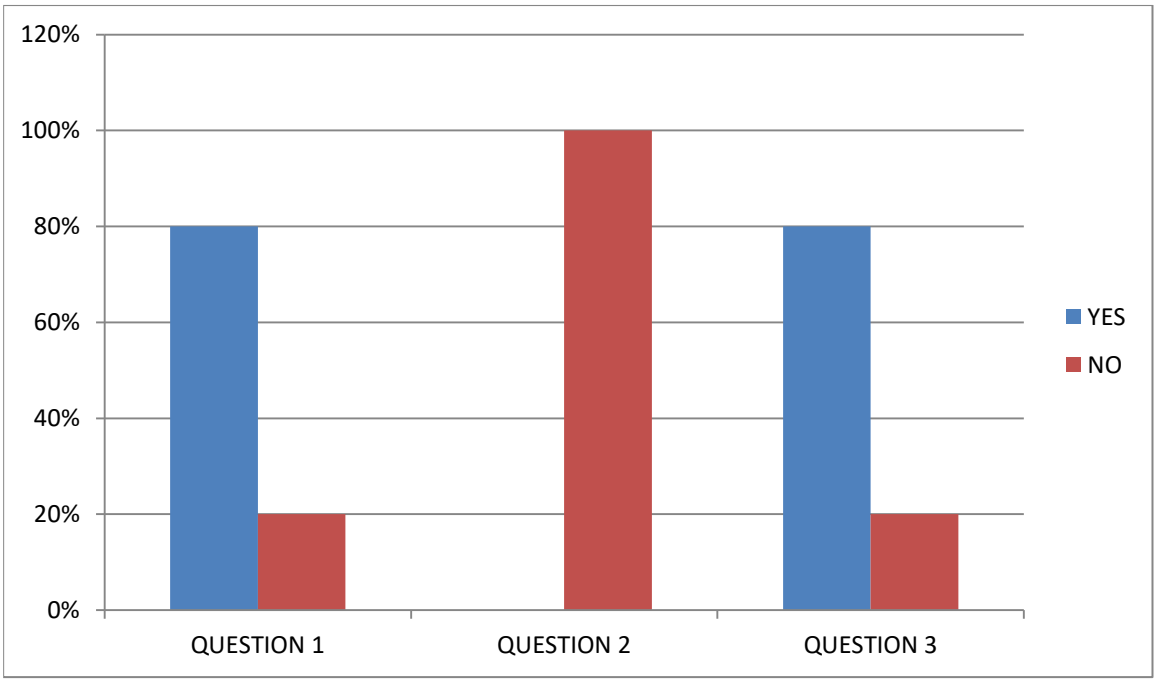


Figure 1- Post-Survey Results