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# Hypertension: Enhancing Lifestyle Management Through Patient Education and Pender's Health Promotion Model

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Hypertension: Enhancing Lifestyle Management Through Patient Education and Pender's Health

Promotion Model

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### Abstract

*Background:* Uncontrolled hypertension is a significant problem in the United States with 46% of hypertensive adults not achieving adequate blood pressure control. Inadequately treated HTN results in increased risk of renal disease, cardiovascular disease, and associated mortality.

Interventions aimed at improving blood pressure control have targeted providers, patients, or a combination of providers and patients. *Methods:* The objective of this project was to enhance lifestyle management of patients with uncontrolled hypertension as measured by patient self-report in post-discharge interviews. The intervention incorporated education for patients on lifestyle management recommendations for hypertension as well as health promotion strategies inspired by Nola Pender's Health Promotion Model. Patients chose a goal behavior and collaborated with this DNP student to identify facilitating factors and barriers to achieve these goals utilizing a health promotion worksheet. This intervention also targeted planning strategies by providers and facilitated the development of patient-specific care plans. This DNP project was conducted on two inpatient medical/surgical units outside of Boston, MA. *Results:* This intervention was completed with a convenience sample of 20 patients. Outcomes, as measured by patient self-report using a Likert scale, revealed that 11 patients always completed the goal behavior (55%), 4 patients sometimes completed the goal behavior (20%) and 3 patients reported never achieving their goal behavior (15%); the outcomes of 2 patients were unknown (10%).

*Discussion:* Although there are several limitations to be considered this intervention shows promise in enhancing lifestyle management of patients with uncontrolled hypertension.

**Keywords:** Hypertension, Uncontrolled hypertension, Pender's Health Promotion Model, Patient education, Lifestyle management

### **Introduction and Background**

The Centers for Disease Control and Prevention (2017) reports that one third of adults or approximately 75 million adults in the United States have hypertension. Forty-six percent of those with hypertension do not have their blood pressure under control (CDC, 2017). Essential hypertension and hypertensive renal disease result in 9.5 per 100,000 deaths annually (CDC, 2017). Uncontrolled hypertension also results in significant increases in risk for myocardial infarction, heart failure, stroke, renal disease and associated mortality (CDC, 2017). Researchers have examined rates of uncontrolled hypertension throughout the country and have noted regional differences, as well as additional factors associated with uncontrolled hypertension.

It is imperative to consider these demographic differences when designing effective interventions targeting uncontrolled hypertension. Higher prevalence of inadequately controlled blood pressure and associated mortality was seen in Washington D.C. and many southern states (Ezzati, Oza, Danaei, and Murray, 2008). Ezzati et al. (2008) also noted that nationwide higher rates of uncontrolled hypertension were seen among women. Higher rates among women however were not demonstrated in a retrospective cohort study conducted by Elperin, Pelter, Deamer, and Burchette (2014) in California. Elperin et al. (2014) did note higher rates of uncontrolled hypertension among African Americans compared to Caucasians. Poor medication adherence was also associated with inadequate blood pressure control in this study.

In addition to demographic differences, adequate treatment intensity by providers as well as patient treatment adherence need to be considered when developing interventions for uncontrolled hypertension. A study that identified inadequate provider treatment was conducted by Khanna, Victor, Bibbins-Domingo, Shapiro and Pletcher (2012). Another study, conducted by Rose, Berlowitz, Orner, and Kressen (2007), illustrated that provider prescribing practices are

a significant factor contributing to uncontrolled hypertension. It also noted an important component of inadequate treatment compliance, including medication nonadherence as well as poor lifestyle modification among adults with uncontrolled hypertension. Although this project did not address prescribing practices of providers it is important to recognize the role this plays in uncontrolled hypertension. The intervention implemented for this Capstone project directly targeted lifestyle modification of patients, including medication adherence. This project also encouraged improved planning for lifestyle modifications between patients and providers, promoting patient autonomy.

### **Problem Statement**

Increased risk of cardiovascular disease and associated mortality among adults is associated with uncontrolled hypertension (CDC, 2017). This results from both inadequate provider treatment and poor self-management by patients, including medication non-adherence and insufficient lifestyle modifications (Rose et al., 2007). The roles of patients and providers need to be considered when developing programs to address uncontrolled hypertension. Interventions that provide patient education and promote health through self-management strategies have been shown to be effective in improving blood pressure control and have been shown to be most effective when utilized along with approaches to enhance provider treatment of hypertension (Bosworth et al., 2009).

### **Purpose**

The purpose of this DNP project was to improve lifestyle management by patients with uncontrolled hypertension and result in the achievement of an identified goal behavior. This DNP project included an educational intervention for patients on hypertension, emphasizing

medication adherence and healthy lifestyle behaviors. As part of the intervention, the educational handout (see Appendix A) was combined with a health promotion worksheet (see Appendix B) adapted from Pender's Health Promotion Model that was completed by this DNP student with patients. After receiving the educational handout patients identified a goal behavior and developed strategies with this DNP student to accomplish their goal while considering facilitating factors and barriers to success. This intervention resulted in the development of individualized care plans with patients.

### **Review of the Literature**

Initially, PubMed, CINAHL, and OVID were searched to gain an appreciation for the state of the science related to hypertension. Search terms included uncontrolled hypertension, health promotion, hypertension, self-management and hypertension. For this literature review peer-reviewed articles from 2006 to 2016 were sought related to self-management and hypertension. The literature searches resulted in 7,708 articles, many of which were duplicates. The abstracts of approximately 300 articles were reviewed, sorted by relevance from this pool of studies.

The literature review revealed two main factors contributing to uncontrolled hypertension: provider prescribing practices and patient non-adherence to medications and recommended lifestyle modifications (Rose et al., 2008). Interventions typically aimed at improving hypertension control target patients, providers or both. Interventions that provide patients with education and promote self-management have been found to be effective in improving blood pressure control (Harshman et al., 2008). Interventions targeting providers, including decision support and education regarding guideline recommendations, have been found



to be inconsistent in improving blood pressure control and benefit from being combined with a patient-based intervention (Bosworth et al., 2008). The evidence regarding hypertension management strategies will be discussed below.

### **Combined Provider and Patient-Targeted Interventions**

Interventions targeting providers and patients have been shown to be effective in enhancing blood pressure control. In a study conducted by Roumie et al. (2006) a sample of 182 providers in the Tennessee Veteran Affairs System, caring for 1341 patients with uncontrolled hypertension, were randomly assigned to one of three groups. Providers received an email including study information and a link to the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7), or an email with study information, JNC 7 recommendations and an alert in the patient's medical record regarding the patient's blood pressure and recommendations. In the third group providers received the email, electronic alert in the medical record, and their patients also received education in the mail regarding medication adherence, lifestyle modification, and communicating with providers. Researchers found that systolic blood pressure was improved in all three groups, but a greater reduction was seen in patients who had received the educational intervention. Roumie et al. (2006) recommend that interventions aimed at improving blood pressure control should target patients as well as providers.

The importance of patient-based interventions was also reported in a study conducted by Bosworth et al. (2008), through the Veteran Affairs System in Virginia. This study compared the effectiveness of provider only, patient only, and combined patient and provider-focused interventions with a sample of 32 providers and 588 patients. The control group of providers

received standard computer reminders of patient blood pressure without recommendations. The first intervention group of providers received computer-generated clinical decision support with recommendations based on patient blood pressure control, lab values, comorbidities, and current medications. The second intervention group, which consisted of patients, received a behavioral intervention conducted by nurses over the phone. Patients received education including medication side effects, health literacy, lifestyle modifications, communication with providers, and hypertension knowledge. The third intervention group utilized clinical decision support among providers as well as the behavioral intervention among patients. Researchers concluded there were not statistically significant changes in blood pressure between the control and intervention groups; however, the greatest improvement in blood pressure control was seen among patients receiving the behavioral intervention. The researchers concluded that although computer-based decision support to providers did not result in improved blood pressure control, a nurse-administered telephone intervention may have clinical benefits in a primary care setting. This study illustrates the inconsistent efficacy of provider-based interventions, and the potential for increased success by incorporating patient-based interventions.

### **Patient-Targeted Interventions**

Additional research has been conducted on the effectiveness of patient-focused interventions involving education and self-management strategies. In a quasi-experimental study, a hypertension management and health promotion program for commercially licensed drivers was successful in improving blood pressure control (Harshman et al., 2008). The effects of the DownShift program were examined among a random sample of 501 drivers for a self-insured utility company. The intervention involved verbal counseling as well as educational materials that emphasized the importance of blood pressure control in decreasing their

cardiovascular risk and maintaining their commercial driving license. They also received resources aimed at helping them understand and manage their hypertension including treatment information, suggested questions for their primary care providers, and record-keeping tools. Rates of uncontrolled hypertension decreased from 28.3% to 20% among the sample after program implementation. This study demonstrates the success of interventions targeting patients that incorporate both education and self-management strategies.

A study was completed on the effectiveness of patient-directed interventions with variations in educational content. Hacıhasanoglu and Gozum (2011) compared the efficacy of an intervention focusing solely on medication adherence to an intervention that also addressed lifestyle modifications. A sample of 120 adults aged 35 or older with hypertension were divided into two intervention groups. Group A received information regarding medication adherence only while Group B received education regarding medication adherence and recommended lifestyle modifications. A pre-test post-test design was used measuring blood pressure, height and weight, medication adherence and lifestyle behaviors. Researchers found that both interventions were effective in improving lifestyle behaviors, medication adherence, and lowering blood pressure. However, the group that received education regarding lifestyle behaviors showed greater improvement in blood pressure control. This study illustrates that patient-focused educational interventions are effective in hypertension management, helping to improve healthy lifestyle behaviors, medication adherence, and lower blood pressure. It also shows that education should focus not only on medication compliance but also on achieving healthy lifestyle behaviors to enhance blood pressure reduction among hypertensive patients.

These studies have shown the importance of patient-focused interventions to improve blood pressure control. Education and self-management strategies resulted in enhanced

hypertension management among study participants. The theoretical framework utilized to develop the patient-focused intervention for this Capstone project, which incorporates enhanced education and lifestyle modification, will be discussed below.

### **Theoretical Framework**

To achieve the behavior change needed to make recommended lifestyle modifications to enhance hypertensive control constructs of Pender's Health Promotion Model were incorporated into this Capstone project. Nola Pender's Health Promotion Model, a midrange theory, examines multiple factors related to patients' health promoting behaviors (Pender, Murdaugh, and Parsons, 2011). Pender utilized the expectancy value theory, and the social cognitive theory to develop the Health Promotion Model. The model is used to assess biological, psychological, and sociocultural factors and prior related behavior. Interpersonal and situational influences on behavior, as well as attitudes related to behavior including perceived benefits and barriers to action and self-efficacy are also considered. The model then takes into account patients' commitment to a plan, and competing demands and preferences. The endpoint of the model is the health promoting behavior (Pender, Murdaugh, and Parsons, 2011). Pender's Health Promotion Model has been utilized to explain, predict and alter patients' health promoting behaviors.

Utilizing Pender's Health Promotion Model, researchers have been able to predict adherence with health promoting behaviors based on participants' behavior-specific cognitions and affect. In a cross sectional study, Kamran, Azadbakht, Sharifirad, Mahaki and Mohebi (2015) examined the relationship between the constructs of the Health Promotion Model and systolic blood pressure among hypertensive rural residents in Iran. A random sample of 671 hypertensive patients in Ardebil city received a questionnaire regarding demographics and self-

reporting of attitudes toward nutritional recommendations. The questionnaire assessed Pender's constructs of perceived benefits, perceived barriers, self-efficacy, affects related to behavior, interpersonal influences, situational influences, and commitment to plan. Researchers found negative correlations between self-efficacy, perceived benefits, situational influences, affects related to behavior, commitment to action and systolic blood pressure. They found a positive correlation between perceived barriers and systolic blood pressure. An inverse relationship between age and reported self-efficacy, perceived benefits, affects related to behavior, commitment and interpersonal influences were also found. It was also noted that as age increased, perceived barriers to health-promoting behaviors increased.

Researchers concluded that the structures of Pender's Health Promotion Model were able to predict 71.4% of changes in systolic blood pressure (Kamran et al., 2015). Perceived barriers were considered the main predictor in behavior based on this study. Interpersonal influences also played a significant role in systolic blood pressure. Previous studies have also noted the significant role of self-efficacy in health promoting behaviors. However, there has been limited study including this population of rural hypertensive patients. This study illustrates the use of Pender's Health Promotion Model to explain and predict behavior. This model has also been beneficial in designing interventions to achieve goal health-promoting behaviors.

Carreno, Vyhmeister, Grau, and Ivanovic (2006) used the Health Promoting Lifestyle Profile (HPLP) to measure the effectiveness of a health promotion program that was based on Pender's model. Researchers conducted a comparative study following eighteen Adventist, and eighteen non-Adventist women in Chile. Participants were interviewed using the HPLP before and after the intervention. The program included thirty-three educational sessions over three months, which addressed nutrition and exercise. The Health Promoting Lifestyle Profile

contained forty-eight items, utilizing subscales of self-actualization, health responsibility, exercise, nutrition, interpersonal support, and stress management. Statistics revealed the tool to be reliable in this study, even though it needed to be adapted to Spanish speakers. The study concluded that both groups of women had increased HPLP scores after the health promotion program.

It was also noted that the group of Adventist women had higher pre and post-nutrition scores, and non-Adventist women had higher exercise scores before and after the health promotion program (Carreno et al., 2006). This study illustrates the effectiveness of Pender's Health Promotion Model in designing interventions. The intervention developed for this DNP project was built on the evidence of "most effective interventions" to improve uncontrolled hypertension using a patient-education tool and worksheet adapted from Pender's Health Promotion Model, focusing on facilitating factors and barriers to achieving goal behaviors.

### **Project Design and Methods**

This DNP project was a Quality Improvement project that aimed to improve patient treatment adherence to lifestyle modifications among adults with uncontrolled hypertension. The intervention utilized an educational handout and health promotion worksheet built on Pender's Health Promotion Model during an individualized educational session with a patient and this DNP student in an inpatient setting. The goal was to achieve a behavioral goal established by the patient that would enhance lifestyle management of hypertension.

A Simple Logic Model, which examines inputs, outputs, and outcomes (Zaccagnini & Waud White, 2014) was also utilized to develop and explain multiple components of this intervention (see Appendix C). The inputs for this project include costs, personnel, and time of

both staff and patients. Costs for printing the tool were minor, as only one sheet of paper was utilized per session, with additional paper costs based on needed additional information for patients. During development of this intervention it was planned for staff nurses to complete the intervention with patients. Ultimately the intervention was completed with patients by this DNP student due to barriers related to time-frame of the project and staffing and workflow issues for nurses on the unit. When identifying inputs to this project it was imperative to consider constraints that may affect implementation according to the Simple Logic Model (Zaccagnini & Waud White, 2014). There were constraints, or barriers, to be considered related to cost of training staff on use of the tool and additional financial constraints to be considered included the amount of time needed for staff to utilize this tool with patients, allowing time for identification of a goal behavior and the development of a plan of action, incorporating facilitating factors and barriers to achieving the goal behavior. The intervention would have required fifteen to thirty minutes of staff and patient time. Patients also received a phone call three days after discharge which assessed the patient's recovery from their acute illness, reinforced the intervention and goal behavior, and provided additional information or resources for patients when needed to achieve the goal behavior.

The educational intervention incorporated an educational handout on hypertension which defined the condition, stated potential consequences if inadequately treated, signs or symptoms that warrant provider alert, and evidenced-based recommendations for patients to reduce blood pressure including medication adherence and lifestyle modifications. The evidenced-based recommendations included on the educational sheet were based on a guideline developed by the Michigan Quality Improvement Consortium (2015), which provides guidance related to the prevention and management of hypertension, and directly addresses appropriate medication

choices and needed lifestyle modifications. The target population for this guideline is non-pregnant adults over 18 who had normal blood pressure, prehypertension, or stage one or two hypertension.

This guideline provides guidance to providers on initial assessment involving evaluation of risk factors and target organ damage, multiple blood pressure readings, and appropriate diagnostic tests prior to initiating therapy. Recommendations also address patient education and non-pharmacologic interventions including self-monitoring, and lifestyle modifications such as promoting weight loss, decreasing sodium intake to less than 2.4gm/day, adoption of the DASH diet, tobacco avoidance, moderation of alcohol consumption, increased dietary calcium and potassium intake, and aerobic exercise of at least 30 minutes most days of the week. The guideline also establishes goals of management (BP<140/90 in most patients), and provides guidance on medication choice, monitoring and adjustment of therapy. The recommendations from this guideline were utilized to identify health promoting behaviors for the educational sheet of this Capstone project. After reviewing the educational sheet, patients chose one goal behavior based on the proposed interventions and with this DNP student developed strategies to achieve these goals, considering facilitating factors and barriers, which are derived from Pender's Health Promotion Model.

The output of this intervention is enhanced patient education on hypertension and concrete individualized care plans to improve treatment adherence to lifestyle modifications. Barriers to completing this activity included time constraints on patients, as well as patient acuity related to acute conditions, and the appropriateness on the use of tool depending on the patient's mental and functional status. At times a family member involved in the patient's care were co-recipients of the intervention or were involved in the post-discharge phone calls.



The outcomes and method of evaluation will be discussed further below. Briefly, the goal was to improve treatment adherence for patients with uncontrolled hypertension, specifically related to lifestyle management. If achieved, the potential impact was greater blood pressure control which reduces the risk of renal and cardiac disease and associated mortality. The specific outcome measured for this Capstone project was the achievement of the patient-identified goal behavior. The outcome was measured utilizing a post-test evaluation relying on self-report by patients during follow-up discharge phone calls made two weeks after discharge.

### **Setting and Resources**

#### **Description of the group, population or community.**

This project targeted an adult population in a community hospital near Boston. Patients previously diagnosed with hypertension who had two or more blood pressures out of goal range during their hospitalization as established by the Eighth Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (James et al., 2014) were targeted for this project. Generally, the goal blood pressure for adults over 60 is less than 150/90, and the goal for adults under 60 is less than 140/90. The project was completed on two inpatient medical units. The first unit has a maximum capacity of 26 patients, with an average of 20 patients on the unit. Average length of stay is 3 days. The second unit has a maximum capacity of 35 patients, with an average of 32 patients on the unit. Average length of stay is 3 days. A convenience sample of twenty patients with previously diagnosed hypertension and two or more blood pressures out of goal range as established by the JNC 8 recommendations were found.

#### **Organizational analysis of project site.**

On Unit A, typical staffing on day and evening shifts include 5 nurses plus a charge nurse. Overnight, there are typically 3 nurses plus a charge nurse on the unit. On Unit B, typical staffing on day and evening shifts include 7 nurses plus a charge nurse. Overnight, there are typically 4 nurses plus a charge nurse on the unit. Initially nurses on the units were going to be trained on the intervention, which could have been completed during a weekly staff meeting that day and evening nurses attend. The intention was that staff nurses could then utilize the tool in an educational session with patients identified as having uncontrolled hypertension. Due to the barriers described above nursing staff on the units did not perform the intervention with patients so training on the tool was not required. The method of education and health promotion strategies utilized in this intervention differ from the current practices at the facility. The clinical site does not utilize health promotion strategies, such as Pender's model in education. Education also typically focuses primarily on medication instructions and less on recommended lifestyle modifications. Patients are often instructed on plans but are not involved in their development and providers fail to identify facilitating factors and barriers that affect patient adherence to treatment plans.

#### **Evidence of stakeholder support.**

The project was discussed with the nurse managers on the proposed units. The project was also discussed with the units' nurse educators and the hospital's Director of Nursing and former Chief of Nursing. Additional support had been voiced by nurses on the unit to improve educational opportunities for patients.

#### **Facilitators and barriers.**

As discussed above barriers to completing this project with nursing staff included the time and money needed to educate staff members on the intervention and the resulting financial impact on the time needed to complete the intervention with patients. Additional cost would be tied to the time needed for nurses to make discharge phone calls to assess if the goal outcome was achieved. Additional barriers to incorporating a patient-focused education-based intervention included demands on nurses' time including number of patients and patient acuity on the unit. Due to these barriers and additional barriers related to the time frame of the project and to ensure continuity with the provider performing the intervention with patients, ultimately this DNP student performed the intervention with all patients. Barriers for patients related to the project include patients' willingness or ability to participate in proposed session due to acute illness or baseline advanced cognitive impairment.

Facilitators to this project included the support of the nurse managers for floor projects, an experienced nursing staff (all nurses on the unit have >1 years med/surg nursing experience), and a high retention rate of nurses. An effective working relationship had already been established with the nurses on the units as this DNP student works at this facility. This established relationship helped promote staff identification of potential patients for this project. A benefit to introducing this project on inpatient units, although the principles can easily be applied to outpatient settings, was the available time of patients who are admitted. There are significantly less time constraints on patients who have an expected three-day length of stay compared to outpatient appointments which typically only last fifteen to thirty minutes.

### **Goals, Objectives, and Expected Outcomes**

The goal outcome for this intervention was the achievement of the established goal behavior, resulting in improved treatment adherence among adults with uncontrolled hypertension. This was measured through self-report. Participants receiving the intervention received phone calls three days after discharge to reinforce the intervention and assess if additional information or resources were needed. A phone call was then placed two weeks after hospital discharge to participants to assess whether the goal outcome was achieved. Patients were asked if they were completing their established goal behavior. Additional space was provided on the script for discharge phone calls allowing for comments, where patients could clarify utilizing a Likert scale if they were completing the goal behavior always, sometimes or never.

### **Implementation Plan**

Patients previously diagnosed with hypertension who had 2 or more blood pressures out of goal range were identified on the two units. Inpatient nurses were utilized to identify if patients would be appropriate for a health promotion intervention, excluding those with significant cognitive impairment, current serious condition, or poor prognosis related to an acute illness. Sessions with this DNP student and eligible patients were completed where the educational sheet was reviewed, a goal behavior was identified, and a plan to achieve the goal behavior was developed, considering facilitating factors and barriers. This DNP student then returned to patients with additional printed resources based on their identified goal behaviors. A phone call was then made three days after discharge to reinforce the intervention and provide additional information as needed. An additional phone call was made two weeks after discharge to evaluate if the goal behavior was achieved. Outcome evaluation relied on patient self-report.

**Cost-Benefit Analysis/Budget**

During the development of this project potential labor costs were considered. Time would be needed to train the nurses on the tool, a one-time occurrence requiring approximately 15 minutes. There would also be a financial impact based on the amount of time needed for nurses to complete the intervention with patients, estimated to be 15-30 minutes per patient, and additional time for discharge phone calls. If a site was planning on using this style of intervention these costs would need to be considered. Labor costs were not applicable for this project as the intervention was completed by this DNP student. There were minimal printing costs for completing this project. The educational sheet and associated health promotion worksheet were printed on the front and back of one form. Additional printed materials were given to patients based on their needs, with a range of 0-6 sheets. One additional sheet was utilized for discharge phone calls associated with the project.

The benefits of the program include enhanced patient education and potential decreased medical complications due to uncontrolled hypertension. Although there are costs to implementing this program, they are to be considered negligible as it is believed that treating patients based on the JNC 8 goal blood pressure is ultimately cost effective, preventing 56,000 cardiac events and 13,000 cardiac-related deaths annually (Moran et al., 2015). In the period between 2014 and 2024 for men aged 35 to 74 years Moran et al., (2015) concluded that treating all hypertensive men with cardiovascular disease, stage 2 hypertension without cardiovascular disease, stage 1 hypertension with diabetes or chronic kidney disease, and stage 1 hypertension without diabetes or chronic kidney disease would result in a decrease in cardiovascular costs of 3.421 trillion dollars. In that same period for women between 35 and 74 years old, Moran et al., (2015) concluded that treating all hypertensive women with cardiovascular disease, stage 2

hypertension without cardiovascular disease, stage 1 hypertension with diabetes or chronic kidney disease, and stage 1 hypertension without diabetes or chronic kidney disease would result in a decrease in cardiovascular costs of 1.234 trillion dollars.

### **Ethics and Human Subjects Protection**

This DNP project is classified as a Quality Improvement project and a Human Subjects Determination form was submitted to the University of Massachusetts Amherst Institutional Review Board. The IRB determined that this project did not require Institutional Review Board oversight. Patients received education regarding evidenced-based interventions for hypertension that reduce the risk of cardiovascular and renal disease and associated mortality. These are the potential benefits to patients' health participating in this project, and there are no anticipated risks for participants. Patients chose goal behaviors, promoting autonomy, and aided in the development of plans of action to achieve these goals. Copies of the worksheets containing patient identifying information were secured on site and destroyed after the project was complete. For analysis of outcomes SPSS software was used with patient-identifying information removed to ensure privacy. The original educational handout and associated health promotion worksheet went home with patients. It was important to maintain patient confidentiality during this project and no identifiable patient information was shared with others. Results were shared with the university and the hospital where the project was conducted.

### **Results**

This intervention was completed with a convenience sample of twenty patients (N=20). The ages of participants ranged from 31 to 95 years old, with a mean age of 75.8 years, and a median age of 79.5 years. The sample consisted of ten females and ten male participants. None

of the patients included had a primary hospital diagnosis of hypertension; all were hospitalized for an unrelated acute condition. Eleven participants chose a goal behavior related to diet, while seven selected an exercise related goal, and two patients selected a goal behavior related to self-monitoring. Outcomes were measured by patient self-report using a Likert scale. The results of this self-report revealed that eleven patients always completed the goal behavior (55%), four patients sometimes completed the goal behavior (20%), and three patients reported never achieving their goal behavior (15%); the outcomes of two patients were unknown (10%). One participant was lost to follow-up. A second participant was unable to report if he was achieving the goal behavior as the conversation was limited due to the patient reporting hearing impairment over the phone.

### **Discussion**

This intervention, which combined patient education and a health promotion worksheet utilizing constructs from Pender's Health Promotion Model, was effective in helping the majority of patients achieve their goal behavior on a short-term basis. Therefore, it appears to be promising as an effective intervention to enhancing lifestyle management of patients with uncontrolled hypertension. This style of intervention could be utilized for various acute and chronic conditions in inpatient and outpatient settings. For chronic conditions, such as hypertension, it may be better utilized in a primary care setting or could be initiated in an inpatient setting with continued follow-up by a primary care provider.

### **Limitations**

When assessing the effectiveness of this intervention it is imperative to consider the limitations of this project. This Quality Improvement project utilized a convenience sample

rather than a random sample, which eliminates the ability to establish a causal relationship between the intervention and the achievement of the established goal behavior (Issel, 2014). Nurses on the units were utilized to help identify appropriate patients for the intervention. Patients with significant cognitive impairment, high acuity of current illness, or poor prognosis related to their current illness were not approached. Selection in this manner may have resulted in completing the intervention with patients who were more motivated or would do better with this style of intervention than the general population. The effect of hospitalization on patient motivation also needs to be considered. Overall, the effect of patient hospitalization increasing patient motivation and compliance was likely lessened as the reason for acute hospitalization of all participants was unrelated to hypertension. Patient compliance with this intervention may in fact have been lessened due to participant recovery from an acute, unrelated illness. The follow-up of the project at three days and two weeks after discharge may have increased participant compliance to the intervention. It is unknown if these outcomes will be sustained without continued monitoring or if this intervention resulted in decreased risk of renal or cardiovascular disease. Lastly a significant limitation resulting from this project design is the reliance on self-reporting of outcomes by patients, which may limit the accurateness of the results.

### **Conclusion**

Uncontrolled hypertension is a significant problem among adults in the United States and is a significant contributor to renal disease, cardiovascular disease and associated mortality. Interventions targeting provider practice alone are insufficient. Self-management and educational programs targeted to patients have been effective in improving blood pressure control. An education-based health promotion intervention that utilized Pender's Health Promotion Model as a theoretical foundation, was completed for this DNP project. Provider



planning strategies were also affected by this project as patients were involved in identifying goal behaviors as well as developing strategies with this DNP student to achieve these goal behaviors. The first part of the educational intervention project took place on two inpatient units. Patients selected evidenced-based goal behaviors and developed plans of action with this DNP student to achieve goal behaviors. A follow-up phone call three days after discharge allowed for further opportunity to reinforce the intervention and adjust strategies to achieve goal behaviors. Outcome evaluation was determined via patient report during follow-up phone call two weeks after discharge. Fifty five percent of participants reported always achieving their goal behavior, and an additional 20% reported sometimes achieving the established goal behavior. This project promoted patient autonomy and has the potential to improve blood pressure control. This project may serve as a template for addressing behavior change needed to manage additional diagnoses. The format of the educational handout along with the worksheet adapted from Pender's Health Promotion Model can be used for various acute and chronic conditions, and would be applicable in both inpatient and outpatient settings.

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## Appendix A

### Educational Handout

#### Hypertension

High blood pressure or hypertension is often treated with lifestyle changes and medications. If uncontrolled, hypertension puts you at higher risk for blindness, heart attack, heart failure, stroke and kidney failure.

#### Symptoms to report to your health care provider:

- Chest pain or pressure
- Facial drooping, sudden slurred speech or arm weakness
- Difficulty breathing
- Headache or blurry vision can be signs that your blood pressure is too high. Report blood pressure higher than \_\_\_\_\_
- Dizziness or feeling faint may be signs that your blood pressure is too low. Report blood pressure lower than \_\_\_\_\_

#### What you can do to stay healthy:

- Take your blood pressure medications as prescribed.
- Learn to check your blood pressure at home.
- Reduce dietary sodium to less than 2400 milligrams per day.
- Increase dietary potassium and calcium (unless told not to by your health care provider).
- Follow the DASH diet (diet that is high in fruits and vegetables, and has reduced saturated and total fat).
- Maintain a healthy weight (goal BMI or body mass index less than 25)
- Aerobic exercise for at least thirty minutes most days of the week
- Avoid tobacco
- Consume alcohol only in moderation

Appendix B

**Health Promotion Worksheet**

Goal behavior: \_\_\_\_\_  
\_\_\_\_\_

What will make it hard for you to achieve your goal?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

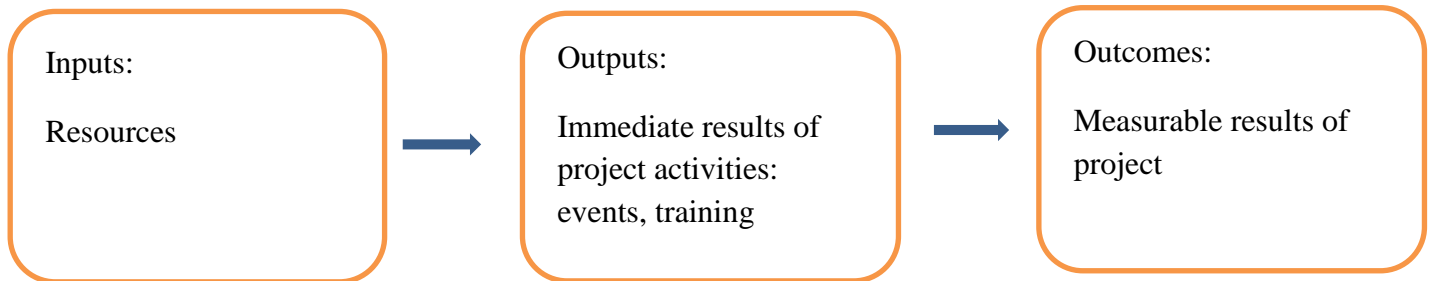
What will help you achieve your goal?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Step by step plan to achieve your goal:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

Appendix C

**Simple Logic Model**



Adapted from Zaccagnini and Waud White, 2014