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Enhancing Knowledge and Confidence in a Retail Clinic Setting of Practitioners in Treating Primary and Secondary Hypertension

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Enhancing Knowledge and Confidence in a Retail Clinic Setting of Practitioners in Treating Primary and Secondary Hypertension

by

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Abstract

Many adult and adolescent patients in primary care settings are diagnosed with primary hypertension, however the workup often does not include an evaluation of secondary causes. The purpose of this Doctor of Nursing Practice (DNP) project was to improve the diagnosis and treatment of hypertension for patients seeking health care in a retail clinic setting. The PICOT question was, what is the effect of an educational offering on hypertension standards of care in enhancing knowledge and confidence for providers working in a retail health clinic setting?

The sampling frame was 40 Nurse Practitioners and Physician Assistants employed at CVS Minute Clinic in Region 38, North Carolina. A 60-minute PowerPoint presentation was developed by the project leader on guidelines for the diagnosis and treatment of primary and secondary hypertension. Provider knowledge and confidence levels (dependent variables) were measured pre- and post-education using an author-created tool using valid questions from the literature. Nine providers (22.5%) completed the pre-survey and only one provider completed the post-survey. Pre-survey results revealed knowledge deficits in using current standards and guidelines for the diagnosis and long-term treatment of primary and secondary hypertension. Providers reported being only *moderately confident* (33%) and *somewhat confident* (67%) in their ability to diagnose and treat hypertension and secondary hypertension. These findings are congruent with the literature and with Orem's concept of nursing agency. Nursing agencies can be promoted through comprehensive provider education and additional time and resources for nurse practitioners and physician assistants working in retail clinic

settings. The use of best practice standards will enhance hypertensive care for the community.

Keywords: primary hypertension, secondary hypertension, retail clinic, nurse practitioners, nursing agency

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Problem Recognition

Pathan and Cohen (2020) state “hypertension is a growing global health concern. As the worldwide prevalence of hypertension increases, so too does the burden of excess disease attributable to hypertension including coronary artery and cerebrovascular disease” (p. 83). Additionally, these authors acknowledge that “estimates of the prevalence of resistant hypertension have varied widely, with reported figures ranging from 2% to 40%” (Pathan & Cohen, 2020, p. 84). Shoulders and Powell (2019) report that “despite the known benefits of lowering BP, more than 50% of adults taking antihypertensive medications have BP above treatment goals” (p. 102).

Many adult and adolescent patients in primary care settings are diagnosed with primary hypertension, however the workup often does not include an evaluation of secondary causes. Failures in care delivery such as not identifying and treating correctable causes of hypertension in an appropriate and timely manner can also generate excess cost, specifically when patients receive services that do very little in promoting treatment and/or care (Knickman & Elbel, 2019). These authors state “in a more concerning scenario, a patient may receive services that cause harm, which in turn initiates a set of services and charges associated with treating the damage” (Knickman & Elbel, 2019, p. 288). In addition to such provisions of care, these authors further acknowledge that “they can also generate charges over a longer term if foregoing effective and low-cost care leads to the use of more costly services later on” (Knickman & Elbel, 2019, p. 288). According to Freihage et al. (2008) “although the vast majority (over 90%) of patients with hypertension have primary hypertension, that is, hypertension

without an identifiable cause, an attempt to detect secondary causes of hypertension is important due to the potential for cure with appropriate treatment" (p. 787).

Secondary causes of hypertension include: chronic renal insufficiency, renal artery stenosis, coarctation of the aorta, mineralocorticoid excess syndromes, Cushing's syndrome, hypothyroid, hyperthyroid, hyperparathyroidism, obesity, obstructive sleep apnea, pheochromocytoma, and paraganglioma (Freihage et al., 2008). As noted by Shoulders and Powell (2019) "there is a strong relationship associated with obesity at a young age and over time and the future risk of hypertension" (p. 104). Therefore, screening measures should be introduced and implemented at an early age. Additionally, Freihage et al. (2008) acknowledge that "a review of medications, both prescribed and over the counter, is important, as many medications can lead to blood pressure elevation and must not be overlooked" (p. 787).

This Doctor of Nursing Practice (DNP) project aims to improve the diagnosis and treatment of hypertension, including the assessment of secondary causes, by nurse practitioners (NPs) in a retail clinic setting. Retail clinics as described by Mehrotra and Lave (2012) "are ambulatory clinics located in pharmacies, grocery stores, or other retail settings. Convenience is one of their key features: retail clinics do not require patients to make an appointment, and they are open evenings and weekends" (p. 2123). These clinics are in convenient locations and meet a need for after-hours care, price transparency, and a low-cost alternative source of care that is especially attractive to the uninsured and people with high-deductible health plans (Mehrotra & Lave, 2012).

Access to care is generally provided via a walk-in concept or one of two telehealth options (E-clinic visit or video visit). Treatment is available to male and female

persons aged 18 months and older. Patients presenting to these clinics for care are with or without a primary care provider. Mehrotra and Lave (2012) state “we found it noteworthy that a large fraction of patients at retail clinics continued to report that they did not have a primary care physician” (p. 2127). These authors further acknowledge that “it is possible that patients with no or a weak relationship with a primary care physician are more likely to seek care at a retail clinic than patients with strong relationships with a physician” (p. 2127).

Mehrotra and Lave (2012) acknowledge that “there have been notable changes in the retail clinic industry since 2006. In addition to increasing their scope of care, some retail clinics have partnered with integrated delivery systems such as the Cleveland Clinic and Allina Health” (p. 2123). These authors acknowledge this period as a time of rapid growth; however, from the start of 2007 up until the end of 2010, the number of retail clinics increased from about 300 to almost 1,200 (Mehrotra & Lave, 2012). These authors predicted that the role of retail clinics would grow after the Affordable Care Act was fully implemented and the demand for primary care reduced access to primary care providers, increasing the demand for retail clinics (Mehrotra & Lave, 2012). Convenient care clinics first opened in the United States in 2000 (Gardenier et al., 2020). According to Gardenier et al. (2020) “twenty years later, with more than 2,700 locations in 44 states, convenient care has logged more than 40 million patient visits, most of them by family nurse practitioners” (p. 558). Additionally, Gardenier et al. (2020) acknowledge that “the numbers alone argue that convenient care is meeting a need that had been unmet previously” (p. 558). There was notable growth in health spending with the implementation of the Affordable Care Act. Hartman et al. (2018) acknowledge that

"health spending growth decelerated in 2016 following faster growth in 2014 and 2015 associated with coverage expansions under the Affordable Care Act (ACA) and strong retail prescription drug spending growth" (p. 150). Following the period of 2014 and 2015 there were dramatic increases in health insurance enrollment (Hartman et al., 2018). Acknowledge by Hartman et al. (2018) "as major provisions of the ACA expanded insurance options under private health insurance Marketplaces and the Medicaid program—factors contributing to 8.7 million people gaining private health insurance and 10.2 million gaining Medicaid coverage in 2014 and 2015" (p. 150). Additionally, Win (2016) acknowledges "there is currently a shortage of primary care physicians in America, although increasingly more Americans will have health insurance under the Affordable Care Act. Many patients have difficulty finding a physician for a traditional office visit" (p. 130). Such has caused more than 35 million Americans to live in areas underserved by physicians (Win, 2016).

Initially, care was mainly limited to common acute ailments, such as upper respiratory infection, sinusitis, bronchitis, otitis media, otitis externa, pharyngitis, conjunctivitis, urinary tract infections, allergies, immunizations, and other preventive care, such as sports physicals and screening tests (Mehrotra & Lave, 2012). Currently, care services provided by retail clinics have expanded to include care for chronic illnesses such as asthma, chronic obstructive pulmonary disease, hypertension, thyroid disease, diabetes, hypercholesterolemia, and sleep apnea. According to Gardenier et al. (2020) "chronic conditions that are being managed in convenient care include hypertension, diabetes mellitus type 2, sleep apnea, thyroid disease, asthma, and high cholesterol" (p. 558). Additionally, a variety of other services are provided such as onsite

lab draws, nutritionists, community wellness services, and special events such as yoga (Gardenier et al., 2020). Some other services include work up and treatment for benign prostatic hyperplasia (BPH), HIV pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP), pelvic exams with treatment for vaginitis, yeast infections, sexually transmitted disease and infections, birth control care, smoking cessation, COVID 19 testing, as well as many more (Minute Clinic, 2021). According to Mehrotra and Lave (2012) "nationally there were a total of 1.48, 3.52, and 5.97 million retail clinic visits in 2007, 2008, and 2009, respectively. This is an average annual increase of 102 percent" (p. 2124). In addition, Ashwood et al. (2016) state "there are now almost two thousand retail clinics in the United States, and they receive more than six million patient visits per year" (p. 1).

This author works in a regional retail clinic setting that consists of 15 clinics seeing approximately 1,708 patient visits per week. Of these, 161 have a documented history of hypertension or have elevated blood pressure readings, however not all cases are documented (M. Watson, personal communication, June 10, 2021). This rural patient population starts at age 12 and is predominately Caucasian. Patients present to the retail clinic for sick visits, Department of Transportation (DOT) exams, administrative or new student physicals, wellness checks, and chronic care visits. Such visits uncover unidentified and/or undiagnosed hypertension and start the education towards primary and/or secondary prevention measures and treatments that can have the potential to enhance patient outcomes by reducing morbidity and mortality rates.

Issues and barriers facing NPs in a retail clinic setting include "suboptimal doses of medical therapy, complex regimens, affordability, lack of adherence, time constraints

that do not allow providers to adequately address the individual needs of each patient" (Shoulders & Powell, 2019, p. 102). In this author's retail clinic setting, 20 minutes are allotted for each visit and in most cases, this is a first-time visit to access family history, and full past medical history including drug and alcohol use, with limited access to past medical records. Also, continuity of care providers is not always guaranteed in this retail clinic setting. One provider may start a work-up for a patient found to be hypertensive and order labs, however another provider may see the patient returning for lab review and initiate antihypertensive medications. The conversation between this new provider and the patient might be completely different and could impact the plan initiated between the first provider and the patient, causing the patient to question variations in the treatment plan.

Guidelines provide parameters that suggest when patients should be referred to a higher level of care and when Emergency Medical Services (EMS) should be activated. There are links to tools such as the atherosclerotic cardiovascular disease (ASCVD) risk calculator that can be used to calculate the 10-year risk of developing cardiovascular disease (CVD). Aside from smart sets embedded into the documentation system intended to guide the ordering of medications, labs, patient instructions, and provider recommendations, there are no other protocols in place to care for people with chronic needs.

Problem Statement

Secondary causes of hypertension such as diabetes, hypercholesterolemia, sleep apnea, thyroid disease, and renal artery stenosis, are often undetected and undiagnosed. Despite appropriate medicines and medical follow-up, blood pressure may remain

elevated due to one or more secondary etiologies. According to Knickman and Elbel (2019) “13% of Medicare beneficiaries nationally, but up to one in four in some states, received a high-risk prescription medicine that should never have been prescribed according to clinical guidelines” (p. 288). Lack of a thorough assessment and workup identifying secondary causes of hypertension places patients at high risk for an initial or repeat cardiovascular event or worsening end target organ damage.

Literature Review

According to Guevara-Cuellar et al. (2018) “hypertension represents a high burden of disease in different healthcare systems” (p. 1). Additionally, these authors acknowledge, “The World Health Organization (WHO) attributes to hypertension at least 45% of deaths by cardiomyopathies, 51% of deaths by cerebrovascular diseases and costs near 1.26 billion dollars in high-middle income countries” (Guevara-Cuellar et al., 2018, p. 1). Goals surrounding the treatment and management of hypertension should be designed to reduce morbidity and mortality rates, identify secondary causes, and determine the impact of cost on treatment and prescription therapy. Another major goal is to reduce end-target organ damage due to prolonged, uncontrolled, or misdiagnosed hypertension.

Acknowledged by Guevara-Cuellar et al. (2018) “different clinical practice guidelines about hypertension have shown a tendency to make a timely diagnosis and strict control of the disease given the evidence of the impact that these strategies can have on morbidity and mortality” (p. 1). Current guidelines have now structured recommendations for the detection, prevention, management and treatment of high blood pressure, and recommend new cut-off points for systolic and diastolic measurements,

defining hypertension at or above 130/80 mmHg as opposed to the previous 140/90 mmHg (Guevara-Cuellar et al., 2018). The authors note that the implementation of new blood pressure parameters will likely increase the diagnosis of hypertension by 50% and such recommendations have caused much discussion among clinicians and policymakers (Guevara-Cuellar et al., 2018).

Needs Assessment

In this author's region of practice, there are issues that impact the evaluation and workup of patients presenting with elevated blood pressure or a history of hypertension. The diagnosis of hypertension is made with multiple readings on two different days. According to Unger et al. (2020) "whenever possible, the diagnosis should not be made on a single office visit. Usually, two to three office visits at 1-4 weeks intervals (depending on the BP level) are required to confirm a diagnosis of hypertension" (Section Three: BP measurement and Diagnosis of Hypertension). Additionally, these authors acknowledge "the diagnosis might be made on a single visit, if BP is ≥ 180/110 mm Hg and there is evidence of cardiovascular disease (CVD)" (Unger et al., 2020, Section Three: BP Measurement and Diagnosis of Hypertension). Also, it is ideal to have patients do ambulatory home blood pressure monitoring and log their readings and bring them when they present back to the clinic.

Poor documentation is a major gap that impacts the ability to accurately capture the diagnosis of elevated blood pressure and/or the diagnosis of hypertension. The diagnosis of an elevated blood pressure reading without a diagnosis of hypertension (ICD-10 code R03.0) or Essential (primary) hypertension (ICD-10 code I10) is not

captured in provider documentation 100% of the time (M. Watson, personal communication, June 10, 2021).

Additionally, providers have variable comfort and knowledge levels about current guidelines for the treatment of primary and secondary hypertension. Shoulders and Powell recommend that NPs gain knowledge of the most recent guidelines and incorporate the recommendations into practice. Another need is for the NP to close the gap between research and practice (Shoulders & Powell, 2019). According to Shoulders and Powell (2019), "the lack of sufficient data related to the efficacy of nonpharmacological interventions and the limited evidence supporting innovative technologies are examples of topics where nurse practitioners are ideally suited to contribute to the existing body of evidence" (p. 108).

Since many instances of secondary causes remain undiagnosed, resistant hypertension might result. Segura et al. (2010) define resistant hypertension as "blood pressure that remains above goal in spite of the concurrent use of three antihypertensive agents of different classes. Ideally, one of the three agents should be a diuretic and all agents should be prescribed at optimal dose amounts" (p. 325). These authors further acknowledge that "the evaluation of patients with resistant hypertension should be directed toward confirming true treatment resistance, identifying the causes contributing to treatment resistance (including secondary causes of hypertension), and documenting target-organ damage" (Segura et al., 2010, p. 325). In many instances, secondary causes are not assessed and they go undiagnosed and untreated, increasing cardiovascular risk.

According to Segura et al. (2010) "although the exact prevalence is unknown, several studies indicate that resistant hypertension is a common clinical problem.

Presumably, the prognosis of patients with resistant hypertension is worse than that of patients with more easily controlled hypertension" (p. 325). Additionally, "the patients with resistant hypertension typically present with a longstanding history of poorly controlled hypertension and commonly have other associated cardiovascular risk factors" (Segura et al., 2010, p. 325). The Framingham hypertension study reported that 90% had achieved a diastolic blood pressure goal of less than 90 mm Hg, while only 49% were at a systolic blood pressure goal of less than 140 mm Hg (Segura et al., 2010). The Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) showed a similar difficulty in controlling systolic blood pressure, and in this trial only 67% of the participants achieved systolic blood pressure below 140 mm Hg, whereas 92% of participants achieved a goal diastolic blood pressure below 90 mm Hg (Segura et al., 2010).

About Stanley County

Stanley is a small town located in Gaston County, North Carolina. Stanley is home to about 3,550 residents and is growing with new development and residents moving into the area. There are four constituent neighborhoods with approximately 190,365 people living in Gaston County. Stanley is the 218th largest community in North Carolina. The town has a Council-Manager form of government and is made up of the mayor, a five-member council, and the Town Manager (Stanley, NC Official Website, n.d.). Council members are elected to a 4-year term. According to the World Population Review (2022) "the average household income in Stanley is $65,909 with a poverty rate of 7.48%. The median age in Stanley is 37.2 years, 34.8 years for males and 42.2 years for females" (p. 1). Table 1 provides information on racial characteristics of Stanley.

Whites make up the majority of the total population at 85% and Black/African Americans at 12.8% (World Population Review, 2022).

Table 1

Racial Characteristics of Stanley Co., NC

Race	Percentage of Total Population
White	85.00%
Black/African American	12.80%
Two or more races	2.20%

According to the World Population Review (202), 4.16% of the population in Stanley has less than a 9th-grade education, 7.81% have a 9th-12th grade education, 36.35% are high school graduates, and 25.80% have attended college. Of college graduates living in Stanley, 5.51% have an associate degree, 16.13% have a bachelor's degree, and 4.24% have a graduate degree (World Population Review, 2022).

Some services in Stanley are parks and recreation, police, fire and rescue, water, public works, and trash services. There are three public schools and one private school. Some county services are building inspectors and the geographic information system (GIS). Medical services include a free-standing emergency department, several urgent care, MinuteClinic, and several physicians and dental offices. There is one grocery store (Food Lion) and several fast-food restaurants.

Attitudes and Behaviors

Twenty-nine percent of people in Stanley County have been told by a healthcare provider they have HTN, 28% measure their blood pressure at home, 42% of people

check their cholesterol, and 21% have been told by a healthcare provider that their cholesterol was high (City-Data.com, 2021). In this author's experience, some patients presenting to the clinic do not know what medications they are taking, do not know past medical history, and do not monitor their blood pressure at home. Some people will stop taking medications without consulting with their primary care provider. Of those patients previously told their blood pressure was elevated, many do not monitor their BP at home or keep journals of their readings or follow up as instructed. Many patients fail to seek higher levels of care or establish care with a primary care provider due to perceptions of their health and healthcare or lack of insurance. Some are unwilling to make lifestyle modifications for better health.

PICOT Statement

- **P**opulation: Providers working in Region 38 in a retail health clinic setting in North Carolina.
- **I**ntervention: An educational offering on hypertension.
- **C**omparison: none
- **O**utcome: An increase in provider knowledge and confidence in hypertension standards of care.
- **T**imeframe: The pre-test, educational module, and post-test will be completed in 6-weeks.
- PICOT Statement: What is the effect of an educational offering on hypertension standards of care in enhancing knowledge and confidence for providers working in a retail health clinic setting in North Carolina Region 38, over a 6-week time frame?

Table 2 describes the sponsors and stakeholders for this DNP project. As you can see there are internal and external individuals and organizations that would have a vested interest in the outcome of this project. Those individuals listed in the internal column are higher in the hierarchy of the company and they have leadership and administrative oversight over those listed below them. Those listed in the external column have a vested interest in the safety, well-being, and quality of care that is provided to those seeking care services. The Federal Motor Carrier Safety Administration (FMCSA) provides oversight, testing, and certification for those providing exams for patients needing certification for Department of Transportation (DOT) certificates. The North Carolina Board of Nursing (NCBON), The American Academy of Nurse Practitioners (AANP), The American Nurses Credentialing Center (ANCC), and The National Commission for Certifying Agencies (NCCA) are accrediting bodies that provide licensing and/or certification for NPs and PAs and maintains practice and regulatory oversight to ensure patient safety and outcomes. All stakeholders (group or organization) have a stake in an issue or outcome and are identified as persons or entities who, one way or another, will be impacted by this DNP project (Zaccagnini & Pechacek, 2021). These stakeholders are not only affected by this work but they also have an interest in its outcomes.

Sponsors and Stakeholders

Table 2

Sponsors and Stakeholders

Internal	External
Chief Executive Officer (CEO)	Federal Motor Carrier Safety
Chief Financial Officer (CFO)	Administration

Internal	External
Senior Practice Manager (SPM)	North Carolina Board of Nursing
Regional Quality Leader (RQL)	American Academy of Nurse Practitioners
Family Nurse Practitioner (FNP)	American Nurses Credentialing Center
Physician Assistants (PA)	National Commission for Certifying Agencies
Registered Nurses	
Pharmacist	Insurers
Organizational IRB	Suppliers
License Practice Nurses	People in the community
Medical Assistants	Families in the community
Care Concierge	Health Departments
	University IRB
	Lab Corp
	Quest Diagnostics

Organizational Assessment

The organizational setting is a retail clinic located in Stanley, NC. The care and services provided are in accordance with and supported by guidelines that provide guidance to the diagnosis, diagnostic testing, treatment plans, prescriptions, as well as all other care services provided to those seeking care. The guidelines that are specific to the workup and treatment of hypertension provide a systematic approach to assessing blood pressure and managing HTN inclusive of screening for high blood pressure, assessing for cardiovascular risk, and monitoring and treating those with hypertension as well as other

acute and chronic healthcare services. The organizational culture promotes shared values and beliefs that are highly reflective of enhancing healthcare outcomes and patient well-being. The culture is supported by providers that have made a commitment to healthcare towards taking a leading role in learning and continued education in order to provide high-quality and evidence-based care to patients presenting to the clinic for their acute and chronic healthcare needs. These values are further established and supported by leaders and are communicated and reinforced through emails, conversations with other providers, collaborating physicians, training and education modules along with education forums, chart audits, and pharmacy support. These values support patients being active participants and taking an active role in their healthcare choices and decision-making processes. Patients are educated about the nature of their illness and measures they can take to improve health goals. Staff is supportive of and willing to help patients achieve their healthcare goals. The organizational values are consistent with the values of the project and the project leader: all care provided is focused on favorable outcomes for patients presenting to the clinic.

SWOT Analysis

A SWOT analysis was developed to assess the retail clinic setting for this project (Figure 1). Strengths include multiple convenient sites staffed with professionally trained and credentialed providers, online and walk-in appointments, most labs can be collected onsite, expanding healthcare services within the clinic, and patients can see a provider and get their prescription medication all at one location. Additional strengths for staff providers include peer support, access to a collaborating provider, and online training and educational modules. Weaknesses include a brief standardized time period allotted for

each patient visit, limited patient support and resources, lack of insurance for patients that are underinsured and cost of out-of-pocket services, limited continuity of care, many patients lack accountability and responsibility for their healthcare needs, treatment, and no convenient reliable source for referral follow up. Opportunities such as a patient referral program coordinator, and patient access to healthcare services within the community such as additional physician offices/clinics, recreational center, and a fresh food market. Identified threats involve, no public transportation services, no mental health/substance abuse programs, or nutritional assistance programs.

Identified strengths and opportunities will support the success of the project despite weaknesses and threats because all project goals and clinic goals are directed towards improving patient outcomes, education, and supporting patients on their journey to better health. The strengths and opportunities identified are properly aligned to provide the attention, care, and support necessary to make this project achievable and sustainable. While the weaknesses and threats can be modified and supported with additional ancillary services.

Figure 1

SWOT Analysis

Strengths	**Weaknesses**
• Peer support and access to a collaborating provider. • Patients can have their labs drawn on site. • Easy access to healthcare providers. • Multiple clinic sites are staffed with educated, trained,	• 20 minutes allotted to patient visits • Patients may not have aftercare support when supplies or equipment such as CPAP or other supplies are ordered, making them less likely to follow through, so there is no continuity of care • Patients lack accountability and responsibility for their healthcare

Strengths	Weaknesses
credentialed, and professional clinicians. • Most providers have extensive background experience in areas of critical care and emergency nursing. • Expanding healthcare services within the clinic. • Staff are educated, credentialed, and professional. • Education is provided by online educational modules and access is provided to Epocrates. • DNP Committee available to ensure staff.	needs and treatment, and no user-friendly and timely referral system or convenient reliable source for referral follow up. • Lack of insurance or underinsured. • Smart-sets do not specifically support or fully address evaluation and workup of secondary causes of hypertension. • Lack of continuity of healthcare providers. • Patients not being accountable for their healthcare needs and treatment. • No user-friendly and timely referral system or convenient reliable source for referral follow-up.
Opportunities	**Threats**
• Patient referral program/coordinator • Patient access to healthcare services within the community • Recreational center • Fresh food market	• No public transportation services • No community nutritional assistance programs • No community mental health/substance abuse programs • No Durable Medical Equipment Supplier in the community

Available Resources

Communication resources are readily available in the form of surveys, email, phone contact, text, and zoom meetings. Quality Improvement resources inside and outside of the organization include Dr. Gayle Casterline (faculty advisor), Melissa

Watson (Senior Practice Manager), Rachel Mineshima (Senior Practice Manager), Anne Pohnert (Quality Director), L'Anita Newby (Regional Quality Leader), Lindsey Ricci (Field Educator), other Providers (NPs/Physician's Assistants), and Dr. David Christopherson (Collaborating Physician).

Desired and Expected Outcomes

Consideration of desired and expected outcomes should be patient-specific and supported by evidenced-based guidelines and recommendations when exploring and discussing lifestyle modifications and antihypertensive drug therapy.

Ideal Characteristics of Drug Treatment

There are several things to consider prior to implementing drug therapy and to provide a focus on the prescriptive characteristics of drug treatment ideal for each individual.

- Treatments should be evidence-based in relation to morbidity/mortality prevention
- Use a once-daily regimen that provides 24-hour blood pressure control
- Treatment should be affordable and/or cost-effective relative to other agents
- Treatments should be well-tolerated
- Evidence of benefits of the use of medication in the population to which it is to be applied (Unger et al., 2020).

Evidence-based guidelines according to Shoulders and Powell (2019) acknowledge "the guidelines are intended to provide a comprehensive resource for clinicians, with the aim of improving outcomes through early detection and effective management of hypertension" (p. 102). The guidelines contain important information that

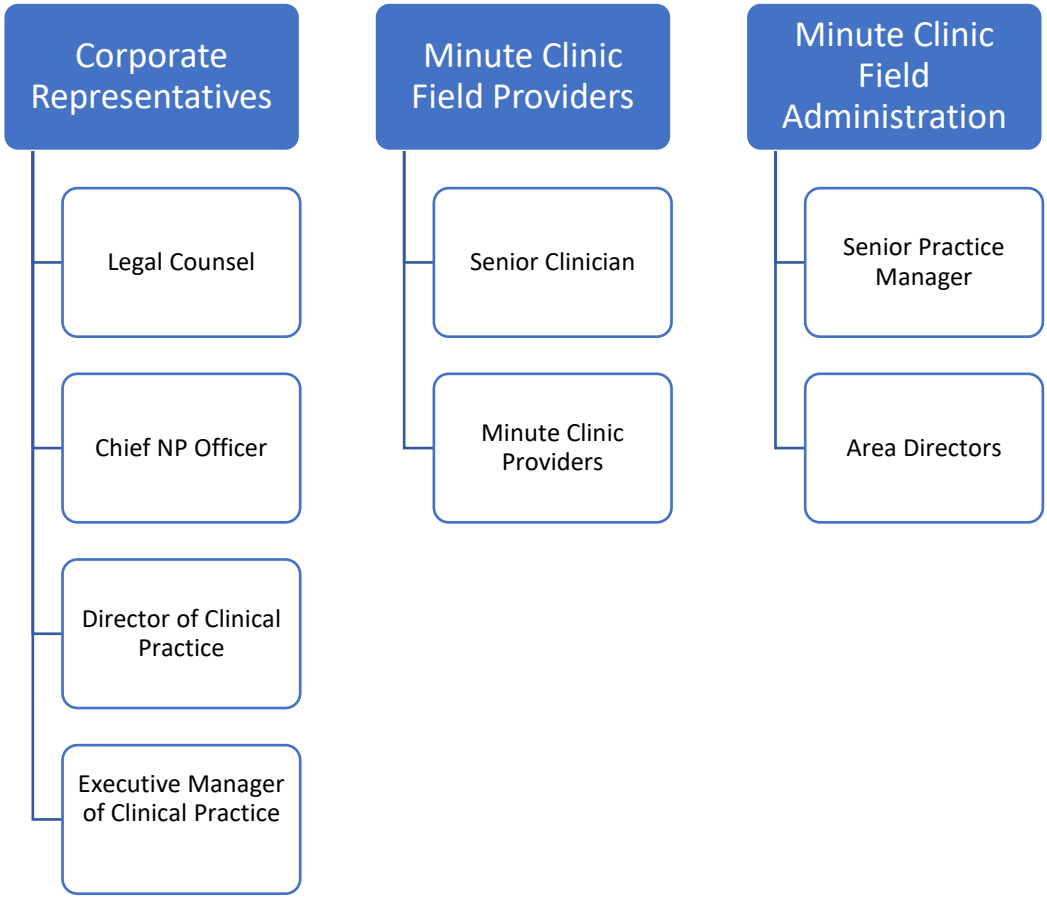
identifies new lower targets for diagnostic criteria for hypertension, also risk assessments that assist in determining the need for medical therapy, diagnostic and treatment algorithms, pharmacological and nonpharmacological therapies, details about accurate BP measurement, and a greater focus on team-based hypertensive care (Shoulders & Powell, 2019). Additionally, diagnostic and treatment goals should be aimed at verifying accurate blood pressure readings, screening for secondary causes along with stopping agents or any other substances such as nonsteroidal anti-inflammatory drugs (NSAIDs) that may contribute to elevated blood pressure, and finding and correcting any contributing lifestyle factors along with reducing pharmacological interventions (Shoulders & Powell, 2019). After an appropriate assessment, workup, and evaluation of secondary causes without any secondary findings, referral to a cardiology or a hypertensive specialist needs to be implemented if BP remains elevated despite maximally tolerated medically therapeutic interventions (Shoulders & Powell, 2019).

Team Selection

Figure 2 describes a Hierarchy list of the Retail Clinic Research and Project Committee Team. Actual names are not provided as some of the individuals in these positions can change and to keep from having to constantly update this information roles, not names, are provided (R. Mineshima, personal communication, August 25, 2021).

Figure 2

Retail Clinic Research and Project Committee



Cost/Benefit Analysis

Table 3 outlines the Cost/Benefit Analysis that provides identification of elements/items that have to do with the fixed cost, variable cost, expenses, potential revenue, and the projected balance and fiscal needs of this project.

Table 3

Cost/Benefit Analysis

Cost/Benefit Analysis	
Fixed Costs	Rental space in a store, administrative and personnel salaries, insurance, and malpractice insurance, IT support, and

Cost/Benefit Analysis	
	networking assistance
Variable Costs	Gloves, copy paper, exam tables, specimen supplies, program handouts/brochures/business cards, advertisement and community networking, part-time and PRN staff.
Expenses	Direct cost: wages and salaries of staff, medical and examination supplies Indirect cost: IT/Technology support, software, computer and printer supplies, language lines, rent for shared space, other clinic supplies, and equipment.
Potential Revenue	$500,000.00/year
Projected Balance & Fiscal Needs	$418,000.00
Fixed Cost: (Annual) – total	$51,200
Rent	$500.00
Clerical support	$500.00
Phone/Internet	$200.00
Insurance/Malpractice	$20,000.00
Personal wages and Salaries	$30,000.00
Variable Cost: (Annual) – total	$30,000.00
Office Supplies and Equipment	$10,000.00
Advertisement and Networking	$5,000.00
Part-time and PRN staff	$15,000.00
Expenses	$82,000.00

Cost/Benefit Analysis	
Potential Revenue	$500,000.00
Projected Balance & Fiscal Needs	$418,000.00

Scope of the Problem

According to Unger et al. (2020), "it is recommended that hypertension be diagnosed when a person's systolic blood pressure (SBP) in the office or clinic is ≥ 140 mm Hg and/or their diastolic blood pressure (DBP) is ≥ 90 mm Hg following repeated examination" (Section Two: Definition of Hypertension, p. 1336). A specific cause of secondary hypertension can be identified in 5% - 10% of hypertensive patients. The early diagnosis of secondary hypertension and the implementation of an appropriate targeted treatment plan has the potential to cure hypertension in some patients or enhance blood pressure control/reduce the quantity of prescription antihypertensive medications in others (Unger et al., 2020). Failure to properly diagnose and treat hypertension increases cardiovascular risk factors contributing to all-cause morbidity and mortality. Unger et al. (2020) state "raised BP remains the leading cause of death globally, accounting for 10.4 million deaths per year. When reviewing global figures, an estimated 1.39 billion people had hypertension in 2010" (Section One: Introduction – Motivation, p. 1335).

Mission Statement, Goals, and Objectives

The primary mission of this project was to provide timely, appropriate, and effective care to all patients presenting with symptoms of hypertension in the retail clinic setting. The goals of this project are to enhance the knowledge and confidence levels of providers to identify secondary hypertension through an educational intervention that

incorporates standard guidelines and a holistic evaluation and workup for patients presenting with or identified to be hypertensive. The outcomes are provider/caregiver-related, aimed at enhancing the knowledge and confidence of providers in the retail clinic setting caring for people diagnosed with primary and secondary hypertension.

Theoretical Underpinnings

Orem's Self-Care Deficit Theory of Nursing acknowledges that nursing is different from other disciplines and services because of its focus on human beings, and Orem viewed nursing as a practical science with both theoretical and practical knowledge (Zaccagnini & Pechacek, 2021). Orem's theory can be applied broadly to a variety of settings and, according to Zaccagnini and Pechacek (2021), "the broad applicability of her theory to a variety of situations and its focus on designing nursing care to meet clients' needs make the self-care deficit theory a useful theoretical base for the DNP's practice and research" (p. 17). Nursing agency is the focus of Orem's Self-Care Deficit Theory as it guides this DNP project. Orem (2001) defines nursing agency as "a conceptual element of self-care deficit nursing theory" and "is identified as the essential elements of the theory of nursing system" (p. 289). Additionally, Orem (2001) states "the theory of nursing system subsumes the theory of self-care deficit, and, with it, the theory of self-care" (p. 147). The theoretical concept of nursing agency is a combination of views that are a product of the abilities of nurses to intentionally engage with individuals who have an identified need for nursing care and services, and empowers nurses with the talent and skill to produce nursing for their patients and, when possible, with their patients (Orem, 2001).

According to Orem (2001) “the theory of nursing system establishes the structure and the content of nursing practice. It is the theory that articulates the nurse property of nursing agency with the patient properties of therapeutic self-care demand and self-care agency” (p. 147). Nursing agency and the central idea of this theory amplifies the general purpose of nursing which is to indemnify for or conquer a known or emerging health-derived or health-associated limitations of legitimate patients for self-care/dependent care, in other words, assist patients where their greatest needs have been identified (Orem, 2001). The nursing agency directly aligns with the general application of nursing actions, care, and other services rendered by nurses. Orem identifies a nursing agency as a set of developed and developing capabilities that allow nurses to carry out services to and for individuals and groups (Orem, 2001). The theory of nursing systems conceptualizes nursing agency, promoting actioned sequences by the nurse that contributes to the life, health, and well-being of patients (Orem, 2001). Nursing agency according to Orem (2001) is:

> a power developed by maturing or mature persons through specialized education, training of self to master the cognitive and practical operations of nursing practice, clinical experiences in nursing practice situations under the guidance of advanced nursing practitioners, and clinical nursing experiences in providing nursing to persons representing some range of types of nursing cases. (p. 289)

According to Hellqvist (2021) “long-term conditions, sometimes referred to as non-communicable diseases, largely affect the resources available in healthcare and are responsible for approximately 70% of all deaths worldwide” (p. 1). Healthcare providers give patients with chronic health conditions the resources they need to be active

participants in their own care and well-being (Hellqvist, 2021). There are times when major adjustments and adaptations will be necessary for the life of the individual impacted by a chronic health condition and ongoing and regular monitoring and contact with healthcare services will be required (Hellqvist, 2021). Hellqvist (2021) acknowledges that "strengthening patients' abilities for self-care actions is the main goal of nursing care according to Dorothea Orem´s Self-care Deficit Theory. The theory has clear specifications for the nurse and patient roles in order to enhance self-care" (p. 2). Hellqvist (2021) acknowledges that "the self-care deficit theory is partly concerned with the more philosophical underlying assumptions of nursing, but above all, it is an action-theory intended to be used in clinical work" (p. 2). Moreover, Orem's well-known theory of nursing is based on the assumption that all nursing interventions should be directed towards strengthening the patients' ability to carry out their own self-management activities in order to manage their own self-care as necessary to maintain life, health, and well-being (Hellqvist, 2021).

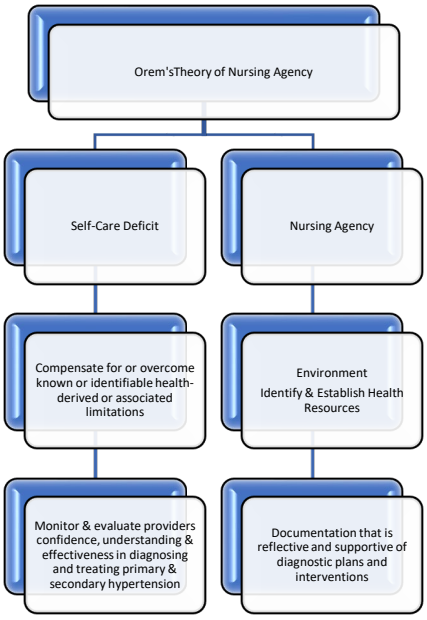
Some patients stand ready with little to no convincing, whereas for others it is not so easy. According to Hellqvist (2021) "every encounter will differ from another due to the characteristics that each person brings to the encounter, i.e., personality, previous experiences, emotional state, educational level, ability to relate to other persons, the specific needs and wishes of the participants" (p. 8). The Self-Care Deficit Theory and the concept of Nursing Agency support each patient's chronic health care needs and goals. Hellqvist (2021) acknowledges "the theory clearly specifies the aim of all nursing care is to help and support patients to develop the abilities needed to manage self-care independently in order to promote and preserve life, health and well-being" (p. 8).

Understanding the concept of nursing agency enhances the education and professional acquired skill-set of nurses and further allows nurses the ability to better understand and apply knowledge of disease etiology and pathology, expertise in consultation and patient education, the ability to understand each individual's emotions, and better direct their ability to provide nursing support.

The Conceptual-Theoretical-Empirical (C-T-E) model illustrated in Figure 3 identifies Orem's Self-Care Deficit Theory as the theoretical underpinning for this DNP project. Within this model are three theories (Theory of Self-Care, Theory of Self-Care Deficit, and Theory of Nursing System) that provide the directional, foundational, and holistic components of the Nursing Agency. The nursing agency not only gives support that has to do with the identity and specifics of the roles of nursing, but it also promotes the patient and care partner as being active participants contributing to improved health outcomes.

Figure 3

Orem's Theory of Nursing Agency



Hellqvist (2021) states that according to Orem, “an encounter in a health care setting always includes the meeting of three unique persons but in their situation-specific roles as nurse, patient, and care partner. The three persons all have their specific reasons for entering into the encounter” (p. 9). The main goal of the nurse agency is to provide care to support self-management abilities. The patient and care partner seek information and advice on how to manage self-care demands brought on by the chronic disease (Hellqvist, 2021). The health care agency stands to support and acknowledge that everyone needs to perform activities of self-care in many areas of life to maintain life and health (Hellqvist, 2021). Responsibilities of the person/client have to do with seeking self-care activities that can potentially impact total health in positive ways, directly and indirectly. Ongoing monitoring and evaluation ensure and support lifestyle changes and medication adherence. The environment is connected to the individual and supports the formation of integrated and interactive resources that is supportive of health and well-being. The model is supportive of monitoring and evaluating community resources in order to assist patients to make choices that support optimal health.

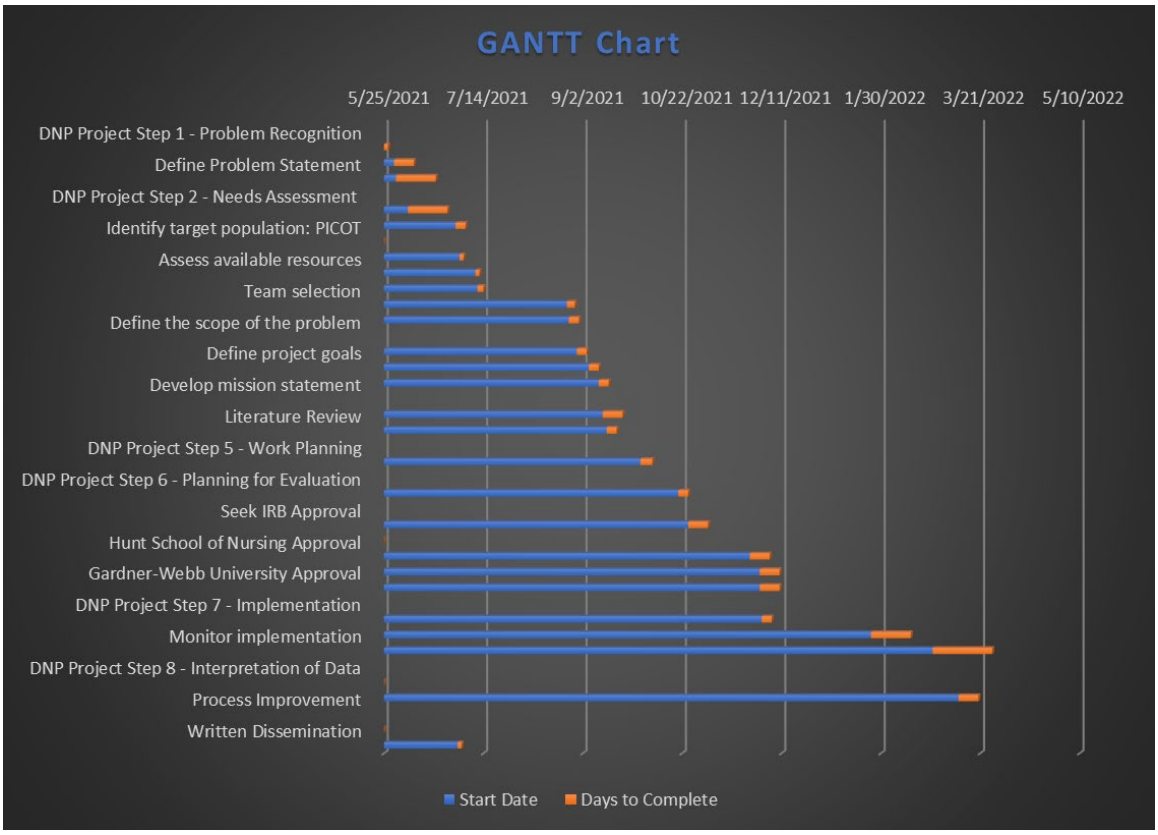
Project Planning

A GANTT chart was developed to provide an approximate timeline of this DNP project from start to completion (Figure 4). This chart is intended to assist with the planning and scheduling of this DNP project and helps to assess how long the project should take, determine the needed resources, and plan the order in which each task will be completed.

Processes with attention provided towards goals that are specific to the needs of each patient. A timeline specific to each deadline for each milestone and goal will be 6 weeks with a varying degree of flexibility for unexpected adjustments.

Figure 4

GANTT Chart



Sampling Frame and Setting

The sampling frame is 40 Nurse Practitioners and Physician Assistants employed at CVS Minute Clinic in Region 38, North Carolina. Region 38 consists of clinics located in Cabarrus/Rowan (Kannapolis & Harrisburg), Catawba (Hickory), Cleveland (Shelby), Gaston (Gastonia & Stanley), Iredell (Turnersburg & Mooresville), Lincoln (Lincolnton), and Mecklenburg (Davidson, Rocky River, Huntersville, Mallard Creek, & Poplar Tent) counties. The project leader is employed as a Family Nurse Practitioner within the

Minute Clinic retail setting. The providers that choose to participate in this project are work peers but the project leader has no managerial or administrative responsibility or accountability to them.

Project Method

The project design is descriptive. The purpose of this DNP project was to provide education to all health care providers in the retail clinic setting in order to enhance their knowledge and confidence in identifying and treating primary and secondary hypertension. A PowerPoint presentation was developed by the project leader on guidelines for the diagnosis and treatment of primary and secondary hypertension (independent variable). Quantitative data were collected by means of pre and post-surveys to measure provider knowledge and confidence level (dependent variables).

The outcomes are provider/caregiver-related with all goals and objectives aimed toward enhancing the knowledge and confidence of providers in the retail clinic setting and determining if an educational tool regarding primary and secondary hypertension helps to increase providers' confidence in the treatment and management of hypertension. Building the knowledge and confidence of all care providers will benefit patients that are hypertensive and prevent all-cause morbidity and mortality and provide greater opportunities for treatment by knowledgeable providers. Using an audiovisual educational tool to deliver enhanced education and guidance that is structured around Joint National Committee for Hypertension (JNC) and American Heart Association (AHA), the project leader hopes to increase the knowledge and confidence of all retail clinic providers.

Independent Variable

A 30-slide PowerPoint presentation with voiceover was used to provide educational information about hypertension in the retail clinic setting. The educational program was developed using current literature on evidence-based guidelines and practices. Guidelines and standards for the diagnosis and treatment of hypertension were incorporated from sources such as the American College of Cardiology (ACC), the American Heart Association (AHA), the American College of Physicians (ACP), the American Academy of Family Physicians (AAFP) (2022), the European Society of Cardiology (ESC), the European Society of Hypertension (ESH), the Centers for Disease Control and Prevention (CDC), and the World Health Organization (WHO).

Dependent Variables

The Hypertensive pre-survey was developed by the project leader. Questions used for the pre-survey were obtained from an article by Chen et al. (2013) and StatPearls. StatPearls granted the project leader full access to the StatPearls test bank which was explored for test content material relevant to hypertension. SpringerNature granted permission, along with instructions, to use content from a study published by Chen et al. (2013). The researchers surveyed 147 general practitioners in five community hospitals in China about their knowledge of hypertension guidelines. The questions were developed from the China Hypertension Guide (Liu, 2020). Chen et al. (2013) stated, “content validity was evaluated by six experts, including one professor and five senior physicians with expertise in general practice. Content validity indices (CVI) of Section G and Section C were 0.967 and 0.974, respectively” (p. 3). There was no mention of reliability in the study. After a careful review of questions from both sources, a selection was made

based on questions that were appropriate to the assessment and care of hypertensive patients presenting to the retail clinic setting.

StatPearls started as an academic teaching project in 2014 and later became the largest library of medical education worldwide (StatPearls, 2021). According to StatPearls (2021) "our mission is to use data and analytics to create the largest, most comprehensive, and continuously updated library of peer-reviewed medical content for the benefit of practitioners globally" (p. 1). More than 7,600 medical authors and editors have published over 8,500 peer-reviewed PubMed-indexed articles that cover every healthcare specialty (StatPearls, 2021). The activities of StatPearls are approved by American Medical Association and all of their activity is reported to CE Broker and all states as required (StatPearls, 2021).

The hypertensive pre-survey used for the project consists of 19 questions (Appendix). Section A has 15 questions assessing general knowledge about hypertension. Questions in this section are multiple choice and some questions allow more than one answer. Section B has four questions assessing education and training needs and confidence. Questions in this section have yes/no choices and some multiple choice with the option to make multiple selections.

The hypertension post-survey consists of 26 questions. Section A has 15 questions assessing general knowledge about hypertension. Questions in this section are multiple choice and some questions allow more than one answer. Section B has 11 questions assessing knowledge, confidence, education and training needs, and barriers impacting care and workup of hypertension. Questions in this section have yes/no choices and some multiple choices with the option to make multiple selections.

Parts A of both the pre- and post-survey have the same questions, however, part B of both surveys is slightly different. Part B of the pre-survey contains a total of four questions, three address lifestyle and blood pressure and one concerns provider level of confidence in diagnosing, treating, and managing patients with hypertension. Part B of the post-survey contains these four and 11 additional questions (Appendix, Section B); questions address health education, training needs, and confidence.

The pre and post-surveys were built and hosted through Qualtrics secure software. Data were anonymous and confidential. No protected health information (PHI) was used in this project. The surveys developed for this project have content validity, but no reliability at this time. The data plan was to analyze using sums, percentages, averages, and independent t-tests on aggregate means.

Implementation Process

The DNP project leader will be given email access to the sampling frame of 40 Nurse Practitioners and Physician Assistants employed at CVS Minute Clinic in Region 38, North Carolina. The providers will receive an informed consent letter, explaining the purpose, the process, and the timeline for the project. All participation is voluntary. Providers will choose to participate, choose to withdraw at any time, or decline participation altogether by deleting the email. Those providers consenting to participate are asked to click on the enclosed pre-survey and complete it anonymously. The pre-survey remained open for 2 weeks. A reminder was sent out after 1 week. Participants had the option to hear the educational offering and not complete surveys.

Once the pre-survey closed, another email was sent with a link to a PowerPoint presentation (independent variable) providing education about primary and secondary

hypertension designed by the DNP project leader, and a link to the post-survey. After 2 weeks, the same email with a link to the educational PowerPoint presentation and post-survey was sent again as a reminder email. The links to the educational offering and the post-survey remained available to providers for 4 weeks. A PowerPoint presentation with narration was chosen for this quality improvement project as most educational resources provided by CVS Minute Clinic are in the form of a narrated PowerPoint presentation or video.

The methodology was descriptive. Quantitative data were collected by means of pre-and post-surveys to measure provider knowledge and confidence level (dependent variables) in the diagnosis and treatment of primary and secondary hypertension. All data were stored on a personal computer and the website hosting the surveys, both of which are password protected. The personal computer is locked in the home office of the project leader, who is the only one with access to the computer. Only the project leader and the faculty advisor have access to the original data collected.

Implementation

Following project approval by Gardner-Webb-University IRB and CVS Minute Clinic DNP Board, the project leader implemented the project. Over the first 2 weeks, period nine providers completed the pre-survey. There was no way to document the number of providers viewing the educational offering, however, only one post-survey was completed following the 4-week viewing period.

Threats and Barriers

Factors that may have influenced provider participation include additional responsibilities during the project period due to increasing COVID-19 rates, increased

workloads due to staffing shortages and increased call activation, and other job-related educational requirements with mandatory completion dates. Providers often work alone without additional nursing staff. High-volume clinic sites typically have two providers, however, often do not have additional nursing staff to assist with Paxlovid drug therapy follow-up, patient follow-up for lab results, and routine clinic tasks such as checking and ordering supplies, point of care testing, and responding to daily emails. These are all potential barriers to making an impact on providers participating in the pre-survey, educational offering, and post-survey.

Interpretation of Data

Nine providers (22.5% response rate) completed the pre-survey. Six questions in the pre-survey tested providers' knowledge about the diagnosis and related factors contributing to the diagnosis of hypertension. Four questions were related to treatment, one question about a referral, and five were about community management. There are three questions in section B about the health education and training needs of providers (Appendix).

Question two addressed knowledge about the diagnosis of hypertension and 73% of providers completing the question did not correctly identify with the risk stratification at the time of diagnosis. Question four also addressed diagnostic risk; only 50% of providers correctly identified high-risk stratification for a person with high blood pressure and three prognostic risk factors: smoking, obesity, and dyslipidemia. Question six involves hypertension treatment and control standards impacting blood pressure reduction. Eighty percent of providers did not identify correctly that the blood pressure of elderly patients (age ≥ 65 years) with hypertension should be reduced to below

150/90mmHg. Only 40% of providers correctly identified a need for referral for patients following up at a community health station who have great blood pressure fluctuations or combined multiple risk factors whose clinical treatment is difficult

Question number 20 is a case study having to do with community management and the vascular involved mechanism of hypertension and the impact the renal artery can have on blood pressure, the correct answer was only identified by 50% of providers. Another case study (question 22) involves the medication management of a patient having symptoms of a medication-on-medication interaction. Only 38% of providers correctly identified to discontinue Simvastatin.

Section B addressed health education and training needs. All of the providers answering the pre-survey felt that changing unhealthy lifestyles helps to control blood pressure and all answered yes to consciously conducting health education for patients with hypertension in their daily work. Providers agreed that health education will change the lifestyles of patients with hypertension *to some extent* (66.67%) and *definitely* (33.33%). In response to the question addressing confidence in the diagnosis, treatment, and management of patients with hypertension, 33% of providers answering the question reported feeling *moderately confident*, while 67% of providers reported feeling *somewhat confident.* There was not enough post-survey data collected to determine if the educational offering influenced a change in the knowledge levels or confidence levels of providers in the retail clinic setting. Figure 5.

Figure 5

Pre-Survey Responses

Diagnosis

➢ **Which of the following is correct about the diagnosis of hypertension?**	
Correct Answer	**Percent correct**
(E). At the same time as diagnosing hypertension, the risk should be stratified according to patient's blood pressure levels, existing risk factors, target organ damage, and combined clinical disorders.	27%
➢ **Which of the following is correct about detecting patients with hypertension in communities? *(You can choose more than one answer.)***	
(A). At all levels of medical institutions, blood pressure should be measured at the first visit of patients over age 35 years.	22%
(B). For populations susceptible to hypertension (BP 130-139/85-89 mmHg, obesity, etc.), it is recommended that blood pressure should be measured every six months.	22%
(C). A variety of public places should be used to measure blood pressure, including elderly activity stations, clinics at institutions, and blood pressure measuring stations.	28%
(D). Make plans to measure the blood pressure of all adults in the community, and blood pressure of adults with normal blood pressure should be measured at least once every 2 years.	6%
(E). Place semi-automatic or automatic electronic blood pressure monitors at a variety of public places to facilitate the public's self-measurement of blood pressure.	22%
➢ **For a patient with hypertension whose blood pressure is 165/95 mmHg, the correct risk stratification should be __ if he/she has three prognostic risk factors: smoking, obesity, and dyslipidemia**	
(C) High risk	50%
➢ **For the blood pressure measuring procedure, which of the following descriptions is incorrect? (*You can choose more than one answer*.)**	
(B) The subject rests for at least 2 minutes before the measurement, and the subject is in a sitting position during measurement while keeping quiet and relaxed.	21%

(D) During auscultation, systolic blood pressure is when the first Korotkoff sound is heard and the diastolic blood pressure is when the fourth Korotkoff sound is heard.	7%
➢ **The main goal of hypertension treatment is to reduce the blood pressure to certain standards. Which of the following blood pressure control standards is correct?**	
(B) The blood pressure of elderly patients (age ≥65 years) with hypertension should be reduced to below 150/90mmHg.	20%
➢ **Nondrug treatment for hypertensive patient includes ___. (You can choose more than one answer.)**	
(A) Weight loss; body mass index (BMI) should be controlled to <24 kg/m2	18%
(B) Regular exercise, which is generally low or moderate intensity exercise, 3 to 5 times a week, 30 minutes per time.	22%
(C) Reduce sodium intake; the daily sodium intake should not exceed 6 grams.	18%
(D) Smoking cessation and limiting alcohol consumption; daily alcohol consumption should not exceed the amount equal to 50 grams of ethanol.	22%

Treatment

➢ **Among the following principles of hypertension drug treatment, which is correct?**	
Answer	**Percent correct**
(D) Following the principle of individualized treatment, choose appropriate antihypertensive drugs according to the specific circumstances of each patient.	57%
➢ **Contraindications of angiotensin II receptor blocker (ARB) include: ___ (You can choose more than one answer.)**	
(C) Pregnancy	45%
(D) Hyperkalemia	18%

(E) Bilateral renal artery stenosis	18%
➢ **Which of the following combination regimens of antihypertensive drugs is inappropriate?**	
(C) ACEI and ARB	83%

Referral

➢ **Which one is correct among the following referral criteria for patients with hypertension who are followed up at community health stations?**	
(E) Patients with great blood pressure fluctuations or combined multiple risk factors whose clinical treatment is difficult.	40%

Community Management

➢ **A 20-year-old female presents to the office due to recurrent headaches. She has had headaches for years, but they have recently gotten worse. She has a history of intractable hypertension which has not improved even after using several antihypertensive medications. The headaches last for several hours but remit spontaneously. Her blood pressure is 170/100 mmHg, pulse 80 beats per minute, and respiratory rate is 16 breaths per minute. Which of the following vessels is most likely involved in the mechanism of her hypertension? (Stat Pearls)**	
Answer	**Percent correct**
(C) Renal artery	50%
You have a middle-aged patient with diabetes and recently diagnosed hypertension, who was started on ramipril about a month ago. Which of the following is true about the medication class of which ramipril is a member? (Stat Pearls)	

(C) It has the potential to cause angioedema	33%
➢ **A 72-year-old woman presents for follow-up after recent hospital admission for significantly elevated blood pressure. She reports fatigue, flu-like symptoms, muscle pain, and difficulty sleeping due to nocturnal cramping. Her symptoms started soon after hospital discharge and have worsened over the last three days. She has a past medical history of chronic obstructive pulmonary disease (COPD), hypothyroidism, hyperlipidemia, and newly diagnosed hypertension. She has documented allergies to latex, codeine, ACEIs, and ARBs. Her medications include tiotropium, levothyroxine, simvastatin, and verapamil. What is the best next step in managing this patient? (Stat Pearls)**	
(B) Discontinue simvastatin	38%
➢ **A 73-year-old man presents to the clinic for a routine visit. His medical history is significant for essential hypertension with adequate treatment with hydrochlorothiazide and gastroesophageal reflux disease treated with omeprazole. His vital signs show a blood pressure of 152/87 mmHg. Which of the following best explains the mechanism of failure of vessel wall relaxation responsible for this patient's increased blood pressure? (Stat Pearls)**	
(B) Increased superoxides and reactive oxygen species in the endothelium	17%
➢ **An 80-year-old man presents to the clinic for a follow-up regarding his uncontrolled hypertension. He has tried a wide range of antihypertensive medications, including losartan, propranolol, hydrochlorothiazide, amlodipine, and hydralazine, but his blood pressure is still uncontrolled. His clinician adds an adrenergic uptake inhibitor to help with his blood pressure. Which of the following best describes the patient's diagnosis? (Stat Pearls)**	
(B) Refractory hypertension	83%

B. Health Education and Training Needs Assessment

➢ **Do you think that changing unhealthy lifestyles helps to control blood pressure? (Chen et al., 2013)**

□ Yes □ No

100% of providers answered yes

- **Do you consciously conduct health education for patients with hypertension in your daily work? (Chen et al., 2013)**

□ Yes □ No

100% of providers answered yes

- **Do you think that health education will change the lifestyle of patients with hypertension? (Chen et al., 2013)**

Responses	**Percent**
(A) Yes, definitely	33% of providers
(B) Yes, to some extent	67% of providers
(C) No	0% of providers

- **How confident are you with the diagnosis, treatment, and management of patients with hypertension?**

Responses	**Percent**
(A) Extremely confident	0%
(B) Moderately confident	33% of providers
(C) Somewhat confident	67% of providers
(D) Not confident at all	0%

Discussion

The results of the pre-survey show knowledge deficits in many areas having to do with diagnosis, treatment, referral, and community management of patients with hypertension. The current literature supports the pre-survey findings that providers are not familiar with current guidelines for the evaluation and workup of hypertension, and is not comprehensive or inclusive of the evaluation and workup of secondary hypertension. According to Shoulders and Powell (2019) "the real-life application of the hypertension guidelines presents a challenge for nurse practitioners, in terms of the ability to achieve lower targets, when BP goals were not being met with the previous higher targets" (p. 108). Freihage et al. (2008) acknowledges "secondary causes of hypertension should be investigated due to the potential for cure" (p. 787). In this sample, providers are not completely confident with the care and management of patients with hypertension. This was also validated in research by Chen et al. (2013) who acknowledged that "the average accuracy rate of hypertension prevention knowledge was 49.2%, ranging from 10.5% to 94.7%" (p. 1).

In addition, Chen et al. (2013) stated that "continuing hypertension education is urgently needed to ensure that physicians in general practice are aware of and adhere to the national hypertension prevention guidelines" (p. 1). Furthermore, Chen et al. (2013) acknowledged that "goals to increase general practitioners' awareness of the Guide, to carry out hypertension education, prevention and control in the communities and to improve hypertension awareness, treatment, and control rates in hypertensive patients remain difficult tasks to accomplish nationwide" (p. 2). Chen et al. (2013) stated, "in the United States, guidelines are provided through continuing medical education and are

shown to influence provider practice patterns and patient outcomes, serving as a cost-effective strategy for prevention" (p. 2).

Theoretical Framework

The findings of this project are congruent with Orem's concept of nursing agency. A nursing agency is understood as a power that may be developed through specialized education and clinical experience (Orem, 2001). It is the nurse's responsibility to help the patient to compensate for or overcome health-associated deficits. A nursing agency is analogous to a self-care agency in that a nursing agency is developed for the benefit of others and a self-care agency is developed for one's personal self-care. This project shows the importance of the knowledge of hypertension standards and guidelines in providing quality diagnosis and treatment for persons seeking care at a community retail clinic.

Orem's Theory allows the focus and the design of nursing care to be devoted to meeting clients' needs making the self-care deficit theory a useful theoretical base for this DNP project (Zaccagnini & Pechacek, 2021). Those providers who answered the question about lifestyle changes felt that it was important to provide patients with education in order to enhance the lifestyles of patients with hypertension. The nursing agency identifies a self-care deficit in order to support the patient's chronic health care needs and goals. Understanding the concept of nursing agency also allows for the enhancement of education and professionally acquired skills for the nurse. Increased knowledge and clinical experience may improve nurse confidence levels.

Conclusion

Lessons Learned

This author has learned that quality improvement begins with a detailed plan and a strategy for collaborating with key stakeholders. There should have been more focus and emphasis on the planning and developmental phases of the project. The plan could have encouraged greater participation from the providers. The sample could have been extended to a neighboring region. More providers might have participated if an incentive had been offered. Likewise, a shorter survey or a shorter educational program might have been more congruent with the providers' limited time constraints.

The role of the DNP project leader was a great learning opportunity. The experience has taught this author much about personal growth and professional development. This author has learned the essential elements of networking in order to build a team that promotes the mission, goals, and objectives for a major quality improvement project. This experience has promoted networking opportunities outside of the author's normal comfort zone, in seeking permission to use copyrighted materials and author-owned content. This DNP leader has had to collaborate and plan around the schedule of others to find time and space to come together to work towards the development of such an extensive project. In addition, the author has learned about the Institutional Review Board (IRB) process and how to complete an IRB application. This author has experienced significant professional growth and leadership skills while learning to effectively communicate with other project team members in order to design and implement a project which enhances the knowledge and confidence of other

providers of care. This author will use the steps in the project model to improve clinical processes in the future.

This author has become more personally and professionally knowledgeable about how theoretical concepts directly guide clinical nursing practice. Specifically, this author has a deeper appreciation of Orem's theories and how they can be applied to the project design and implementation of improvements in the future. The DNP education experienced at Gardner-Webb University has broadened this author's view of nursing practice and nursing leadership and has offered a firm grounding in the AACN DNP Essentials.

Implications for Practice

According to Shoulders and Powell (2019), "the guidelines are intended to provide a comprehensive resource for clinicians, with the aim of improving outcomes through early detection and effective management of hypertension" (p. 102). Only a small percentage of clinicians completed the surveys in this project and it is not known how many viewed the educational video. It would improve nursing agency if providers had at least an hour in the clinic setting for administration time, as this would allow time for essential tasks and for educational programs to be completed outside of the patient appointment schedule. If administration time is not an option, then new policies allowing reimbursed access to the organization's education platform would improve provider knowledge and confidence.

Future Recommendations

Recommendations for sustaining the education as part of continuing education would be to divide the educational offering into two 30 minutes presentations instead of

60 minutes. This education can further be sustained by policy changes that are reflective, comprehensive, user-friendly, and supportive of current cardiology guidelines. There is a need to promote current standards and guidelines for hypertension care for retail setting providers.

Summary

In conclusion, the project revealed that providers have knowledge deficits regarding current standards and guidelines for the diagnosis and long-term treatment of hypertension, including the evaluation and workup of secondary hypertension. If a nursing agency is to be promoted, additional resources are needed for the comprehensive education of nurse practitioners and physician assistants working in retail clinic settings providing quality hypertensive care to the community. The pre-survey results conducted in the project support the need for comprehensive education and the use of best practice standards to improve the knowledge and confidence of providers of patients with hypertension seeking care in the retail clinic setting.

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Appendix

Hypertensive Pre-Survey

Section A

1. Which of the following is correct about the diagnosis of hypertension? (Chen et al., 2013)

(A). For patients without the use of any antihypertensive drugs, hypertension can be diagnosed if two measurements on different days show systolic blood pressure > 140 mmHg and/or diastolic blood pressure > 90 mmHg.

(B). Systolic blood pressure > 140 mmHg and diastolic blood pressure ≤ 90 mmHg is isolated systolic hypertension.

(C). Systolic blood pressure <140 mmHg and diastolic blood pressure > 90 mmHg is isolated diastolic hypertension.

(D). When grading hypertension, if the patient's systolic and diastolic blood pressure belongs to different grades, a lower grade should be selected.

(E). At the same time as diagnosing hypertension, the risk should be stratified according to patient's blood pressure levels, existing risk factors, target organ damage, and combined clinical disorders.

2. Which of the following is correct about detecting patients with hypertension in communities? *(You can choose more than one answer.)* (Chen et al., 2013)

(A.) At all levels of medical institutions, blood pressure should be measured at the first visit of patients over age 35 years.

(B.) For populations susceptible to hypertension (BP 130-139/85-89 mmHg, obesity, etc.), it is recommended that blood pressure should be measured every six months.

(C.) A variety of public places should be used to measure blood pressure, including elderly activity stations, clinics at institutions and blood pressure measuring stations.

(D.) Make plans to measure the blood pressure of all adults in the community, and blood pressure of adults with normal blood pressure should be measured at least once every 2 years.

(E.) Place semi-automatic or automatic electronic blood pressure monitors at a variety of public places to facilitate the public's self-measurement of blood pressure.

3. For a patient with hypertension whose blood pressure is 165/95 mmHg, the correct risk stratification should be __ if he/she has three prognostic risk factors: smoking, obesity, and dyslipidemia? (Chen et al., 2013)

(A) Low risk

(B) Moderate risk

(C) High risk

(D) Very high risk

(E) Cannot be determined

4. For the blood pressure measuring procedure, which of the following descriptions is incorrect? (*You can choose more than one answer*.) (Chen et al., 2013)

(A) A mercury sphygmomanometer or an upper arm electronic blood pressure monitor that complies with international standards should be used.

(B) The subject rests for at least 2 minutes before the measurement, and the subject is in a sitting position during measurement while keeping quiet and relaxed.

(C) The cuff wraps the upper arm evenly and the lower edge is 2 to 3 cm above the cubital fossa and at the same level as the heart.

(D) During auscultation, systolic blood pressure is when the first Korotkoff sound is heard and the diastolic blood pressure is when the fourth Korotkoff sound is heard.

(E) The time interval between two blood pressure measurements is 1 to 2 minutes.

5. The main goal of hypertension treatment is to reduce the blood pressure to certain standards. Which of the following blood pressure control standards is correct? (Chen et al., 2013)

(A) The blood pressure of the average patient with hypertension should be reduced to below 130/80mmHg.

(B) The blood pressure of elderly patients (age ≥65 years) with hypertension should be reduced to below 150/90mmHg.

(C) The blood pressure of patients with diabetes, cerebrovascular disease, and chronic kidney disease should be reduced to below 140/90mmHg.

(D) Blood pressure of patients with all grades of hypertension should reach the control standard within 1 to 2 weeks, and long-term blood pressure control should be achieved.

(E) Patients with coronary heart disease or elderly patients (age >65 years) require attention when the diastolic blood pressure is lower than 50mmHg

6. Nondrug treatment for hypertensive patient includes ___. (*You can choose more than one answer*.) (Chen et al., 2013)

(A) Weight loss; body mass index (BMI) should be controlled to <24 kg/m^2

(B) Regular exercise, which is generally low or moderate intensity exercise, 3 to 5 times a week, 30 minutes per time.

(C) Reduce sodium intake; the daily sodium intake should not exceed 6 grams.

(D) Smoking cessation and limiting alcohol consumption; daily alcohol consumption should not exceed the amount equal to 50 grams of ethanol.

(E) Reduce fat intake; the energy provided by dietary fat should be less than 40% of the total calories consumed.

7. Among the following principles of hypertension drug treatment, which is correct? (Chen et al., 2013)

(A) Start the treatment from a smaller effective dose, gradually increase the dose or add combined drugs; the goal is to lower the blood pressure to the standard within 1 to 2 weeks.

(B) Intermediate- or short-acting drugs are recommended to lower the blood pressure as soon as possible to prevent target organ damage.

(C) Try to apply only one drug to avoid the adverse effects of antihypertensive drugs.

(D) Following the principle of individualized treatment, choose appropriate antihypertensive drugs according to the specific circumstances of each patient.

(E) Diuretics are preferred in elderly hypertensive patients

8. Contraindications of angiotensin II receptor blocker (ARB) include: ___ (*You can choose more than one answer*.) (Chen et al., 2013)

(A) Congestive heart failure

(B) Tachyarrhythmias

(C) Pregnancy

(D) Hyperkalemia

(E) Bilateral renal artery stenosis

9. Which of the following combination regimens of antihypertensive drugs is inappropriate? (Chen et al., 2013)

(A) Calcium antagonists and angiotensin-converting enzyme inhibitors (ACEI) or ARB

(B) Small dose of diuretic and ACEI or ARB

(C) ACEI and ARB

(D) Dihydropyridine calcium antagonists and small doses of beta blockers

(E) Calcium antagonists and small doses of diuretics

10. Which one is correct among the following referral criteria for patients with hypertension who are followed up at community health stations? (Chen et al, 2013)

(A) The treatment regimen was followed for 2-3 weeks, but the blood pressure did not reach the goal.

(B) Patients with stable blood pressure control who experience an increase in blood pressure

(C) Patients who experience adverse reactions after administration of antihypertensive drugs

(D) Patient requires referral to higher level hospitals

(E) Patients with great blood pressure fluctuations or combined multiple risk factors whose clinical treatment is difficult

11. A 20-year-old female presents to the office due to recurrent headaches. She has had headaches for years, but they have recently gotten worse. She has a history of intractable hypertension which has not improved even after using several antihypertensive medications. The headaches last for several hours but remit spontaneously. Her blood pressure is 170/100 mmHg, pulse 80 beats per minute, and respiratory rate is 16 breaths per minute. Which of the following vessels is most likely involved in the mechanism of her hypertension? (Stat Pearls, 2021)

(A) Carotid artery

(B) Descending aorta

(C) Renal artery

(D) Coronary artery

12. An 80-year-old man presents to the clinic for a follow-up regarding his uncontrolled hypertension. He has tried a wide range of antihypertensive medications, including losartan, propranolol, hydrochlorothiazide, amlodipine, and hydralazine, but his blood pressure is still uncontrolled. His clinician adds an adrenergic uptake inhibitor to help with his blood pressure. Which of the following best describes the patient's diagnosis? (Stat Pearls, 2021)

(A) Orthostatic hypertension

(B) Refractory hypertension

(C) Secondary hypertension

(D) Hypertensive emergency

13. A 73-year-old man presents to the clinic for a routine visit. His medical history is significant for essential hypertension with adequate treatment with hydrochlorothiazide and gastroesophageal reflux disease treated with omeprazole. His vital signs show a blood pressure of 152/87 mmHg. Which of the following best explains the mechanism of failure of vessel wall relaxation responsible for this patient's increased blood pressure? (Stat Pearls, 2021)

(A) Lower concentration of angiotensin II

(B) Increased superoxides and reactive oxygen species in the endothelium

(C) Increased nitric oxide in the endothelium

(D) Decreased endothelin-1

14. A 72-year-old woman presents for follow-up after recent hospital admission for significantly elevated blood pressure. She reports fatigue, flu-like symptoms, muscle pain, and difficulty sleeping due to nocturnal cramping. Her symptoms started soon after hospital discharge and have worsened over the last three days. She has a past medical history of chronic obstructive pulmonary disease (COPD), hypothyroidism, hyperlipidemia, and newly diagnosed hypertension. She has documented allergies to latex, codeine, ACEIs, and ARBs. Her medications include tiotropium, levothyroxine, simvastatin, and verapamil. What is the best next step in managing this patient? (Stat Pearls, 2021)

(A) Discontinue verapamil

(B) Discontinue simvastatin

(C) Increase levothyroxine dose

(D) Recommend acetaminophen, hydration, and rest

15. You have a middle-aged patient with diabetes and recently diagnosed hypertension, who was started on ramipril about a month ago. Which of the following is true about the medication class of which ramipril is a member? (Stat Pearls, 2021)

(A) It is more effective at controlling hypertension than agents in the angiotensin- receptor Neprilysin inhibitors class

(B) It does not cause a chronic cough

(C) It has the potential to cause angioedema *

(D) It only reduces mortality in patients who have low ejection fraction without coronary artery disease

2. You have a middle-aged patient with diabetes and recently diagnosed hypertension, who was started on ramipril about a month ago. Which of the

following is true about the medication class of which ramipril is a member? (Stat Pearls, 2021)

(E) It is more effective at controlling hypertension than agents in the angiotensin- receptor Neprilysin inhibitors class

(F) It does not cause a chronic cough

(G) It has the potential to cause angioedema *

(H) It only reduces mortality in patients who have low ejection fraction without coronary artery disease

Section B: Health Education and Training Needs Assessment

1. Do you think that changing unhealthy lifestyles helps to control blood pressure? (Chen et al., 2013)

□ Yes □ No

2. Do you consciously conduct health education for patients with hypertension in your daily work? (Chen et al., 2013)

□Yes □No

3. What is the difficulty in providing health education during clinical practice to patients with hypertension? (*You can choose more than one answer*.) (Chen et al., 2013)

(A) Lack of relevant educational knowledge

(B) Poor compliance of patients

(C) Lack of behavioral medicine techniques

(D) Patients' visits do not allow long enough time

(E) Other

4. Do you think that health education will change the lifestyle of patients with hypertension? (Chen et al., 2013)

(A) Yes, definitely

(B) Yes, to some extent

(C) No

5. How much medical consultation time did you spend on providing health education to patients with hypertension? (Chen et al., 2013)

(A) 3/4 or more

(B) 1/2

(C) 1/3

(D) 1/4

(E) Lesser or 0

6. Have you received any training courses on hypertension prevention and control knowledge? (Chen et al., 2013)

□ Yes □ No

7. Would you like to attend training courses on hypertension prevention regularly? (Chen et al., 2013)

□ Yes □ No

8. What is the most appropriate frequency of related training course (Chen et al., 2013)?

(A) Weekly

(B) Bi-weekly

(C) Monthly

(D) Once every 2 ~ 3 months

(E) Don't need training course

9. What topics should be covered in the related training course? (*You can choose more than one answer*.) (Chen et al., 2013)

(A) Diagnosis and evaluation of hypertension

(B) Medical treatment of hypertension

(C) Education for hypertensive patients (including non-medication treatment)

(D) Management of hypertensive patients in community

(E) Two-way referral of hypertensive patients

(F) Treatment for patients with complications/comorbidity

(G) Other

10. What kind of format(s) should be used in the related training course? (*You can choose more than* one *answer*.) (Chen et al., 2013)

(A) Expert lectures

(B) On-site guidance

(C) Case Study

(D) Community workshop

(E) Other

11. How confident are you with the diagnosis, treatment, and management of patients with hypertension?

(A) Extremely confident

(B) Moderately confident

(C) Somewhat confident

(D) Not confident at all