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Creating a Clinical Practice Guideline for Patients with Uncontrolled Hypertension

Nar'Cissa McDonald
Walden University

Walden University

College of Nursing

This is to certify that the doctoral study by

Nar'Cissa McDonald

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

Review Committee
Dr. Anna Hubbard, Committee Chairperson, Nursing Faculty
Dr. Tanya Cohn, Committee Member, Nursing Faculty
Dr. Susan Fowler, University Reviewer, Nursing Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

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Abstract

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MSN, Walden University, 2018

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Project Submitted in Partial Fulfillment

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Abstract

Cardiovascular disease is the leading cause of death globally, with hypertension (HTN) the primary causal factor. The nursing professions' role as a critical agent in facilitating the management of patients should be based on best practices. No specific standard exists in the United States for nurses despite the publication of Clinical Practice Guidelines (CPGs) on HTN for adults. A gap in practice was identified in an outpatient primary care clinic located on the Gulf Coast of Mississippi, as there is no comprehensive CPG for nurses to provide patients with complete HTN diagnosis and management care. A literature review revealed that clinical CPGs could improve patient outcomes by initiating combination therapy with antihypertensive medications. This project attempted to answer the practice-focused question: "Can the creation of a Clinical Practice Guideline for uncontrolled hypertension in adults lead to better patient outcomes?" Health promotion and disease prevention underpin the central concepts guiding this project. Six nurses participated in the creation of the CPG. The CPG was then created using the Appraisal of Guidelines Research and Evaluation tool evaluating three sources of evidence. This project can impact social change as utilization of an evidence-based CPG can lead to better HTN management.

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Section 1: Nature of the Project

Cardiovascular disease (CVD) has been globally recognized as the leading cause of death, reaching 17.3 million fatal cases per year, with the annual mortality rate expected to exceed 23 million by 2030 (Zhou et al., 2018). Hypertension (HTN) proves the significant risk of CVD development; it is defined as the level of systolic blood pressure (SBP) exceeding 140 mmHg, while the diastolic blood pressure level equals or exceeds 90 mmHg (Merai et al., 2016). People taking blood pressure reduction medications is because of their diagnosis of having HTN. With HTN recently recognized as a global health concern, this adds to the epidemiological and economic burden it causes.

The World Health Organization (WHO; 2019) experts reported that over 1.13 billion people globally have HTN and rated it as the number-one cause of premature death globally. Every year, 10.4 million people die because of increased blood pressure (BP; Unger et al., 2020). The situation is exacerbated by patients' ignorance about the disease resulting in low rates of HTN diagnosis and medical treatment interventions across the globe (Arredondo & Recaman, 2018).

Based on the Centers for Disease Control and Prevention (CDC; 2012) estimate, more than 36 million adults in the United States have uncontrolled BP despite active health insurance and regular physician visits. Such a dramatic lack of BP control thus leads to the elevated risk of CVD development among patients suffering from HTN. With HTN officially recognized as the leading risk factor for CVD and stroke, it affects almost one-third of the US population aged over 18 years old, approximately 75 million people.

In nearly half of the population with HTN, the condition is uncontrolled, resulting in a total population of 35 million people living with uncontrolled HTN (Merai et al., 2016).

The problem of HTN is much more severe than HTN, given the plurality of effective HTN treatment methods available to patients today. HTN, in turn, remains a primary significant health concern in the US because of the growing number of patients with uncontrolled BP, either unaware of the potential health risks of their health condition or even ignorant of having this health problem (Liu et al., 2017). According to the 2016 findings of CDC experts, around one-third of US citizens with hypertension do not know about their health issue (11.5 million people, approximately around 20% of those learning about their condition but not controlling it, and almost a half of the population with HTN (16.1 million persons) trying to control their HTN with inadequately prescribed medications that do not work (Merai et al., 2016).

HTN has profound health implications for patients in the form of increased morbidity and mortality. Besides, the rising ratio of patients with HTN in the United States causes an elevated economic burden, with $49 billion spent every year on direct and indirect medical expenses of patients with HTN in the uncontrolled state. Notably, 77% of all persons suffering a first-time stroke in the US every year have HTN, with a significant share of that population either unaware of their condition or controlling HTN poorly (Merai et al., 2016). This evidence is in line with Lee and Park's (2017) findings of the positive impact of self-care behaviors on the HTN hindered by a low rate of patients' engagement in such behaviors, especially among patients of an older age.

Evidence suggests that missed opportunities to detect and control HTN arise at the individual, care provider, and health care system levels. Millions of Americans do not recognize their HTN because they have no symptoms, thus living for years with HTN. Others who know about their HTN diagnosis find it challenging to follow a complex medication regime and undertake far-reaching diet and lifestyle changes, thus causing the exacerbation of their HTN and transferring into the HTN state (Merai et al., 2016). Most of these issues remain unaddressed because of insufficient attention to the medical practitioners' side, ignoring public education about the importance of blood control.

To address these problems, the WHO launched the Global Hearts Initiative (HEARTS) in collaboration with the US CDC in 2016. This global initiative aims to aid national governments in implementing effective measures to diagnose, manage, and prevent the spectrum of CVDs. Five critical aspects of the HEARTS initiative comprise healthy lifestyle counseling, evidence-based treatment protocols, increasing patients' access to CVD medications and therapies, team-based care, and the development of comprehensive monitoring systems (WHO, 2019).

These suggestions provide a sound foundation for nurses' increased role in delivering effective CVD prevention and management services to the US population. However, there is no comprehensive clinical practice guideline (CPG) for nurses to provide patients with complete HTN diagnosis and management care in an outpatient primary care clinic located on the Gulf Coast of Mississippi. This project can impact social change as an evidence-based CPG to address HTN can lead to better patient outcomes. First, the CPG can help with the early detection of HTN. This will involve

moving HTN from a medical issue only handled at the fatal stages of a patient's life to becoming an intervention preventative medical practice for helping address any problems that may come with HTN in persons prone to the condition.

CPGs are defined as recommendations for optimizing patient care, informed by the systematic evidence review and harm/benefit assessment of all existing treatment alternatives (Graham et al., 2011). Therefore, the need arises to develop comprehensive nursing CPGs to delineate their clear roles in HTN diagnosis, management, and prevention.

Problem Statement

As of Fall 2020, there was no unified CPG for HTN management for nurses in an outpatient primary care clinic located on the Gulf Coast of Mississippi. Lee et al. (2015) interviewed healthcare professionals on using HTN CPGs and discovered that healthcare professionals experienced numerous barriers to CPG adherence and felt confused about CPG use variation. As a result, only primary care doctors were the main CPG users, while nurses and policymakers were found not to use CPGs at all. The respondents of Lee et al. (2015) commented that CPGs had been developed with doctors in mind, which resulted in a lack of other healthcare workers' involvement. Thus, nurses' path towards greater adoption of HTN CPGs makes them simple, reliable, accessible, and inclusive for all healthcare stakeholders.

This project holds significance for nursing practice because, to date, there are several published CPGs for HTN in the US, with no single primary CPG identified for the nationwide adoption and compliance. The American College of Cardiology,

American Heart Association, and other societies developed the guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults in 2017. The International Society of Hypertension (ISH) also developed worldwide practice guidelines for managing HTN in adults to address the rising public health burden of HTN. Their policies are evidence-based and can serve as the basis for clinicians, nurses, and community health workers (Unger et al., 2020). The 2014 Clinical Practice Guidelines for the Management of Hypertension in the Community, created by ISH in collaboration with the American Society of Hypertension, have also helped improve HTN management practices in many countries, including the United States. This CPG is primarily meant to serve as community guidance for self-care and lifestyle improvement. However, they may still become a critical component of nursing CPGs for HTN management as well.

Purpose Statement

The gap in nursing practice is that HTN opens the floodgates for many severe medical conditions if left untreated. Controlling BP can improve the quality of life for many people, particularly the older populations. The purpose of this project was to create a nursing CPG for patients with uncontrolled TN using the evidence-based practice for an outpatient primary care clinic located on the Gulf Coast of Mississippi.

This project aimed to create a CPG for nurses that would allow them to treat patients with HTN more effectively by educating on proper blood pressure checks and medication management. The nursing CPG for diagnosis and management of HTN was based on the current evidence-based practice review to provide nurses with a universal

toolkit for managing the population's needs with HTN. According to the Institute for Quality and Efficiency in Health Care (2005), "'Clinical Practice Guidelines' (CPGs) are recommendations on how to diagnose and treat a medical condition. They are mainly written for doctors, but also nurses and other health care professionals" (Windeler & Lange, 2016, p. 68. This project attempted to answer the following practice-focused question "Can the creation of a Clinical Practice Guideline for uncontrolled hypertension lead to better patient outcomes?" By creating a CPG using evidence-based practice, I addressed the gap in practice by taking a step towards delivering safe, high-quality care for every patient via proven, consistent processes.

Nature of the Doctoral Project

The doctoral project was planned to be undertaken in two phases. Primary and secondary data were used (secondary data will serve as the basis for Phase 1 of the project, while Phase 2 will involve primary data collection from the clinic's staff). Phase 1 involves speaking with colleagues and nurses to get their input on how successful they think the project can improve patient outcomes.

The project's first phase developed a systematic literature review from HTN diagnosis, management, and prevention practices worldwide. This grading of recommendations, assessment, development, and evaluations (GRADE) is arguably the most widely used method for systematic reviews and guidelines appraising studies. Referencing Siemeiniuk and Guyatt (2021), GRADE has described this as a transparent framework for developing and presenting evidence summaries through a systematic approach for creating clinical practice recommendations. This grading system tool has

been widely adopted because of its outcomes in the quality of evidence (Siemeiniuk & Guyatt, 2021).

This grading tool for the systematic literature review required first deciding the clinical question (Siemeiniuk & Guyatt, 2021). This process includes the target population the question applies to and two or more alternative questions (Siemeiniuk & Guyatt, 2021). Aims of the review designate what is mattering the most to the decision-makers. In contrast, this systematic review thus provides the best estimation of the size of the effect for each outcome in terms of absolute risk difference (Siemeiniuk & Guyatt, 2021).

Rating the quality of evidence is next with determining and applying the best to each outcome (Siemeiniuk & Guyatt, 2021). This is because variations occur in the quality of evidence between the results (Siemeiniuk & Guyatt, 2021). Consequently, the overall rating of the GRADE tool quality provides an application to a body of evidence that goes across outcomes and typically takes the lowest rate of evidence from the total results designated critical to decision making (Siemeiniuk & Guyatt, 2021).

The GRADE tool consists of four levels of certainty in evidence and the quality of evidence measuring—very low, low, moderate, and high (Siemeiniuk & Guyatt, 2021). The high quality of evidence is literature providing evidence from randomized controlled trials due to the residual confounding it reveals, while observational data as evidence grades at a low rate (Siemeinuiuk & Guyatt, 2021). In developing a systematic literature review, increasing or decreasing the certainty of evidence entails specifics that include

publication bias, indirectness, inconsistency, imprecision, and risk of bias (Siemeiniuk & Guyatt, 2021).

The resulting literature review's findings were organized using GRADE and offered for the team I assembled at the practice setting, an outpatient care clinic, for assessment and evaluation. This stage constituted the second phase of the project involving the ranking of literature in terms of significance and applicability in the clinical settings, coupled with a narrative account of their perceptions of the CPGs' potential value. I held an in-depth interview with each of the six colleagues in the practice setting to elicit their opinions about what literature from the review should be included in the nursing CPGs and which ones should be skipped. Their rationale for inclusion and noninclusion of specific practices was also requested.

The final version of HTN management CPGs for nurses was produced based on the synthesis of clinical evidence reviews and expert opinions on its findings. The resulting CPGs were submitted for broader expert review with a clearly outlined path for their adoption in the nursing practice.

Significance

This doctoral project possesses considerable practical and theoretical significance for the management of HTN in the United States. In terms of theoretical value, this project sought to bring together many different methods and best practices that have evolved over the past few years to control HTN. CPGs are always a result of a rigorous, systematic inquiry into the available clinical evidence worldwide. Thus, the formulation of CPGs based on the current clinical findings, practices, and methods can become an

effective bridge between HTN management theory and practice. This project supported the mission of Walden University that the Doctor of Nursing Practice (DNP) student promote positive social change in the community.

In practical terms, the CPG can improve the current practices on the early detection of HTN. As Hoesing (2016) pointed out, CPGs are one of the primary tools available today to improve healthcare value, including its quality and cost. CPGs form the basis for evidence-based medical practice, transforming theoretical findings into impactful patient care. Besides, well-formulated CPGs can support the development of high-quality metrics for medical staff's performance, which improves healthcare providers' accountability. Thus, the newly developed comprehensive CPGs for HTN can transform HTN from a global lethal health danger into a manageable healthcare issue that is detected early and effectively managed with preventive medical practices.

Finally, the CPG can form a model transferred to other clinical settings, and this can be used across many different medical facilities. For instance, the 2014 American Society of Hypertension's (ASH) CPGs provides extensive coverage of HTN epidemiology, definition, and classification of HTN, its causes, steps for patient evaluation and diagnosis, physical examination, tests, HTN treatment goals, and a set of pharmacologic and nonpharmacologic HTN treatment methods, including treatment-resistant HTN (Weber et al., 2014).

However, HTN management guidelines tend to change, and nurses must stay tuned to the latest changes in HTN classification, diagnosis, and management recommendations to provide up-to-date, effective healthcare. For instance, the 2017 joint

CPGs of the American Heart Association (AHA) has reduced the official diagnosis of HTN from 140/90 mmHg to 130/80 mmHg for any patient with an elevated risk of heart attack or stroke, which poses specific changes to the diagnosis of HTN and expands the HTN population from 72 to 103 million people only in the US (Schwartzbard et al., 2018). Thus, it is always vital for the medical personnel to stay updated about the recent research and clinical practice in their relevant area to follow the most current clinical guidelines for proper patient care and disease management. The formulation of HTN guidelines for nurses is thus expected to improve the current nursing practice by giving a consistent set of diagnostic criteria, procedures, and preventive and curative measures for comprehensive HTN management.

Summary

CVD is the leading cause of death globally, and HTN is a significant risk factor for CVD development. About one-third of hypertensive patients live with uncontrolled HTN for various reasons. Given the rising mortality and morbidity associated with HTN, medical professionals should be more proactive in early HTN diagnosis and HTN prevention. These preventive measures can improve healthcare outcomes and quality of life for patients with HTN suffering from debilitating symptoms and not knowing the cause of their health problems.

With multiple initiatives developed globally for boosting public education about HTN and HTN consequences and dangers, nurses should assume a more proactive role in the HTN diagnosis and management. However, there are no unified CPGs for nurses on HTN, causing confusion and practice heterogeneity across clinical settings. This section

sought to develop CPGs for HTN management while explaining different evidence-based resources that are utilized. The upcoming quarter will define the layout of theories and their relevance to nursing.

Section 2: Background and Context

The present section lays the theoretical foundation for this project. I present the relevant concepts, models, and theories informing the project's approach to show the theoretical framework and sources of the project's design. The practical section then explains the project's relevance to nursing practice. The local background and the project's context are also presented, with proper detailing of the DNP student's role and the role of the project team in it.

Concepts, Models, and Theories

The vital guiding concepts of this project were those of health promotion and disease prevention. The overarching goal of health promotion is to shift the modern healthcare system's focus from the medical treatment model to holistic disease prevention. Following the health promotion model, healthcare professionals should intervene early, at the stage when the disease has not yet developed, instead of treating the existing malfunctions. Health promotion priorities formulated in the 1979 United Nations report include smoking, hypertension, alcohol and drug abuse, poor nutrition, and a lack of regular physical exercise (Lundy & Janes, 2003).

The concept of health promotion and disease prevention has become increasingly important to nursing practice because it changes how health care and services are viewed, considering broader influences on patient health. The fundamentals of good nursing practice are providing patient-centered care, attending to patients' individual needs and using strong communication skills, and their involvement in healthcare decisions. Thus, competent nurses should be able to identify patient's needs for specific health promotion

activities based on their health status, to include those health promotion initiatives into the care plan, and to choose health promotion materials based on the patients' needs, capacity, and individual preferences (Stanhope & Lancaster, 2019). In such a way, nurses become an instrument in preventative healthcare, detect the early symptoms of developing the disease, provide community education about risk factors and lifestyle risks exacerbating their health, and provide health promotion activities to address those risks.

Regarding thisproject of designing a CPG for effective HTN management by nurses, I chose the levels of prevention model of nursing to inform the study's approach. Leavell and Clark proposed this model in 1975 to highlight the continuum of disease and differentiate three preventive care levels at which the disease can be curbed early before it causes serious harm to the person's health (Stanhope & Lancaster, 2019). The model distinguishes primordial prevention (the one provided at the stage of risk factor emergence, when the disease has not yet developed), primary prevention (actions taken before the onset of disease, blocking its development), secondary prevention (steps that hinder the disease's progression and minimize its complications), and tertiary prevention (measures are taken to limit the growth of impairment or disability resulting from the disease's complications) (VanDerHeyden et al., 2015).

Secondary and tertiary prevention measures belong to the domain of clinical practice. They are much more expensive and less effective for human health than primordial and primary prevention activities are. Based on the levels of prevention model, the best and most effective management of public health problems occurs in the

early stages of its development. Thus, the model is applied to inform the development of nursing CPGs for HTN diagnosis and management to curb the progression of HTN as early as possible to improve the patients' health outcomes, quality of life, life duration, at the same time reducing the cost of medical care the progressive HTN management in clinical settings may involve.

Relevance to Nursing Practice

The need for efficient CPGs for HTN management by nurses is supported by numerous studies' findings underlining the significance of proper HTN management for better patient outcomes. As of 2015, there were 114 CPGs for HTN, which can create inevitable confusion among nurses. Thus, the existence of consistent CPGs meant specifically for nurses can provide them with clear guidelines about HTN epidemiology, risk factors to be considered during patient examination, types of lab tests that may point at HTN, and proper ways of managing the identified HTN. Besides, clearer and more systematic knowledge about HTN's effects on the patients' health may help nurses provide more consistent public education to increase their awareness about this health problem. For instance, Frias et al. (2017) pointed out that HTN and Type 2 diabetes are the top modifiable risk factors for cardiac, cerebrovascular, and kidney diseases, with significant nonadherence, causes related to medication nonadherence and low patient engagement. Besides, Ahuja et al. (2018) discovered that while patients with HTN were aware of CVD risks, such as heart attacks, heart failure, and stroke, they were less informed about the contribution of HTN to the development of kidney disease and dementia.

To conduct preventive HTN care and provide public education on the dangers of unattended HTN, nurses should possess current evidence-based clinical data about the HTN effects and lifestyle impacts on the development of HTN. For instance, Liu et al. (2017) identified a strong relationship between smoking and HTN, with varied strength of that relationship depending on the respondents' race. Cutler (2016) pointed out the need for all patients to control BP and emphasized the need for nurses to communicate the importance of healthy weight maintenance, keeping to a healthy diet, and regular physical exercise as the most effective lifestyle-related ways of preventing HTN.

For adequate HTN management with patients diagnosed with this health problem, nurses should possess a good knowledge base about technologies and pharmacological/nonpharmacological practices currently available. For example, Margolis et al. (2020) recommended the use of home BP telemonitoring and pharmacist management for HTN. One of the most recent HTN drug therapies is the fixed-dose triple-drug combination (a renin-angiotensin system blocker, a diuretic, and a calcium channel blocker) recommended by Thomopoulos et al. (2018). For resistant HTN, Dudenbostel and Calhoun (2016) suggested using aldosterone antagonists, such as spironolactone. Nurses cannot prescribe medications to patients with HTN but distinguishing the treatment plans is vital for verifying patient compliance, which can be done with urine analysis interpretation (Pucci & Martin, 2017).

Local Background and Context

The setting for this project was an outpatient primary care clinic located on the Gulf Coast of Mississippi. At the time of writing (Fall 2020), there was no unified CPG

for HTN management for nurses in this setting. In addition, the healthcare providers were not using the latest evidence-based practice guidelines when prescribing medications for HTN. This setting primarily serves the underserved population while accepting major private and state insurances, including Medicaid, Medicare, Blue Cross Blue Shield, Cigna, etc. The clinic is attended by 17 to 40 patients daily. Patients are serviced by four medical professionals, including one Internal Medicine doctor and three Family Nurse Practitioners in a Federally Qualified Health Center (FQHC). The faculty of the clinic supported the project and confirmed participation in it.

Role of the DNP Student

My role, as a DNP student, in the project was manifold. In Phase 1 of the project, I collected the current clinical evidence on the HTN diagnosis and management practices globally and analyzed that data to provide a systematic literature review for data organization and credibility rating. In Phase 2 of the project, I served as the data collection instrument, following the basic principles of stake holder's perspective, by collecting the interview data from colleagues in the outpatient clinic. At the project's implementation stage, I acted as a change agent by disseminating their findings among the concerned staff and as a practice change implementor in their clinical nursing practice. After the CPG development in the discussed clinical setting, I acted as the practice change evaluator by collecting first-hand impressions of the staff and analyzing the HTN metrics and staff performance within the given period.

Summary

The theoretical foundation of this project was formed by the nursing concepts of health promotion and disease prevention. The guiding nursing model that informed the development of nursing CPGs for HTN management is the levels of prevention model. There are several potentially significant directions in which nurses can conduct proactive HTN management with patients: diagnosis based on patient examination and tests, increased patient awareness about HTN consequences, and detection of patients' nonadherence to the medical regimen based on their lab test results. To perform the diagnostic functions effectively, nurses should be adequately trained in lab test interpretation. My role was varied throughout this project, ranging from secondary data analyst to a data collection instrument, practice change agent, and postimplementation impact assessor. The project's implementation occurred in an outpatient primary care clinic located on the Gulf Coast of Mississippi. This section described how the CPG was outlined, including stakeholders, location, and community served. The upcoming section adresses the evidence as it is analyzed and how it supports the practice-focused question.

Section 3: Collection and Analysis of Evidence

This section presents a detailed review of the project that was applied in the project. I formulated the practice-focused question for the project, stipulating the sources of evidence on which it was answered. A detailed explanation of the origins of evidence collected, evidence analysis, and the synthesis of obtained findings is provided.

Practice-Focused Question(s)

The gap in nursing practice is that HTN opens the floodgates for many serious medical conditions if left untreated. Controlling BP can improve the quality of life for many people, particularly the older populations. The purpose of this project was to create a CPG for advance nurse practitioners treating adults with uncontrolled HTN using the evidence-based practice for an outpatient primary care clinic located on the Gulf Coast of Mississippi. Based on the analyzed evidence of the future improvement of patient's health outcomes, quality of life, and satisfaction with healthcare services in case of better HTN management, I developed the following practice-focused question: Can the creation for a Clinical Practice Guideline for uncontrolled hypertension lead to better patient outcomes?"

Sources of Evidence

The choice of evidence sources was determined by the nature of a CPG, which is a series of recommendations produced based on recent clinical and research evidence review and expert opinion of this clinical field's representatives (Windeler & Lange, 2016). Therefore, to deliver a rigorous, evidence-based CPG, I derived the data for its formulation from primary and secondary data sources. The secondary data source was a

literature review of recently published research about patients' HTN diagnosis, management, and prevention. I took an in-depth look into global practices in this clinical field to identify various methods and determine their clinical effectiveness.

Based on the literature review findings, further narrowing down of the clinical guidelines occurred based on the interviews with the outpatient clinic's staff. The six staff members commented on the literature review findings, assessed the effectiveness of each HTN management measure, and proposed which measures should be included in the CPG protocol.

Literature review findings and expert opinion on HTN management measures' efficiency used GRADE to produce a homogeneous set of recommendations for the clinical practice improvement. It is expected that based on the combination of secondary and primary data, I arrived at a complete, evidence-based, and expert-approved step-by-step plan and set of guidelines to assist nurses in the comprehensive, preventive HTN management.

Analysis and Synthesis

Since the project's primary method was a literature review, the respective data analysis method was applied. The review process involved developing a literature search strategy by formulating the studies' inclusion/exclusion criteria. In the project, I utilized the following inclusion criteria:

- Research related to HTN and HTN in patients of different ages and population groups.

- Studies reporting real-life practice outcomes and the impact of practices on patient quality of life, satisfaction, and health outcomes.
- Research published within the past 10 years.
- Research published in academic peer-reviewed journals.
- Research published in English.

Articles were collected from the medical research databases ProQuest, CINAHL, PubMed, with duplicate articles removed at the initial analysis stage. The remaining pieces were screened by titles and then by abstracts to weed out the irrelevant studies. The remaining articles were evaluated for quality with the help GRADE checklist, with low-quality publications and those not corresponding to the search strategy in terms of population, methods, or research subject excluded from the dataset.

After the initial assessment, all articles were reviewed for evidence of efficient HTN practices and assessment tools with proven clinical results. The findings were organized in a table to show the review outcome and single out the most effective practices on which six participants reached a consensus. The list of identified practices with relevant implementation details was presented to the outpatient clinic's staff in a survey where I asked them to rank each recognized practice by the ease of performance and perceived efficiency. At the end of the study, I asked the clinic's staff to comment on the survey and indicate why certain practices are helpful or useless to HTN management's improvement.

Summary

Sources of evidence include secondary data (systematic review of existing clinical research on HTN diagnosis, prevention, and management) and primary data (expert opinions on the identified practices and their perceived effectiveness). Based on the findings from the stages, I formulated the final CPG version to recommend it for adoption in the nursing practice.

This section explored all the evidence that was presented to create the CPG. The evidence supported the expected outcome if the guideline is followed as indicated. The upcoming section will focus on the products and what can be done for improvement.

Section 4: Findings and Recommendations

This section provides an overview of the project findings. Given the obtained data, I completed the results to show how they are reported in the final project report. The section also highlights the project's anticipated strengths and limitations and the recommendations for nursing practice based on the project's findings.

Findings and Implications

The project's first stage involved reviewing existing published research on various approaches and practices for HTN diagnosis and treatment. The sources' selection was based on such criteria as the year of publication, the English language of the publication, clinical research, and the focus on the GRADE tool for study quality analysis. The results of this analysis are shown in Appendix A. I reviewed three articles, each with its objective yet reflecting the ultimate aim of this paper. Petrak et al. (2016) analyze the clinical use of different types of combination therapy in a sample of patients with uncontrolled hypertension; Booth et al. (2019) estimated the percentage of US adults meeting criteria for out-of-clinic BP monitoring; whereas Mazza et al. (2017) compared the efficacy of a fixed-dose triple combination (FDTC) of antihypertensive drugs with that of an unrestricted variety of three antihypertensives in patients with HTN. All had one thing in common: determining the most effective treatment for the patients with an exceptional condition (Appendix A).

Besides the literature review data, I also introduced the AGREE tool to retrieve raw data for analysis from face-to-face interviews in a questionnaire survey. The total sample of nurses participating in the clinical practice rating was six. They are staff at the

current outpatient primary care clinic where I practice. The nurses were asked to rank the identified practices from 3 to 1, with three meaning highest importance using a peer interview conducted by myself and the preceptor. Three clinical practices were ranked in the perceived importance assigned to each CP in their approach with uncontrolled HTN in patients. We determined the mentioned clinical practices as shown in the table by what we see daily and how we can improve what is already being done.

Table 1

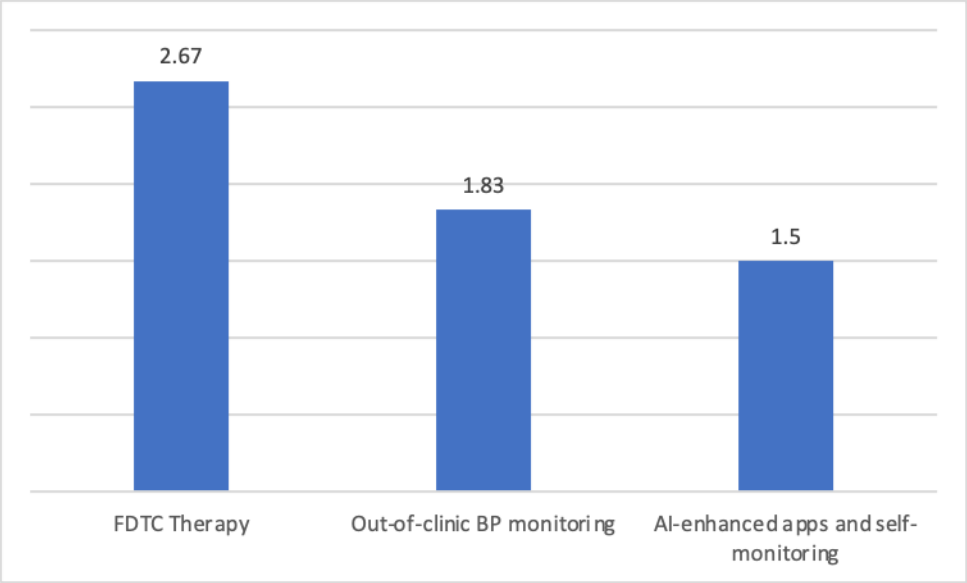
Identified Clinical Practice Rating

	Nurse 1	Nurse 2	Nurse 3	Nurse 4	Nurse 5	Nurse 6	Mean rating
FDTC therapy	3	2	2	3	3	3	2.67
Out-of-clinic BP monitoring	2	3	1	2	1	2	1.83
AI-enhanced apps and self-monitoring	1	1	3	1	2	1	1.5

The hierarchy of rated CPGs from the Clinical Practice test can be viewed in Figure 1 below and the last graph in Appendix B.

Figure 1

Clinical Practice Ratings



One also utilized the AGREE tool (Attached in Appendix B) to shed more light on the question at hand. The AGREE tool has 23 items from which a Likert Scale is used to analyze how much the evaluator agrees with the statements (Joshi et al., 2015). The evaluation results for the itemized elements in the tool are summarized in the table below. Six evaluators independently completed the evaluation.

Table 2

AGREE Tool Results

Evaluator	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Overall guideline assessment
1	17	17	48	16	22	8	6
2	16	15	43	18	21	11	4
3	15	16	44	14	23	11	6
4	18	15	48	18	20	10	5
5	15	16	43	16	21	11	4
6	17	18	40	15	20	9	5
Percentage	78%	77%	79%	77%	76%	71%	71%

From the evaluation above, the AGREE score for the clinical guidelines indicates that for all the domains evaluated, the percentage score is just above the 70% threshold. This means that the score is above average, but the evaluators identified some critical flaws.

Recommendations

Based on the project's findings, the recommendations relate to including certain nursing practices into the CPGs for HTN management explicitly meant for nurses. I cited the clinical evidence for each recommended practice and enhanced the recommendations with expert opinion. The current ratings show why and how the chosen nursing practices improve HTN management, patient outcomes, and healthcare service quality. Adding multiple antihypertensive medications, proper blood pressure checks, and self-monitoring has been shown effective.

Strengths and Limitations of the Project

The project's strengths are in the pioneering work in HTN CPG development specifically for nurses. With HTN being a severe public health concern, there is still no unified guidance for nurses to participate in HTN management and preventive care to minimize the impact of HTN on patients' quality of life and health outcomes. Thus, the current project is aimed to shed light on the intricacies of the nursing approach to the HTN problem, to provide a nurse-centered perspective of HTN management practices, and to develop workable guidelines for HTN early diagnosis, management, and health deterioration prevention; these approaches are consistent with the health promotion and disease prevention paradigm of nursing.

The project also possessed certain limitations that also must be mentioned. The project was held with a small nurse population, with the proposed CPGs clinically tested only in one medical setting, making the generalizability of findings low. Second, the pilot project will require further validation via testing in different nursing settings with diverse patient populations for the proposed CPGs to be recognized as a universal professional standard.

Section 5: Dissemination Plan

This section presents a detailed account of the proposed CPGs' dissemination plan and the analysis of the self-process that the DNP-prepared student undertook during the project's completion.

Once the nursing CPGs are ready, the action phase of the doctoral project starts, which involves disseminating the new nursing protocol for HTN diagnosis and management throughout the outpatient primary clinic participating in the study. The CPGs will be presented to the nursing staff at a professional workshop, providing enough time for familiarization with the guidelines' content. A practice workshop will clarify all practical issues involved in introducing HTN management CPGs into the clinical routines. Nurses will be urged to ask questions and explain all concerns during that workshop to minimize their resistance to a practice change and provide sufficient information for CPG implementation.

I will collect basic metrics for diagnosed patients with HTN and clinical practices applied to manage their conditions by the outpatient clinic's nurses. Patients' health outcomes and satisfaction with the HTN preventive care and education received from nurses will also be documented in the framework of the project's implementation. Nurses' experiences and perceptions of the introduced CPGs will be collected at all three points for the DNP-prepared student to track nurses' efficiency of CPG implementation, the success of the change, and the overall comfort of all stakeholders in the process CPG use.

After the pilot project of CPG introduction in the outpatient primary clinic is over, I will compile all evidence of the proposed CPGs' efficiency as seen by the recipients of

care (patients with HTN) and care providers (nurses). The collected evidence will be compiled into a complete project report to the committee, showing the practical proof of CPGs' success and their impact on the standard of care for patients with HTN.

Analysis of Self

Throughout the entire project, I conducted regular analysis of self in terms of my role in the project, the quality of the review, the absence of bias in article selection and quality appraisal, and other critical stages of the project's progression. Besides self-analysis in terms of academic research competencies, I reviewed my performance at a professional level. I will also participate in the implementation of CPGs in the outpatient clinic, which will allow me to evaluate their professional evolution and growth of professional expertise through the application of nursing CPGs for better HTN management.

Summary

This DNP project of nursing CPGs for HTN management will be disseminated among the outpatient clinic's staff for the implementation in clinical settings. Staff performance in terms of CPG application and the quality of HTN patient care will be evaluated in 1, 3, and 6 months. I will also be a part of the implementation team and conduct regular self-analysis of research competence and professional growth as a nurse.

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Appendix A: Literature Review

Reference	Objective	Study setting	Patient population	Research method	GRADE evaluation	HTN management method	Research findings	Implications for nursing practice
Petrak et al. (2016)	To analyze the clinical use of different types of combination therapy in a sample of patients with uncontrolled hypertension	Hypertension Center	1254 patients with HTN receiving at least triple-combination anti-hypertensive therapy	Retrospective analysis	Very low	Triple-combination anti-hypertensive therapy	The use of a controversial or incorrect combination of drugs is every day. Diuretics are often underdosed, while the use of spironolactone is mainly neglected in clinical practice	An improper combination of antihypertensive drugs can contribute to HTN
Booth et al. (2019)	To estimate the percentage of US adults meeting criteria for out-of-clinic BP monitoring	Secondary data are taken from the National Health and Nutrition Examination Survey	US adults (n = 9,623)	Retrospective statistical analysis of data from the National Health and Nutrition Examination Survey	Very low	Out-of-clinic BP monitoring	Around 103.8 million US adults met the 2017 Hypertension Clinical Practice Guidelines criteria for out-of-clinic BP monitoring	The proportion of adults meeting the out-of-clinic BP monitoring criteria was higher at an older age, among men versus women, and non-Hispanic blacks and whites

Mazza et al. (2017)	To compare the efficacy of a fixed-dose triple combination (FTDC) of antihypertensive drugs with that of a free variety of three antihypertensives in patients with HTN	Hypertension center in Italy	92 patients with HTN previously treated with a renin-angiotensin-aldosterone system (RAAS) system inhibitor	Clinical trial	Moderate	Once-daily FDTC therapy with perindopril/indapamide/amlodipine	The FDTC therapy resulted in a significant reduction in ambulatory 24-h, daytime, and nighttime systolic BP and pulse pressure (PP.)	FDTC therapy is effective in BP and PP reduction and is well-tolerated by patients with HTN FDTC therapy should include a RAAS inhibitor, a diuretic, and a calcium antagonist

Appendix B: AGREE II Tool for Evaluation of Clinical Practice Guideline

Rating Scale: (1) Strongly Disagree (2) Disagree (3) Partially Disagree (4) Neutral (5) Partially Agree (6) Agree (7) Strongly Agree

Domain	Item	AGREE II Rating						
		1 Strongly Disagree	2	3	4	5	6	**7** Strongly Agree
Scope and purpose	1. The overall objective(s) of the guideline is (are) specifically described.							
	2. The health question(s) covered by the guideline is (are) specifically described.							
	3. The population (patients, public, etc.) to whom the guideline is meant to apply is described.							
Stakeholder involvement	4. The guideline development group includes individuals from all the relevant professional groups.							
	5. The views and preferences of the target population (patients, public, etc.) have been sought.							
	6. The target users of the guideline are clearly defined.							

Domain	Item	AGREE II Rating						
		1 Strongly Disagree	2	3	4	5	6	**7** Strongly Agree
Rigor of development	7. Systematic methods were used to search for evidence.							
	8. The criteria for selecting the evidence are clearly described.							
	9. The strengths and limitations of the body of evidence are clearly described.							
	10. The methods for formulating the recommendations are clearly described.							
	11. The health benefits, side effects, and risks have been considered in formulating the recommendations.							
	12. There is an explicit link between the recommendations and the supporting evidence.							
	13. Experts have externally reviewed the guideline before its publication.							
	14. A procedure for updating the guideline is provided.							
Clarity of presentation	15. The recommendations are							

Domain	Item	AGREE II Rating						
		1 Strongly Disagree	2	3	4	5	6	**7** Strongly Agree
	specific and unambiguous.							
	16. The different options for management of the condition or health issue are presented.							
	17. Key recommendations are easily identifiable.							
Applicability	18. The guideline describes facilitators and barriers to its application.							
	19. The guideline provides advice or tools on how the recommendations can be put into practice.							
	20. The potential resource implications of applying the recommendations have been considered.							
	21. The guideline presents monitoring or auditing criteria.							
Editorial independence	22. The views of the funding body have not influenced the content of the guideline.							

Domain	Item	AGREE II Rating						
		1 Strongly Disagree	2	3	4	5	6	**7** Strongly Agree
	23. Competing interests of guideline development group members have been recorded and addressed.							
Overall Guideline Assessment	1. Rate the overall quality of this guideline.	1 Lowest possible quality	2	3	4	5	6	**7** Highest possible quality
Overall Guideline Assessment	2. I would recommend this guideline for use.	Yes	Yes, with modifications					No

Appendix C: Clinical Practice Guideline

Purpose

The purpose of this updated guideline is to provide blood pressure management direction to the clinical staff during a clinic office visit.

Procedure:

The CPG will be reviewed with all clinical staff on the implementation

The CPG will be included in new hire orientation

The CPG will be included in the mandatory annual education for staff

The CPG will be included in the policy and procedure manual

The CPG will be used as a guide for managing blood pressure

Question:

In the context of the medical facility, what are current evidence-based strategies for managing uncontrolled hypertension?

Target Population:

The CPG will be a tool to address blood pressure management during a clinic office visit for patients with a previous history of uncontrolled hypertension.

Disease/Condition:

All patients with uncontrolled hypertension.

Guideline Category:

Hypertension Diagnosis, Hypertension treatment, Hypertension management.

General Guidance:

Avoid using confusing language, clinical terms, medical jargon.

Make the uncontrolled hypertension assessment one's priority at the initial office visit.

Do not delegate uncontrolled hypertension.

Consider having the physician or other clinician with you or on the phone standing by to give admission regarding uncontrolled hypertension.

Recommendation 1: Diagnostic

In most cases, blood pressure rises asymptomatically, and hypertension is detected only during an objective examination of the patient. In cases where there are complaints, they are nonspecific (headache, dizziness, palpitations, etc.). With symptomatic hypertension, objections are due to the underlying disease:

• OSAS (Obstructive Sleep Apnea Syndrome): snoring, headache in the morning, drowsiness during the daytime, impaired memory, attention, inadequate night sleep.

• Primary hyperaldosteronism: muscle weakness, polyuria, polydipsia, constipation.

• Pheochromocytoma: paroxysmal hypertension, headache, profuse sweating, palpitations, labile increase in blood pressure, orthostatic hypotension.

• Cushing's disease: moon face, plethora, fat hump, hirsutism, central obesity, skin atrophy, purple striae, bruises, disorders of carbohydrate metabolism.

• Diseases of the thyroid gland: symptoms of thyrotoxicosis or hypothyroidism.

• Coarctation of the aorta: headache, cold extremities, leg pain on exertion, nosebleeds

Many patients with high blood pressure may not have any complaints. Symptoms (headaches, shortness of breath, chest pain, nosebleeds, subjective dizziness, edema, visual disturbances, fever, sweating, hot flashes) occurring in hypertension are nonspecific and can be observed in other diseases. In the presence of the listed symptoms

in any patient, it is necessary to consider the possibility of diagnosed hypertension in the process of his examination. It is recommended to collect a complete medical and family history to assess familial predisposition to hypertension and CVD.

Recommendation 2: Physical Diagnostic

All patients with hypertension are recommended to determine anthropometric data to detect overweight/obesity, assess the neurological status and cognitive function, fundus examination to detect hypertensive retinopathy, palpation, and auscultation of the heart and carotid arteries, palpation, and auscultation of peripheral arteries to detect pathological murmurs, comparison Blood pressure between the arms at least once. All patients with hypertension are advised to palpate the resting pulse to measure its frequency and rhythm to detect arrhythmias.

Recommendation 3: Laboratory Diagnosis

To establish the diagnosis of hypertension, laboratory diagnostics are not required. However, it is necessary to exclude secondary forms of hypertension, detect MOM, assess CVR and concomitant pathology that affects the effectiveness of treatment and the patient's quality of life. • For all patients with hypertension, it is recommended to conduct a general (clinical) blood test (hemoglobin/hematocrit, leukocytes, platelets) to exclude secondary hypertension.

At glucose values ≥6.1 mmol / L, its level should be re-determined in all cases, except for undoubted hyperglycemia with acute metabolic decompensation or apparent symptoms. HbA1c determination can be used as a test to confirm hyperglycemia. The diagnosis of diabetes is based on two digits in the diabetic range: twice determined HbA1c or once

decided HbA1c and once measured blood glucose. The values of the listed parameters for assessing glycemia above average but below diabetic indicate the presence of prediabetes. An oral glucose tolerance test is performed in doubtful cases to clarify the diagnosis of diabetes and identify prediabetes. HbA1c can be used to diagnose diabetes and prediabetes if the method for its determination is certified per the National Glycohemoglobin Standardization Program (NGSP) or the International Federation of Clinical Chemists (IFCC) and standardized following the reference values adopted in the Diabetes Control and Complications Trial. (DCCT). In diabetes, stratification of the patient into the category of high or very high CVR is recommended.

For all patients with hypertension, to identify the impaired renal function, an assessment of CVR is recommended to study the level of creatinine in the blood serum and calculate the GFR in ml/min / 1.73 m2 using the Chronic Kidney Disease Epidemiology (CKD-EPI) formula.

Recommendation 4: Instrumental Diagnostics

Carrying out instrumental diagnostic methods is necessary to exclude secondary forms of hypertension, identify POM, assess CVR and concomitant pathology that affects the effectiveness of treatment and the patient's quality of life.

Echocardiography is recommended for patients with hypertension with ECG changes or symptoms/signs of LV dysfunction to determine the degree of LVH.

Patients with hypertension in combination with CVD or signs of atherosclerotic vascular lesions of other localizations, with a history of transient weakness in the limbs on one side or numbness of half of the body, as well as men over 40 years old, women over 50

years old and patients with high general CVR are recommended duplex scanning of the brachiocephalic arteries to detect atherosclerotic plaques/stenosis of the internal carotid arteries.

All patients with impaired renal function, albuminuria, and suspected secondary hypertension are recommended to perform an ultrasound of the kidneys and duplex scanning of the renal arteries to assess the size, structure, and presence of congenital renal anomalies renal artery stenosis.

For hypertensive patients with neurological symptoms or cognitive impairment, computed tomography (CT) or magnetic resonance imaging (MRI) of the brain is recommended to exclude cerebral infarctions, microbleeds, and lesions of the white matter and other pathological formations.

Other diagnostic studies are not provided for in the diagnosis of hypertension. Depending on the clinical situation and the patient's condition, it is possible to expand diagnostic studies by the doctor's decision. Cognitive impairment in elderly patients is partially associated with hypertension. Therefore, in elderly patients with a history suggesting early cognitive deficit, assessing cognitive function using the MMSE test (Mini-Mental State Examination) is recommended.

Recommendation 5: Treatment

• Patients with grade 2 or 3 hypertension at any level of CVR are advised to start AHT immediately to reduce the risk of CVD and cardiovascular death, along with recommendations for lifestyle changes.

• Patients with grade 1 hypertension belonging to the low/moderate risk categories without signs of POM (risk assessment on the SCORE scale) are recommended to start antihypertensive therapy if they persist in elevated blood pressure despite lifestyle changes for three months.

• Patients with grade 1 hypertension, belonging to the high-risk category (risk assessment on the SCORE scale in uncomplicated hypertension or the presence of MIP, it is recommended to start AHT and recommendations for lifestyle changes immediately.

• Patients with high normal blood pressure (130-139 / 85-89 mm Hg) are recommended to start AHT with a very high level of CVR due to the presence of CVD (especially coronary artery disease).

• Elderly patients with hypertension (even at the age of> 80 years), who are in a satisfactory physical condition, are recommended to change their lifestyle and AHT if the SBP level is ≥160 mm Hg. Elderly patients (> 65 years old, but not> 80 years old) who are in a satisfactory physical condition (without senile asthenia syndrome), if their SBP corresponds to the indicators of grade 1 hypertension (140-159 mm Hg), a change in the image is recommended life and AHT with good tolerance.

• It is recommended to consider the possibility of prescribing AHT in elderly patients with senile asthenia syndrome with acceptable tolerance.

• In patients over 80 years of age, it is not recommended to discontinue AHT, provided that this therapy is well tolerated, is not accompanied by orthostatic hypotension, development/aggravation of geriatric syndromes, and decreased functional status due to proven benefits in a relationship.