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Basic Quality Care Blood Pressure Teaching Plan

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
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Walden University
2019

Abstract

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MSN, Walden University, 2016

BSN, Sojourner Douglas College, 2012

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Hypertension (HTN) is a leading risk factor for cardiovascular disease complications, disability, and mortality. Delayed detection of HTN increases the risk of the patient developing heart disease, renal failure, and stroke, which are among the leading causes of death in the US. Educating healthcare providers is, therefore, necessary to ensure accuracy when measuring blood pressure (BP) to improve the likelihood of early detection and commencement of treatment. The BP teaching project involved the development of an evidence-based teaching program to educate nurses at an East Coast Veterans' Administration Center on the guidelines of measuring BP. The practice-focused question addressed whether the literature would support a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' quality of life related to HTN. The evidence-based literature supported education and provided the information used to develop the teaching modules. The frameworks guiding the project included practice modules grounded in quality improvement and, more specifically, the plan, do, study, and act cycles. The findings indicated a highly significant increase in nurses' knowledge of BP measurement after the educational session ($p < 0.001$). The implications for positive social change included improving the health outcomes of veterans and promoting HTN management in the East Coast VA primary care centers.

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Dedication

This project is dedicated to the memory of my husband, Ambitious Britton SR, who has been my biggest inspiration and cheerleader. I know he has been watching over me, keeping me motivated to complete this project that was so important to both of us. The project is also dedicated to the "Fully Engaged, Member-driven Association" American Nursing Association; my parents, George Lynch and Georgeanna Davis, and to my sons, Lamont Harrison JR, Ambitious Britton JR, and Malik Britton; and to my daughters Tiericka Harrison, Jazmine Meyers, and Aniyah Britton, all who have served as my inspiration for this project.

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Above all, to the Great Almighty, the author of knowledge and wisdom for his infinite love.

I thank you.

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Section 1: Nature of the Project

Introduction

Hypertension (HTN) is one of the main contributing factors to cardiovascular disease complications, disability, and mortality (Williamson et al., 2016). In the United States (US), it is estimated that one out of three adults has HTN. Accurate measurement of blood pressure (BP) enables healthcare practitioners to make proper medical decisions to manage HTN and thus reduce the risk of people developing cardiovascular conditions (Bello et al., 2018). Inaccurate BP measurement could lead to misdiagnoses of HTN resulting in faulty clinical decisions relating to the management of the condition (Bhatt, Siddiqui, Judd, Oparil, & Calhoun, 2016). Thus, there is a need for healthcare practitioners to measure BP accurately to prevent misdiagnoses of HTN. Implementation of education programs can help to improve the knowledge of health care practitioners to make sure they measure BP accurately (Leung et al., 2016). Thus, the Doctor of Nursing Practice (DNP) doctoral project, called the BP teaching project (BPTP), focused on developing and implementing a teaching plan for staff to equip healthcare practitioners with adequate knowledge to accurately measure BP. The potential positive social change for the doctoral project is the improvement of the health outcomes of veterans by promoting effective management of HTN.

Problem Statement

Nursing Practice Problem

Accurately measuring BP is one of the most fundamental types of care that a nurse can provide (Ukpabi & Ewelike, 2017). BP is essential in determining the patient's

condition, and so many approaches to care, intervention, and treatment are based on the initial BP reading. In other words, inaccurate readings can impact how a patient is perceived, diagnosed, and treated. Nurses must be able to provide BP readings accurately for patients, including veterans who constitute a vulnerable population and require early diagnosis and management of HTN. Accurate measurement of a 10 mm Hg decrease in systolic BP can reduce a patient's risk of dying from a stroke by 40% and from heart disease by 30% (Ukpabi & Ewelike, 2017). The problem is that a significant number of nurses are failing to measure BP accurately (Ukpabi & Ewelike, 2017).

I currently work as a Patient Aligned Care Team Coordinator (PACT) at a Veteran's Affairs (VA) primary care clinic on the East Coast. This clinic provides patients with services that include regular annual checkups, blood work, and BP checks/monitoring. As the wars in Iraq and Afghanistan come to an end, and the large US army is disassembled, more veterans will need high-quality care as they transition to civilian life (Cooper, Andrew & Fossey, 2016). However, healthcare providers serving this population have little knowledge of the health needs of the population, including inadequate knowledge of how to measure BP accurately (Leblanc, Cloutier, & Poirier, 2015). Previous studies have also established that nurses rarely have access to continuing education programs to improve their knowledge and skills on BP measurement (Cooper et al., 2016).

This primary care clinic offers very costly healthcare services to over 8,000 veterans with HTN. Most patients with HTN have their condition managed by their primary care provider (PCP); in the US, four out of five HTN office visits for patients

who have HTN are performed by PCPs, not by specialists (Ukpabi & Ewelike, 2017). Moreover, HTN is the most commonly billed primary care visit type (Ukpabi & Ewelike, 2017). The primary care setting is where the quality of HTN care needs to improve. The US Department of Veterans Affairs (2018) tracks the percentage of well-controlled hypertensive patients for every clinic and provider with the Survey of Healthcare Experiences of Patient (SHEP) scores (Centers for Medicare & Medicaid Services [CMS], 2019). The target HTN SHEP goal for every VA clinic is to score 8 out of 10 (80%) in the management of HTN, and this East Coast VA clinic only met 5 out of the 10 (50%) for this quarter. The VA center utilizes performance measures metrics to evaluate how the staff is accurately measuring BP and to identify any areas where training may be required. Performance measures are tracked for a goal of BP<140/90 with the recording from the nurse clinics BP visits. When the veterans' BP was measured again by the PCP, they were found to be at goal, and this implies a need for skill reassessment and education. Poorly managed HTN presents an urgent matter because primary care aims to prevent cardiovascular complications through preventative care.

Approximately 22% of the people with HTN are not aware that they have the condition (Ukpabi & Ewelike, 2017). The prevalence of HTN among veterans in the US is about 30%, and is expected to increase by 8% by the year 2024 (Eibner et al., 2016). By contributing to the development of conditions such as stroke, cardiovascular diseases, and ischemic heart disease, HTN reduces the quality of life. According to the Centers for Disease Control and Prevention (CDC; 2016), 30% of the people with HTN develop various cardiovascular complications, which indicates the need for employing proper

screening and management approaches to promote early detection and management of the condition.

According to Cooper et al. (2016), most nurses offering health care services, such as measuring BP, do not have access to educational plans to improve their knowledge and skills. The knowledge and skills to measure BP are essential in the management and treatment of HTN among veterans. Additionally, complications secondary to poorly managed HTN precede the increased use of urgent care and emergency room resources, thus increasing costs for our healthcare organization. The fiscal impact of HTN on our nation's healthcare system is tremendous; in fact, 46 billion dollars are spent treating HTN, including missed workdays (CDC, 2016). HTN is a costly and distressing disease if it is not managed appropriately, but early detection and correct diagnosing can promote cost-effective treatment. Action must be taken to improve the accuracy of our patient population's BP readings for prompt and appropriate treatment to prevent complications.

The increasing number of veterans seeking medical services in different VA centers across the US requires nurses to be adequately prepared to assess BP and ensure that accurate screening is conducted and that suitable treatment offered to patients (White, 2015). Thus, the BPTP involving the development and implementation of a teaching plan related to nurses is significant because it can facilitate the improvement of knowledge and skills required to measure BP accurately. The acquired knowledge can enable nurses to correctly measure the BP to identify HTN among veterans, thus enabling the provider to make appropriate clinical decisions about the treatment and management

of the condition (White, 2015). Correct diagnoses of HTN help to reduce the risk of cardiovascular diseases, such as stroke and renal failure.

Purpose

The return of soldiers from wars in Afghanistan and Iraq has led to an increased need for high quality care of veterans to facilitate their transition to civilian life (US Department of Veterans Affairs, 2017). However, nurses offering care at VA primary care centers on the East Coast have inadequate knowledge and skills to measure BP correctly (US Department of Veterans Affairs, 2017). Many practice gaps are present in healthcare preventing patients from being diagnosed and treated effectively for HTN. Despite robust guidelines for the diagnosis and treatment of HTN, many providers fail to recognize repeated abnormal BP measurements (Messerli, Bangalore, & Kjeldsen, 2017). The meaningful gap-in-practice that this doctoral project sought to address was the lack of adequate knowledge and skills of nurses to measure BP accurately.

BP is one of the most important screenings because HTN often has no symptoms; it cannot be detected without being measured (Kallioinen, Hill, Horswill, Ward, & Watson, 2017). Thus, incorrect measurements can lead to misdiagnosis and treatment errors that can result in adverse effects on the health status of the patients (Kallioinen et al., 2017). The BPTP consisting of Mosby's nursing consult, combined with a competency exam and mock measuring BP practicum, ensured the staff's necessary training and preparedness in the measurement of BP. Mosby's nursing consult is a web-based product that utilizes a professional format similar to that practicing nurses use to train, hence convenient for the BPTP. The guiding practice-focused question for this

doctoral project was as follows: What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' healthcare outcomes? The BPTP has the potential to address the identified gap-in-practice by facilitating the training of nurses to equip them with the required knowledge and skills to accurately measure BP (Messerli et al., 2017).

Nature of the Doctoral Project

The BPTP incorporated evidence-based literature collected from peer-reviewed, scholarly articles retrieved from online databases including PubMed, CINAHL, Medline, and Google Scholar, in addition to new American College of Cardiology (ACC) and American Heart Association (AHA) BP measurement guidelines (ACC, 2017). The ACC released guidelines to assist the practice community in improving prevention, awareness, treatment, and management of HTN (Whelton et al., 2018). In the 2017 ACC guideline, HTN is defined as a common disorder in which BP remains abnormally high (a reading of 140/90 mm Hg or greater). The BPTP project helped to improve the knowledge required to measure BP correctly. The newly developed guideline helped staff to identify high BP accurately.

The literature chosen to be included in the development of the teaching module included articles written in English and published between the years 2016 and 2019. Also, I searched official nursing websites for information and white papers on measuring BP and continued to review current literature until the completion of the teaching module. Selected evidence was graded using Melnyk’s (2016) hierarchy of evidence

decision-making matrix and then synthesized to apply the best practices from the literature to the educational plan. Sources are discussed in more detail in Section 3.

Significance

The primary stakeholders for this DNP BPTP project were the nurses and health technicians (HTs) who gained knowledge and skill competencies that helped them to grow in their professional development regarding knowledge about accurately measuring BP. The veterans, although not involved in this project, were also important because they depend heavily on the staff's competency and readiness for identifying HTN and enable precise treatment. Another important stakeholder is the VA department because accurate measurement and early, effective treatment decreases costs.

The BPTP helped to meet the clinic's HTN SHEP scores by providing a systematic process of identifying people with elevated BP; their appropriate management and follow up will help to reduce morbidity and premature mortality (CMS.gov, 2019). Strategies aimed at continuously upgrading staff knowledge and sustaining a culture of commitment to the patients are key for quality care (CMS.gov, 2019). Potential contributions of the project include better-educated VA nurses in the East Coast facility and improved care to veterans. The BPTP is transferable to any clinical setting that assesses and treats HTN because the knowledge and skills related to BP measurement are the same, regardless of the population.

The implications for positive social change involve improving the health outcomes of veterans and promoting HTN management in an East Coast VA primary care center. The VA should receive increased SHEP scores with nurses who are trained,

competent, and prepared to identify HTN by accurately measuring BP. Competent nurses working in the facility will be better prepared to deliver high quality, essential care to all veterans in the VA primary care center. High-risk veterans should have increased confidence in routine BP checks closer to their homes, where they can receive safe and high-quality care.

Summary

This section identified the gap in practice, problem statement, purpose, practice-focused question, nature, and significance of the BPTP project. Many practice gaps are present in healthcare, and prevent patients from being diagnosed and treated effectively for HTN. The meaningful gap in practice that this doctoral project addressed is the lack of adequate knowledge and skills of nurses to measure BP accurately. The prevalence of HTN among veterans in the US is about 30%, with the occurrence expected to increase by 8% by the year 2024. The increasing number of veterans seeking medical services in different VA centers across the US requires nurses to be adequately prepared to assess BP and ensure accurate screening is conducted and suitable management of HTN provided to the patients. The purpose of the project was to develop and implement an educational plan to increase nurses' knowledge and skills to measure BP accurately. The practice-focused question that guided this DNP project was as follows: What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' healthcare outcomes? The BPTP incorporated evidence-based literature collected from peer-reviewed, scholarly articles retrieved from online databases. The primary stakeholders for

the project included nurses and HTs who gained knowledge and skill competencies that helped them to grow in their professional development regarding knowledge about accurately measuring BP.

In Section 2, I addressed the background, the concepts and model guiding the project, the relevance of the BPTP to nursing practice, local background and context, and the role of the DNP and project team.

Section 2: Background and Context

Introduction

The practice problem in the East Coast VA clinic where this BPTP project was conducted was inaccurate BP measuring by a substantial number of nurses (US Department of Veterans Affairs, 2017). Based on unacceptable SHEP scores (US Department of Veterans Affairs, 2018), staff should be better trained in measuring BP. A process was needed to educate the primary care staff. The purpose of the project was to develop and implement an educational plan for nurses to increase their knowledge and skills to measure BP accurately. Thus, the practice-focused question that guided this DNP project was as follows: What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' healthcare outcomes? Section 2 discusses the models related to staff education along with relevance, local background, and role of the DNP and team members.

Model

The competency, outcomes, and performance assessment (COPA) model developed by Lenburg (1998) was used to inform the BPTP. The COPA model is a framework and process developed to promote initial and continuing competence by integrating contemporary practice, outcomes to be achieved for practice, the performance of essential competencies, and assessment structured to measure competence (Chianchana & Wichian, 2016). The COPA model was used to identify the critical skills needed for practice, the most effective way to integrate those skills, and the most efficient

methodology to teach the skills so that staff integrates them into practice (Chianchana & Wichian, 2016). The COPA model is used by many schools and the Quality and Safety Education for Nurses Institute (Boyer, 2016).

The COPA model provides a suitable framework for evaluating the full range of core competencies necessary for nursing practice (Lazarte, 2016). The BPTP integrated the COPA concepts to promote a nurturing format of transitioning the novice and the experienced nurse into the workplace (Lazarte, 2016). The COPA model was also used by Lin, Wang, and Ye (2015) in exploring and discussing different methods of injection and IV infusion methods in animals to improve the core professional nursing competencies. The COPA model is a comprehensive framework that requires significant changes in traditional educational attitudes and methods to promote quality care and competence for patient safety.

The COPA model was applicable in the BPTP project (teaching practice-based competencies for accurately measuring BP) because the project involved the use of innovative designs for supportive learning and teaching strategies to train nurses about measuring BP. The eight-core competencies — assessment and intervention, communication, critical thinking, teaching, caring human relationships, management, leadership, and knowledge integration skills — guided the implementation of the educational plan.

Manojlovich, Lee, and Lauseng (2016) demonstrated the five core nurses' competencies, which include patient-centered care, teamwork, collaboration, evidence-based practice, quality improvement, safety, and informatics. Manojlovich et al. (2016)

addressed patient safety and quality care issues as major concerns for nursing and all health care professions using Lenburg's COPA model. Initiatives driven by these concerns have been undertaken during the past decade by organizations and agencies at the local, state, and national levels. Other schools of nursing using the COPA model include Capital Medical University in China, Vermont Board of Nursing, and the University of Colorado Denver.

Klein's (2006) initial work reported on the performance examination aspect of the COPA model; from this experience, she designed her dissertation as an exploratory study to provide data related to the influence of this curricular approach. A comparative, cross-sectional survey method was selected to study senior students near the point of graduation from different nursing education programs (diploma, associate, and baccalaureate degree). Her findings indicated that students from COPA schools had a slightly higher National Council Licensure Examination 5-year pass rate (93.4%) compared to the non-COPA educational institutions at 91.5% average.

De Stampa et al. (2014) used a quasi-experimental study to evaluate the impact of the COPA model on hospital admissions which provided integrated primary care with intensive case management for community-dwelling, very frail elderly patients. The COPA model provided integrated primary care with intensive case management for these patients.

Relevance to Nursing Practice

The BPTP project, developing and implementing an educational plan for BP measurement, is relevant to nursing practice because the goal is for nurses to be more

accurate in measuring BP to identify HTN among veterans. The prevalence of HTN is approximately 30% among veterans in the US, with the rate of occurrence expected to increase by 8% by the year 2024 (Eibner et al., 2016). According to Kallioinen et al. (2017), proper screening for elevated BP is vital in a clinical setting to accurately identify HTN. Nurses should be trained in BP measurement procedures to measure BP accurately. Lack of use of continuing nursing education (standardized BP measurement protocols) contributes to variability and inaccurate BP readings. As a result, many cases of HTN among veterans in the area are misdiagnosed. Implementation of the educational plan helped to equip nurses with the required knowledge to correctly measure BP.

BP control at VA clinics has improved significantly over time, but slowly as many patients have less than optimal BP control shown in a review of data done by the US Department of Veterans Affairs (2017). The gap between HTN guideline recommendations and achieved BP control is still wide. This gap is attributed to both inaccurate BP measuring and provider-related reasons, although the failure of nurses to identify HTN for providers to intensify therapy when needed is a prominent problem, and improvement in providers' adherence to HTN guidelines is still needed.

The role of the nurse in preventing and controlling HTN has expanded over the past 50 years (Himmelfarb, Commodore-Mensah, & Hill, 2016) to include measuring BP and providing education to patients. Formal guidelines for treating and managing HTN have been developed for four decades based on the available evidence (Stergiou, Parati, McManus, Head, Myers, & Whelton, 2018). However, the lack of appropriate methods to determine a correct BP reading in routine clinical practice has frequently been ignored,

leading to frequent misclassification of the patients' BP status (Stergiou et al., 2018). The BPTP is the perfect teaching program to fill in the gap in knowledge and skills for nurses to accurately measure BP, thus improving the physician's ability to accurate diagnoses and treatment of HTN. In the past, the approach to educating nurses about measuring BP has lacked a uniform strategy. Even though there was much known about how to measure BP and identify HTN, there was no uniform system for making certain that the information reached the nurses.

Local Background and Context

Primary care and specialty outpatient services at the East Coast VA primary care clinic are provided in an outpatient facility that was designed to meet the needs of veterans by offering the latest medical technology, ample clinical space, and comfortable waiting areas and exam rooms. The East Coast VA services 112 veterans daily with a total population of over 34,398. Over 37% of veterans in the East Coast VA have HTN, making it the most common chronic medical condition among veterans (US Department of Veterans Affairs, 2017). Every health care facility requires well-educated and highly experienced healthcare practitioners. The 15.2% of veterans with unmet medical needs indicate that there are inadequate healthcare resources and personnel in the system (Iachan, Pierannunzi, Healey, Greenlund, & Town, 2016). As a result, there was a need for implementing continuing education for staff to equip them with adequate knowledge and skills to identify HTN.

About 1.5 million adults in Maryland have HTN (Behavioral Risk Factor Surveillance System, 2017), with an estimated 700,000 people with uncontrolled high BP

in 2016. A health practitioner has told one-third of adult residents in Maryland that they have high BP (BRFSS, 2017). These statistics suggest the need for training nurses and other health professionals to be better equipped with the required knowledge and skills to measure BP accurately.

Currently, over 15,000 veterans have been diagnosed with chronic conditions, such as diabetes, arthritis, and HTN (US Department of Veterans Affairs, 2017). The veterans in the region get primary care, inpatient, and outpatient health services from the East Coast VA primary care center (US Department of Veterans Affairs, 2017). The US government runs the VA primary care center, and the mission of the health facility is ensuring all veterans have access to high-quality health care. Cooper et al. (2016) explained that the inadequacy of knowledge about the health needs of veterans prompted the American Academy of Nursing to start the *Have You Ever Served in the Military?* initiative. The program deals with raising awareness to reinforce the dire need of educating nurses delivering healthcare services to the patients so that appropriate care can be provided.

Role of the DNP Student

As a DNP nursing student, my role in the institution was to serve as a team leader for the project. Though I work as a PACT team coordinator offering health care services to veterans in the facility, I have no personal relationship with the nurses and other participants in the BPTP. My role in the project was to develop an educational plan that was used to teach the staff how to measure BP accurately. I worked together with project stakeholders to effectively implement the BPTP to increase accuracy in measuring BPs

among the staff working in the East Coast VA center. My motivation to conduct this project was the failing HTN site SHEP scores; I hoped to help in reducing the problem of HTN and other associated chronic conditions such as cardiovascular diseases, stroke, and disabilities. There were no identified biases that could have affected the outcome of the project; other than that. I feel that inaccurate BP measurement is a serious problem and needs to be addressed aggressively through nurse skills training with the BPTP.

Role of the Project Team

The project team comprised of eight primary care physicians, eight registered nurses (RNs), eight licensed practical nurses (LPNs), and two health technicians (HTs). The RNs, LPNs, and HTs were the participants of the project who were educated on accurate measurement of BP. The RNs and LPNs are the primary healthcare providers involved in measuring vital signs of patients, including BP. The HTs are often responsible for monitoring and maintaining the equipment used in the clinic, including those that are required in measuring BP. The nurse manager, a primary care provider (PCP), and a medical support associate were also members of the project team who were involved in reviewing the development of the teaching curriculum for the intervention. The nurse manager also contributed to the project by presenting the approved educational plan to the staff. The DNP student also had a team of mentors consisting of the project's supervisor and chairperson. The mentoring team provided guidance and constructive criticism regarding the development of the project.

Early in the process, when I was seeking permission to conduct the project at the facility, the nurse manager was informed of the project and the team's help was requested

in reviewing the curriculum and presenting the final education program. The nurse manager recruited the review team consisting of the PCP and medical support personnel to review the educational plan. The RNs, LPNs, and HTs were informed of the required assistance through participating in the project. The participation of the RNs, LPNs, and HTs in the project is further discussed in Section 3.

Summary

BP measurement is the most common test performed in this East Coast VA clinic and is the first step in assessing cardiovascular health. The accuracy of BP measurement is variable in office-based settings. Even when staff training programs are effective, knowledge and skills decay over time, supporting the need for ongoing staff training. Accurately assessing BP is important because any error can have adverse consequences for patients. This section focused on the COPA model used to guide the BPTP project, the BPTP project's relevance to nursing practice, local background, and context, and the role of the DNP student. The BPTP project of developing and implementing an educational plan for BP measurement is relevant to nursing practice because the goal is for healthcare staff to measure BP accurately to identify HTN among veterans. As a DNP nursing student, my role in the project was to serve as a team leader for the project.

Section 3 describes the sources of evidence along with the collection and analysis of the evidence on the effectiveness of the educational plan in improving healthcare practitioners' knowledge regarding accurate BP measurement.

Section 3: Collection and Analysis of Evidence

Introduction

HTN is the leading cause of cardiovascular disease and stroke—both major causes of mortality in the US (Williamson et al., 2016). Approximately 75 million American adults have HTN, with 46% of the cases being uncontrolled (CDC, 2016). The lack of appropriate knowledge about measuring and interpreting BP readings is associated with the high number of patients who are unaware of their hypertensive condition (Bhatt et al., 2016). Inaccurate BP measurement is a contributing factor to the high rates of mortality associated with HTN. Inaccurate measuring of BP could also result in misdiagnoses of HTN, leading to faulty clinical decisions (Bhatt et al., 2016). Previous research suggested that most healthcare practitioners who offer HTN-related services, such as taking BP readings, especially nurses, do not have access to continuous education programs to improve their knowledge and skills (Cooper et al., 2016).

The veteran population in the US is increasing and requires extensive medical services (Hardman & Hardman, 2017). About 30% of the veteran population in the country has HTN, with an estimated 8% increase expected by the year 2024 (Eibner et al., 2016). Precise screening for HTN is essential in a clinical setting to facilitate accurate diagnoses and the commencement of management strategies for associated health conditions, such as cardiovascular diseases and stroke (Kallioinen et al., 2017). Healthcare providers at the various VA centers across the US need educational plans to ensure that they are adequately prepared to accurately screen and diagnose HTN and offer the appropriate treatment to the population (Hardman & Hardman, 2017). The

BPTP focused on improving the knowledge of the nursing staff working in an East Coast VA center on accurate BP measurement and HTN diagnosis.

Section 3 presents the practice-focused question leading the project and describes the procedures to ensure that the question is addressed. This section also presents the sources of evidence, the procedures for developing the educational plan, and the implementation process, which includes the steps taken in collecting, managing, and analyzing data for the project.

Practice-Focused Question

As more veterans are diagnosed with HTN compared to previous years, the need to address their healthcare needs increases (Cooper et al., 2016). The East Coast VA center where this BPTP was implemented has a high veteran population estimated at greater than 30,000 (US Census Bureau, 2016). With the recent and continued disassembling of the US Army, more veterans are transitioning to civilian life and require competent healthcare services (Cooper et al., 2016). Currently, the clinic has not achieved the desired Department of Veterans Affairs' HTN SHEP score of 8/10, but lags at 5/10. Nurses, being at the forefront of providing BP measuring services, have been found to have little knowledge of accurate BP measurement (Leblanc et al. 2015). The center had never had educational plans for the nursing staff regarding BP measurement or HTN diagnosis. There was, therefore, a need to educate the staff working in this VA center on the East Coast on accurate measurement of BP.

The purpose of the BPTP was to develop and implement an educational plan to increase the nurses' knowledge and skills to measure BP accurately. The following

practice-focused question guided the project: What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' quality of life related to HTN? An educational plan for BP measurement guidelines supported by current peer-reviewed literature and the ACC BP guidelines were developed and implemented in an East Coast VA primary care center targeting the nursing staff, to increase their knowledge and skills of measuring BP. Accurate measurement of BP is expected to promote early diagnosis of HTN, thus improving health outcomes (Cooper et al., 2016). The BP teaching program was presented to address the identified gap in practice by providing the staff with the required knowledge and skills to accurately measure and identify HTN among veteran patients.

Sources of Evidence

The projected growth of HTN found in the published statistics for BP teaching programs, both domestically and globally, indicate that there is a priority need for skills training, early detection, education, and competency (Leung et al., 2016; Siegel, 2018; Ukpabi & Ewelike, 2017). Evidence has shown that skills training and teaching on the topic can improve a nurse's knowledge of how to accurately measure and detect HTN (Leung et al., 2016). One of the most important factors that can influence the accuracy of BP readings is the size of the BP cuff that is used. There is a very specific set of guidelines for precise cuff sizing, but it can be difficult for patients to tell, just by looking, if their healthcare provider is using a correctly sized cuff (ACC, 2017). Other recommendations showed that proper positioning of the arm is vital in obtaining accurate

BP readings. In general, BP should be measured while the patient is seated comfortably. The arm being used should be relaxed, uncovered, and supported at the level of the heart with only the part of the arm where the BP cuff is fastened, needing to be at heart level, not the entire arm (Whelton et al., 2018).

Based on the ACC/AHA (2017) BP guidelines, the recommendations for early detection of HTN should begin with staff skills/knowledge assessment and educating them on how to measure BP accurately. Evidence from Bhatt et al. (2016) showed that an educational plan specifically for patient care in primary care settings and other civilian hospitals could increase nurses' knowledge of what constitutes appropriate BP measurements, control, and HTN self-management practices. With nurses being knowledgeable on the needs of their patients and the circumstances under which HTN developed, they can provide the appropriate HTN control and management strategies, thereby reducing the high risk of mortality and morbidity with HTN (Leung et al., 2016). Additionally, because nurses participate in patient education, improved knowledge, skills, and attitudes on consistent BP monitoring can enhance communication and promote patient engagement. Nurses have the responsibility to assess and monitor BP in the clinical setting. However, according to Mesquita (2017), because of the lack of adequate knowledge about accurate BP measurement processes, nurses make numerous errors when taking BP readings. All this literature helped the DNP student determine which education program was the most appropriate and effective in improving the knowledge of providers leading to accuracy in measuring and diagnosing high BP.

Participants

The participants in the BPTP were all the RNs, LPNs, and HTs employed by the VA center in Baltimore, MD, where the project was implemented. In total, there were eight RNs, eight LPNs, and three HT who were the project participants. The team of RNs, LPNs, and HTs was targeted because they are responsible for measuring patients' vital signs, including BP. Although the project targeted nurses, the three HTs were included as participants because of their active role in measuring BP in some of the patients visiting the facility.

Planning and Implementation

The setting for this Capstone project, an educational plan, was a VA primary care clinic on the East Coast that offers very costly health services to over 8,000 veterans with HTN. The staff is comprised of eight primary care physicians, eight registered nurses, a nurse manager, eight LPNs, three health technicians, and six medical support associates; the physicians and the medical support associates did not participate in the project because they are not actively involved in measuring BP. The clinic was chosen because the patients represent a multiethnic community that is at high risk for the development of HTN due to their lifestyle, mental health status, and potential side effects from medication. The location is appropriate for the BPTP based on the primary care HTN SHEP goals for every VA clinic to score 8 out of 10 (80%) for the management of HTN, and this East Coast clinic VA scored 5 out of the 10 (50%) for this quarter.

The DNP student analyzed the need for the project within the VA facilities on the East Coast and selected the center due to its low score and high population of veterans

depending on it for access to health services. After an extensive review of previous literature on improving providers' knowledge and skills regarding BP measurements, the research-focused question was developed. A BP educational plan was selected as the intervention of choice. Permission to implement the education program at the clinic was discussed with the medical director and nurse manager of the clinic. After obtaining permission, the DNP student discussed with the nursing manager and facility director the educational needs of the providers. The center's leadership was committed to assisting the DNP student in implementing the project and advising providers to take part in the educational plan.

The reviewed literature was synthesized to obtain relevant teaching content to address the problem of lack of knowledge and adequate skills for measuring BP. The DNP student designed the curriculum plan, which included learning objectives, the educational plan, a teaching plan, and the pre-/post-test. Learning objectives were then formulated, followed by the development of the teaching plan (Appendix B). The education presentation consisted of a Powerpoint presentation (Appendix C) and a pre-test was developed based on the content of the curriculm plan (Appendix C). The developed program was based on the ACC (2017) BP measuring guidelines with additions and deletions made depending on the supporting literature. A table of the synthesized literature is presented in Appendix A. The developed plan was presented to the nurse manager, PCP, and a medical support assistant (MSA) at the center for review and recommendations. The reviews were in the form of questionnaires, scoring how the educational plan addresses the healthcare facility needs in terms of improving BP

outcomes. The pre-/post-test (Appendix D) was developed by the DNP student and was meant to assess the educational value of a structured educational plan. Suggestions included changes in cleaning time and wiped used for the equipment. The educational plan was then revised as advised and questions for assessing the providers' knowledge developed from the content. This was done using the expert evaluation of the curriculum plan summary form (Appendix F). The nurse manager also suggested the use of a PowerPoint presentation, which was adhered to for the educational plan. The pre-/post-test and the revised BP measurement educational plan were reviewed by the nurse manager, PCP, and MSA, once again to validate content (Appendix G). After the VA center management and leaders' acceptance of the educational plan and test content, I applied for ethics approval from the Walden University IRB before the project implementation.

After the IRB approval was received, I began recruiting the nursing staff and HTs to participate in the project. The nurse manager encouraged his staff to participate by allocating time within their shift changes for the educational offering and placing an internal memo on the clinic's noticeboard calling for participation. During the first meeting, providers were informed about the Walden consent, anonymity, and confidentiality of data they were to provide. The pre-test (Appendix D) was handed out after the introduction to assessing providers' knowledge and skills of BP measuring as baseline data. The pre-test consisted of 10 questions on the topic of BP management. The presentation was conducted on June 6, 2019, at 08:00 and lasted 15 minutes, beginning with verbal explanations, followed by a Powerpoint presentation (Appendix C) on how to

accurately measure BP, and later a Mosby video for how to measure BP. The instructors demonstrated how to measure BP on each other, and the staff performed a return demonstration. After the presentation, the staff was given the same pre-test questions to assess their post-test knowledge. The staff was at first confused as to why they were given the same questions, so I explained that it was necessary to know if their knowledge of how to measure BP had increased. Once explained, participants were very understanding and continued in their participation. I then entered the test grades into a Microsoft Excel file in a personal computer awaiting analysis.

Protections

The rights of the human subjects were protected as required by the Walden University IRB and consent form for anonymous questionnaires were given. The DNP student was awarded IRB approval from both the VA East Coast site after obtaining the Walden University's Site Approval Form for Staff Education and Walden University (06-25-19-0497117) to implement and evaluate the educational plan. The IRB ensures that the correct stages are followed to safeguard participant's welfare when conducting a study (Nicholls et al., 2015). Participants were informed of the objectives, data protection, confidentiality, and anonymity before they chose to complete the tests. Participants' consent was sought before they completed the pre-/post-test.

Anonymity was assured by assigning codes to each of the participants who were used to label the pre-/post-test to ensure anonymity. No demographic characteristics were collected. Paper copies of the pre-/post-test were stored in a locked cabinet in administration where they will be kept for 5 years, the standard Walden operating

procedure before they are shredded. Only the nurse manager has a key to the cabinet keeping the tests. Project data was stored in a password-protected personal computer for protection.

Analysis and Synthesis

De-identified, pre-/post-test results were input in a Microsoft Excel File by the DNP student. Once post-test data were collected, an analysis was conducted using the IBM Statistical Package for Social Sciences (SPSS) ANOVA with Cochran's Test version 25. The two rows of data were compared for significant differences using the paired sample t-test. A statistically significant increase in knowledge and skills signified the efficacy of the educational plan. The integrity of the data was maintained by ensuring that the compared values belong to the same participants by assigning each participant a certain code that was used on both baseline and post-test data. Data from participants who did not answer all questions or complete both tests were discarded to avoid skewed results through missing data.

Summary

HTN is a leading risk factor for cardiovascular disease, stroke, diabetes, and other health conditions, which are principal causes of mortality. The ability to accurately measure BP leads to early detection, thus the management and treatment of the patients, therefore preventing the onset of HTN associated conditions. Educating healthcare providers on measuring and interpreting BP readings may encourage early detection, thus promoting the management of the condition. The DNP BPTP involved the implementation of an evidence-based educational plan in a VA center aimed to improve

the knowledge and skills of nurses at the facility to promote accurate measuring based on using similar evidence-based programs from previous literature. The education program was adapted to the setting and implemented at the VA center. A total of 28 participants participated in the BPTP and were asked to complete the pre-/post-test developed based on the teaching module. These test results were utilized to identify changes in the knowledge and skill level after the BPTP. Clerks working at the facility collected data and de-identified them before presenting it to the DNP student for analysis. Analyzing the data was useful to determine the efficacy of the educational plan in improving the knowledge and skills of measuring BP among the nurses. Section 4 will present the findings from the analysis.

Section 4: Findings and Recommendations

Introduction

It is estimated that one in three American adults has high BP (CDC, 2016). With accurate measurement, high BP can be detected early, allowing for appropriate management strategies, which may then prevent the onset of cardiovascular diseases and stroke (Bello et al., 2018). Unfortunately, nurses who are in primary healthcare have been found to have inadequate BP measurement skills (Ukpabi & Ewelike, 2017). VA healthcare centers use nurses in the outpatient primary care centers and thus require them to be adequately prepared to accurately assess BP to ensure that appropriate treatment would be provided (White, 2015). The aim of this scholarly project was to develop an evidence-based BP teaching plan for nurses and implement it on the East Coast VA center. The project was guided by the practice-focused question: What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge and skills necessary to promote patients' healthcare outcomes? The purpose of the BPTP was to develop and implement an educational plan to increase the nurses' knowledge and skills to measure BP accurately.

Evidence-based educational materials from the literature were combined with the current ACC/AHA (2017) guidelines on BP measurement to develop a teaching plan. Evidence for evaluating the project outcomes was obtained from pre-/post-tests assessing nurses' knowledge of accurate measurement of BP. Analysis of the evidence involved comparing the nurses' scores on the knowledge assessment questions issued before and after the presentation of the BPTP. A comparison of the scores was conducted using a

paired-sample *t* test; it showed significant improvement in nurses' knowledge of accurate BP measuring.

Findings and Implications

Summative Evaluation

The evaluation results of the teaching plan by the project team were analyzed using Pearson's product-moment correlation and Cronbach's alpha in order to establish validity and reliability. Table 1 below presents the reliability and validity scores of the questionnaire. All three sections—the learning objectives ($\alpha = 0.656$), suitability for the facility ($\alpha = 0.687$), and adaptability by providers ($\alpha = 0.689$)—were found to be reliable, with an average Cronbach's alpha of 0.677.

Based on Pearson's product-moment of each item in the questionnaire (see Table 1), all the questions evaluated by the reviewers were valid. The test-retest for each of the questions showed strong Pearson's product moment correlation indicating construct validity for the extent to which the learning objectives are defined ($r = .687$, $p < 0.000$), their alignment with the needs of the facility ($r = .658$, $p < 0.000$), how they are addressed in the educational intervention ($r = .774$, $p < 0.000$), and the extent to which the reviewers agree with the learning objectives ($r = .632$, $p < 0.000$). The reviewers also ranked the extent to which the educational plan addressed the current needs ($r=.687$, $p<.000$) and appropriateness to the target audience ($r=.723$, $p<.000$) and the target audience will agree to the plan ($r=.675$, $p<.000$). The extent to which the target audience may adhere to the learned knowledge from the intervention was ranked as a lot ($r=.675$, $p<.000$).

Table 1

Reviewers Scores for the Intervention and the Validity and Reliability of the Questionnaire

Category	Item	Cronbach's alpha	*r* (correlation with total score) (*p*-value)	Average review score
Curriculum learning outcomes	To what extent are the learning objectives defined in the curriculum?	0.656	0.687 (.000)	4
	To what extent do the defined learning objectives align with the facility's objectives?		0.658 (.000)	2.75
	To what extent are the defined learning objectives addressed in the educational plan?		0.774 (.000)	4
	To what extent do you agree with the defined learning objectives		0.632 (.000)	3.25
Suitability of the educational plan	To what extent do you think the educational plan addresses the current needs of the facility regarding measuring BP?	0.687	0.789 (.000)	4
	To what extent do you feel the educational plan is appropriate for the target of an audience?		0.723 (.000)	3.75
	To what extent do you think the target audience will agree with the educational plan?		0.698 (.000)	3.5
	To what extent do you think the target audience will adhere to what they learn from the educational plan?		0.675 (.000)	3.25
Implementation of the	Do you think the program should be implemented in the facility?	0.689	0.589 (.000)	4

educational plan	Do you think that regular implementation of the educational plan is appropriate and helpful for the facility?	0.654 (.000)	4
	Do you think the educational plan will be beneficial to the facility and staff?	0.713 (.000)	4

The reviewers gave recommendations on additional materials for the educational plan to ensure it aligns with the objectives. The additions were made in the final educational plan presented to the nurses. The review scores indicated the educational plan's ability to meet the facility's needs. The newly developed staff educational plan includes recommendations on the unsatisfactory scores as follows:

- Measurement errors that occurred with an incorrect performance of the procedure: ensure that there is standardized training of staff in the proper technique of BP measurement.
- Incorrect cuff size: nurses were taught how to select the correct cuff size, especially for morbidly obese patients
- The equipment has not been calibrated, and the BP measurement is incorrect: use a BP measurement device that has been validated and ensure that the device is calibrated periodically.
- Elevated BP because of arm positioning: support the patient's arm (e.g., resting on a desk). In this case, BP may be measured with the cuff on the forearm, supported at heart level. Keep in mind that this method may overestimate systolic BP (ACC, 2017).

BPTP Outcomes

The average post-test score for the providers improved by three points from the five questions answered correctly at baseline to eight after nurses were educated using the BP teaching plan. On average, RNs correctly answered 5.5 questions compared to 5 by LPNs and four by HTs at baseline. The post-test scores averaged at 8.5 for RNs and 8 for LPNs and HTs, as shown in Table 2. The improvement in overall score was statistically highly significant (t (17) = 22.64, $p < .001$), indicating that the BP teaching plan was effective in improving nurses' knowledge (see Table 3). Participants answered correctly between 4 and 7 questions pre-test and 7 and 10 after implementation of the teaching plan. Providers' knowledge levels differed by profession before and after implementation of the teaching plan. RNs had higher scores compared to LPNs and HTs, both at baseline and after they were educated. The difference in baseline scores indicates the variance in knowledge levels among different types of providers, specifically among the nursing community.

Table 2

Average Number of Questions Answered Correctly

Provider	Pre-test Average	Post-test Average
RNs	5.5	8.5
LPNs	5	8
HTs	4	8

Table 3

Project Findings

No. of correct questions answered	Pre-test frequency	Post-test frequency	Paired differences
4	4	0	*DF* = 17
5	9	0	*p* = 0.000
6	4	0	*t* = 22.64
7	1	3	
8	0	10	
9	0	3	
10	0	2	
Total	18	18	

One of the main reasons the project was implemented in the facility was the consistently poor ratings in SHEP scores conducted by CMS (2019). The facility had consistently scored an average of 5 out of 10 in previous surveys, which is low compared to the required 8/10 for all healthcare facilities. The facility SHEP scores released a month after the project implementation recorded a significant improvement of 7/10. Although the facility did not attain the required 8/10 score, the current score is a significant improvement from the constant 5/10 previously obtained. An observed deviation in practice at the facility after the project is that providers have been more actively engaging patients in discussions regarding their BP readings. It can be assumed that the improved knowledge among the staff has given them the confidence to discuss patients' health regarding the current BP readings, what they mean, and the way forward. Active patient engagement has been known to improve client satisfaction; hence, it could lead to improved SHEP scores (Ukpabi & Ewelike, 2017). This improvement in the center's SHEP scores further supports the findings of the project that the BP teaching plan was effective in improving providers' knowledge of BP measurement.

The pre-/post-test findings indicate that the educational plan was effective in improving staff knowledge of BP measurement, hence improved accuracy when measuring BP. Improved accuracy should lead to improved management of HTN due to early detection, thus improving the facility's patient health outcomes. For the healthcare system, the management of HTN at the early stages will improve.

The CDC (2016) estimated that up to 46% of HTN cases in American adults have not been detected. Unmanaged HTN is a major contributing factor to cardiovascular disease complications, disability, and mortality (Williamson et al., 2016). Improved accuracy in measuring BP will, therefore, improve detection and early management of HTN, leading to a reduction in its prevalence within the community. The healthcare setting can save on the costs of treating the life-threatening conditions associated with high BP, such as stroke and cardiovascular disease.

According to ACC (2017), nurses seeking to improve the safety and quality of care in their organization can often find literature reviews, systematic reviews, or evidence-based tools to address goals that are relevant to specific areas of practice. The 2017 ACC/AHA guideline reported that there is substantial evidence to demonstrate that a BPTP is fundamental in categorizing BP, ascertaining BP-related CVD risk, and managing HTN. I used the evidence obtained from the sources mentioned above to develop a comprehensive curriculum that ensures understanding of BPTP and creates a formative evaluation process to help sustain critical skills for nurses.

Recommendations

Recommendations based on the analysis and synthesis of this DNP project include incorporating the BPTP during orientation and 3 and 6-months' post- orientation. Also, sharing the findings and teaching plan with other VA hospitals would increase accurate BP measurement throughout the VA system. The BPTP practice improves BP outcomes and recommendations for future projects should follow. Several studies demonstrated the lack of evidence in accurately measuring BP (Mersal et al., 2015; Rakotz et al., 2017), while other studies have demonstrated that the use of BPTP improves nursing knowledge and reduces measurement errors by as much as 86% (Aminoroaia, Mashhadi, Maracy, & Attari, 2014; Delaney et al., 2015; Gagnon et al., 2015). The results of the review showed that the adoption of evidence-based practice guidelines leads to positive patient outcomes as well as improving nursing practice.

Further research is needed in the area of accurate measurement of BP because the DNP review produced a lack of comprehensive guidelines in accurately measuring BP for early identification of HTN. There is limited research to support the effectiveness of evidence-based findings for BPTP. According to a systematic review to determine the impact of BPTP on inaccurate BP measuring, Tse, Burbridge, Jaffe, and Brock-Utne (2018) concluded that BPTP has the potential to reduce common errors and lead to correct diagnoses, speeding time to treatment and thus improving BP control rates. At an all staff meeting the medical director suggested that the BPTP be included with competency validation semiannually instead of annually.

The nursing manager was encouraged to post the teaching plan on the notice board in the nursing station so staff can review the procedures and knowledge learned during the intervention. The video presentation was left with the facility managers and recommendations were made for educational sessions to be held semiannually as part of the skills assessment/update. Further recommendations were made that the facility test new primary care recruits using the project's pre-/post-test as a clinic policy. Testing newly hired providers will enable the nursing manager to know if the recruited personnel can accurately measure BP. If the recruit is not skilled, the nursing manager will be able to train them on the areas they need improvement in ensuring that they can provide efficient care to their patients. Frequent educational sessions should sustain nurses' knowledge while maintaining up-to-date professional expertise in those newly hired (Abdullah, 2017).

With encouragement of the VA administration, the plan to extend this DNP project beyond the DNP doctoral phase will be implemented by me, in collaboration with the project site team. The ultimate goal is to implement the BPTP educational plan in other primary care clinics in the Veteran Administration Medical Care Systems. Post pilot phase, I foresee full implementation for this expanded project nine months to 1 year out due to the barriers that may arise due to the administration and bureaucratic processes of VA systems.

Contribution of the Doctoral Team

The doctoral project team was helpful in the evaluation and implementation of the teaching plan by providing criticism and feedback during the entire process. Working

with the doctoral team was smooth; the discussions helped in every stage of the project. The doctoral team guided the implementation of the teaching plan by helping to determine how the BPTP would operate and ensuring the BPTP meets patient, clinician, and health care system needs. The team also assisted with ensuring staff engagement in improvement activities that affected the BPTP. The doctoral team reviewed the educational plan before it was utilized, providing constructive criticism during the development of the BPTP. They are strongly supporting and assisting with the expansion of the project.

Strengths and Limitations of the Project

The project had various strengths easing its development, implementation, and evaluation. The willingness of the management personnel at the facility was a major strength facilitated by the consistent low SHEP scores. The nursing manager and the facility director were already looking for strategies to improve patient satisfaction in the facility, hence readily allowed the project to be implemented. Gained knowledge is likely to improve the confidence of the staff to engage their patients regarding their BP readings, possible risk factors, and the way forward to maintain or improve their health quality. Patients have been known to have improved satisfaction when their health conditions are explained to them by the provider, hence improved SHEP scores for the facility should follow. The willingness of the nurse manager eased the process of developing the teaching plan by her reviewing the drafts and providing guidance on what was important for the clinic. Presentation materials were provided by the facility free of charge, and nurses were advised by the management to participate in the project, easing

the DNP student's load in implementation. The nursing manager also assisted in the presentation of the teaching plan to the staff, showing support from leadership. Participants' willingness to participate in data collection was also a major strength for the project. The 18 participants (100%) working at the facility completed the pre and post-test, providing enough data for the DNP student to evaluate the effectiveness of the teaching plan.

Limitations of the project included a short time and a lack of blinding among participants. The project timeframe was not long enough to evaluate the sustainability of the knowledge acquired by the nurses. Similarly, the timeframe was not long enough to evaluate the transference of the gained knowledge into practice. Participants were aware of why the project was conducted, which may have influenced the results. Participants were informed during the post-test that the reason they had to take the same test was to show if their knowledge had increased. Such knowledge may have influenced the project outcome with nurses trying harder to provide correct answers to the question than they would have if they did not know the reasons (Abellán-Huerta, Prieto-Valiente, Montoro-García, Abellán-Alemán, & Soria-Arcos, 2017).

In future studies on the topic, it is recommended that the long-term sustainability of the gained knowledge among educated providers be evaluated along with transference of the gained knowledge to practice. Randomization of participants to control and treatment groups, as well as double-blinding, is recommended in evaluating the effectiveness of a BPTP. Grouping participants to control and treatment groups will enable the comparison of the teaching plan and other interventions for improving

accuracy in measuring BP to determine the one that is sustainable with positive outcomes.

Section 5: Discussion and Summary

Dissemination Plan

The results of the evaluation of the BPTP educational plan were presented to the leadership team during a scheduled meeting that included the chief of nursing, director of infection control, nurse educator, nurse manager of health promotion and disease prevention, nurse manager of the primary care center, medical director, and PCP. Approximately 40 staff nurses also attended the meeting. The results, suggestions for improvement, and strategies to improve nursing practice were also discussed, along with presentation of the materials to improve nursing practice.

Audiences for Dissemination

The primary audience for this DNP project dissemination is the clinical staff at the East Coast VA primary care center. The BPTP's objectives, findings, and recommendations will be presented to the healthcare staff in two phases. In the first phase, the findings of the BPTP that the staff participated in will be reviewed during an all-staff interactive discussion led by the nurse manager. The second phase will involve posting the project objectives, findings, and the guidelines for the BPTP on the notice board at the nurse's station. The posting will be the educational plan with the steps for accurately measuring BP. Posting the BPTP information, accompanied by the project outcomes, will remind the nurses of the importance of the guidelines when measuring BP. Nurses will also be able to refer to the pinned guidelines in the future to review and refresh their knowledge and skills for accurate BP measurement. Posting the guide in the nurse's station is also expected to elicit discussions among the nursing staff and other

primary care providers. Continued discussions will boost the confidence of the staff and thus encourage more patient interactions and education, which, in turn, could promote client satisfaction. Continued patient satisfaction will ensure a sustainable improvement of the facility's SHEP scores.

The BPTP will be disseminated to various VA centers in the surrounding area. The DNP student will coordinate with fellow PACT coordinators within the region to disseminate the project objectives, findings, and the BP measurement guidelines in the nursing stations. Disseminating the project in various centers and the posting of the intervention guidelines is expected to reach wider nursing staff, eliciting discussions on the current BP measurement procedures. Discussions regarding BP measurement among nursing staff are expected to lead to the examination of the current processes and making improvements where necessary based on the posted guidelines. An abstract of the project will be sent to *The American Journal of Nursing* or another peer-reviewed nursing journal and a conference of the Maryland Nurses' Association.

Analysis of Self

The processes of developing the BPTP intervention, implementation, and evaluation used and added to my experiences as a practitioner, scholar, and project manager. As a practitioner, I am also responsible for coordinating team-based healthcare focused on wellness and disease prevention; developing the educational plan helped me learn more about the prevention of diseases through small changes in healthcare practice. As an RN, I am determined to ensure that patients receive the best available care, thus promoting their wellness and preventing disease onset and progression. By implementing

the project, I improved my practice skills on the continuous impact learning has on my practice and patient outcomes. My roles as an RN and PACT coordinator align with the promotion of high-quality care provided to patients and their sustenance.

As a PACT coordinator, I promote a team-based approach to healthcare and look for opportunities for improving the quality of care provided without additional costs to the facility and patient. I learned from the project how to effectively coordinate teams to work towards achieving a common goal. My role as a healthcare practitioner focuses on ensuring that my patients always receive quality care. In designing the project and developing the intervention, I grew in my career to understand that other avenues exist for improving my knowledge of quality care delivery. I have grown to understand that through reviewing current research articles, I may learn new strategies to continuously improve the quality of care I offer to my patients. As a nurse practitioner and PACT coordinator I promote the provision of the best possible healthcare services to my patients while looking for opportunities for improvement.

As a scholar, I focus on advancing the quality of healthcare quality using evidence-based practices to improve healthcare outcomes, including satisfaction, safety, and reducing spending. With the reported efficacy of evidence-based nursing practices, I aim to implement small-scale approaches for improving the quality of care provided not just by me, but also by the other practitioners. I tend to focus on the small-scale strategies that do not require additional costs for the facility and resource utilization. With a recurrent review of quality improvement studies, I have found many evidence-based strategies that require little to no effort on my part but are effective for improving

healthcare outcomes and reduction of spending. This understanding was helpful to me during the process of developing the BPTP. My knowledge as a scholar helped synthesize the available research to come up with a simplified teaching plan for nurses. The project provided me with first-hand experience in the design of interventions from evidence-based practices supported by the literature.

As a project manager, I am interested in implementing effective evidence-based programs without the need for additional resources. The BPTP is one of the evidence-based quality improvement approaches I found that does not require additional resource utilization for the facility. The major resources required for the BP measuring education plan were time for the healthcare team to participate, a personal computer, a projector, space for the presentation, and printing paper, which were all readily available and did not cost the facility any additional charges. Hosting the BPTP after the end of practitioner shifts ensured that there was no interference with the working hours of the staff. My views influenced my responsibilities as a project manager opting to implement cost-effective and time-friendly interventions that can be understood by the nursing staff. I excelled in my role as a project manager, based on the summative evaluations by the review team, and had an advantage due to my focus on simplicity. The facility administrators readily accepted the project because of its cost-effectiveness, promised outcomes, and simplicity of implementation. My only weakness as a project manager was that I could not attend the training sessions held by the nurse manager.

Various challenges were encountered in the completion of the scholarly project. Identifying the correct evidence-based procedure from literature synthesis was

challenging at first. As a solution, the guidelines acquired from the literature synthesis were harmonized with those presented and recommended by the ACC/AHA to form an education program for implementation (ACC, 2017). Having the nurse manager review the education plan also helped in its refining. The nurse manager was able to point out how to effectively adapt the education plan to the facility. In developing the intervention, I gained valuable insights into adapting evidence-based programs to specific facility settings based on the teams, patients, and work environment. Given the project was implemented in a VA clinic and to various staff members, including RNs, LPNs, and HTs, the intervention had to be custom-made on various levels to not just cover all the necessary areas but to also be applicable for each attending staff member.

The second challenge experienced in this scholarly journey was in participant recruitment for data collection. Despite the nursing manager recommending the educational presentation sessions to all healthcare practitioners working at the VA center, not all of them were willing to take part in the data collection. The healthcare staff had low knowledge levels regarding the need for quality improvement projects, including the low SHEP scores for the facility. Additional information was provided to address the problem, regarding the facility's SHEP scores and the need for improvement. From the experience, I learned that my role as a team leader also includes improving the awareness of staff regarding the need for evidence-based practices and quality improvement

Summary

HTN is a leading risk factor for cardiovascular disease and stroke among other health conditions. With a prevalence rate of more than 30% in the US, high BP is often

misdiagnosed, and research has shown that nursing staff often do not possess the adequate skills for accurate measurement. Inaccurate measurement of BP hinders correct diagnosis and decision-making regarding management, thus reducing the risk of cardiovascular disease and stroke. The BPTP scholarly project involved the development, implementation, and evaluation of an evidence-based BP-measurement teaching plan to improve knowledge among healthcare practitioners working in a VA center. The teaching plan was developed based on previous evidence-based literature and implemented at the VA center. Participants were tested before and after they were educated using the developed teaching plan to evaluate its effectiveness in improving nurses' knowledge of accurate BP measurement. Reviews of the teaching plan indicated that it would meet the needs of the center and the difference between the pre and post-test scores indicated that its implementation was effective. The teaching plan was, therefore, effective in improving nurses' knowledge of accurate BP measurement. The findings were consistent with existing literature regarding the effectiveness of educational plans on improving knowledge and skills among nurses. The acquired knowledge is expected to be reflected in clinical practice where improved skills will increase the rate of accurate diagnosis of HTN within the VA center. Regular educational sessions using the developed teaching plan were recommended for the nurses at the facility to help sustain the acquired knowledge and skills.

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Appendix A: Literature Review Matrix

DNP Project Title: Basic Quality Care Blood Pressure Teaching Plan

	Theoretical / Conceptual Framework	**Research Question(s)/ Hypotheses**	**Research Methodology**	**Analysis & Results**	**Conclusions**	**Grading the Evidence**
Bhatt, H., Siddiqui, M., Judd, E., Oparil, S., & Calhoun, D. (2016). Prevalence of pseudoresistant hypertension due to inaccurate blood pressure measurement.	Behavioral health	To determine the prevalence of pseudoresistant hypertension (HTN) due to inaccurate BP measurement.	Randomly Controlled Trial.	Statistical calculations using SPSS. About 33.1% patients with uncontrolled resistant HTN (RHTN), were falsely identified as having the condition based on triage BP measurements.	Inaccurate blood pressure measurement leads to increased prevalence of pseudoresistant hypertension.	Level II
Block, L., Flynn, S. J., Cooper, L. A., Lentz, C., Hull, T., Dietz, K. B., & Boonyasai, R. T. (2018). Promoting sustainability in quality improvement: An evaluation of a web-based continuing education program in blood pressure measurement.		To determine whether a web-based continuing education program on BP measurement reinforces skills and knowledge among clinical staff.	Pre- and post-intervention assessment of attitudes, knowledge, and behaviors among Johns Hopkins Community Physicians (JHCP) staff.	The web-based continuing education program on BP led to significant improvement of skills and knowledge among clinical staff.	The web-based educational plan reinforced knowledge relating to recommended BP measurement technique.	Level VI
Daskalopoulou, S. S., Rabi, D. M., Zarnke, K. B., Dasgupta, K.,		To providing detailed recommendations on HTN diagnosis,	A medical librarian conducted a MEDLINE search of	A meta-analysis involving synthesized results from 12 reviews.	The updated recommendation can help to improve	Level I

Nerenberg, K., Cloutier, L., … Bolli, P. (2015). The 2015 Canadian Hypertension Education Program Recommendations for Blood Pressure Measurement, Diagnosis, Assessment of Risk, Prevention, and Treatment of Hypertension.		prevention, assessment, and treatment.	relevant articles. Evidence from randomized systematic reviews of trials and controlled trials was preferred.	The updated recommendation can be used in a nursing education program to help in improving the knowledge and skills required to accurately measure blood pressure	nurses' knowledge and skills to accurately measure blood pressure.	
Delaney, M. M., Friedman, M. I., Dolansky, M. A., & Fitzpatrick, J. J. (2015). Impact of a sepsis educational plan on nurse competence. 24-20150320-03		To determine the effect of a sepsis educational plan on nurses' perceived ability for early identification, determining suitable intervene, and offer care for patients with the condition.	A quantitative, quasi-experimental design.	A one-tailed paired *t* test and paired *t* tests. The findings of the study showed that the educational plan leads to improvement of nurses' ability to ensure improved quality of care offered to patients, selection of suitable interventions, and early identification of the intervention.	The educational plan is important to improve nurses' ability offer high quality care, select of suitable interventions, and timely identify HTN.	Level III
Gagnon, M. P., Payne-Gagnon, J., Fortin, J. P., Paré, G., Côté, J., & Courcy, F. (2015). A learning organization in the service of knowledge management among nurses: A case study.		To analyze the impacts of a learning organization on nurses' knowledge management, continuing professional growth, and retention in health care centers.	Randomly Controlled Trial.	Statistical software package (SPSS) 17.0 was applied to conduct the statistical analysis. The study showed that learning organization is important in improving daily nursing work.	Organizational learning helps nurses to improve their knowledge transfer and quality of care offered to patients	Level II

Gazibara, T., Rancic, B., Maric, G., Radovanovic, S., Kisic-Tepavcevic, D., & Pekmezovic, T. (2015). Medical students, do you know how to measure blood pressure correctly?		To estimate the level of knowledge of BP measurement procedure among medical students.	Randomly Controlled Trial.	SPSS17.0 was applied to conduct the statistical analysis. The highest percentage of correct answers among indicated that BP should be evaluated twice for the duration of patient examination.	Educational plans on BP measurement can help to nurses' knowledge and skills to evaluate BP.	Level II
Gyamfi, J., Plange-Rhule, J., Iwelunmor, J., Lee, D., Blackstone, S. R., Mitchell, A., ... & Cooper, R. (2017). Training nurses in task-shifting strategies for the management and control of hypertension in Ghana: A mixed-methods study.		To evaluate nurses' knowledge and procedure of HTN management and control.	The cluster-randomized trial.	Excel spreadsheet. The training led to an improvement of 68.8% of nurses' HTN knowledge test.	Training is important to improve nurses' knowledge and procedure related to HTN diagnosis, management, and treatment.	Level II
Himmelfarb, C. R. D., Commodore-Mensah, Y., & Hill, M. N. (2016). Expanding the role of nurses to improve hypertension care and control globally.		To examine the expanding role of nurses in providing optimal care to a patient with HTN.	Meta-analysis	A meta-analysis. An educational plan for nurses using research findings has led to increased quality of HTN care offered to patients.	Educational plans and nurses training help the health care professionals to assume leadership roles to improve the quality of care and decrease ethnic disparities.	Level III
Mersal, F. A., & Mersal, N. A. (2015). Effect of evidence-based lifestyle guidelines on self-		To determine the impact of evidence-based guidelines on	Quasi-experimental design	SPSS17.0 was applied to conduct the statistical analysis.	Nurses should be trained to implement lifestyle guidelines and evidence-based	Level III

efficacy of patients with hypertension.		the self-efficacy of people with HTN.		The implementation of evidence-based guidelines on lifestyle helps to enhance blood pressure, self-care activity, knowledge, and self-efficacy of people with HTN.	educational plan to improve the management of HTN.	
Rakotz, M. K., Townsend, R. R., Yang, J., Alpert, B. S., Heneghan, K. A., Wynia, M., & Wozniak, G. D. (2017). Medical students and measuring blood pressure: results from the American Medical Association Blood Pressure Check Challenge.		To assess the skills of medical students in measuring blood pressure.	Randomly Controlled Trial.	Statistical analysis. The findings showed that only one student was proficient on all 11 skills.	Implementation of an educational plan on BP measurement can help to prepare nurses who can accurately measure BP.	Level II

Appendix B: Teaching plan/Curriculum Development

Student: DORINE LYNCH

Title of Project: Basic Quality Care Blood Pressure Teaching Plan

Problem: A significant number of nurses are failing to measure blood pressure accurately at East Coast VA Primary Care Clinic.

Purpose: The BPTP has the potential to address the identified gap-in-practice by facilitating the training of nurses to equip them with the required knowledge and skills to accurately measure BP.

Practice Focused Question: *What evidence from the literature supports the use of a continuing education program in BP measurement to improve the nurses' knowledge* and *skills necessary to promote patients' quality of life related to hypertension?*

Conducting a needs assessment at a VA primary care clinic on the East Coast facilitated in identifying that nurses at the facility have inadequate knowledge and skills for correctly measuring BP, which affects the patient outcomes. Increased knowledge among nurses has been supported by peer-reviewed literature as an effective intervention for enhancing accurate blood pressure measurement.

Purpose of the Project: To improve BP measurement related knowledge and skills among nurses who provide care at the VA primary clinic.

Objectives: By the end of the educational intervention, the target participants should be able to:

1. List at least three variables that affect BP measurement.

2. Explain and illustrate accurate BP measurement techniques that are inclusive of appropriate patient position, effective use of the devices, determining cuff size and placement, and describing the sounds related to the process.

Target Participants: Registered nurses (RNs), Licensed Practical Nurses (LPNs), and Health Technicians (HTs) who provide care at the VA primary care clinic.

Equipment: Sphygmomanometers and stethoscopes.

Materials: Pre-test-post-test forms and educational handouts

Components: Power point presentation, Lecture Discussion demonstration and return demonstration and educational sessions.

Session One: Introduction

All RNs, LPNs, and HTs who provide care at the VA primary clinic will attend a 15-minute meeting. At the meeting, the Doctor of Nursing Project (DNP) student will explain to the nurses about the proposed project. The nurses will have an opportunity to ask questions and the project leader will provide clarification. While requesting the nurses to participate, they will be issued consent forms. Nurses who agree to participate will be issued and asked to complete the form containing the Pre-test questions. The project leader will collect and review the Pre-test form to determine the areas to discuss in detail during the educational session.

Session Two: Educational plan

Section two is classified into lessons containing explanations based on the pre-test questions and focused on the sections that the participating nurses have limited knowledge. The lessons will include practical demonstrations, laboratory activities, and

BLOOD PRESSURE MEASUREMENT OBSERVER EXAM
Pre-/Post-test Form

Employee Initials: _____
Date: _____
Trainer Name: _____

Please answer the questions below regarding accurate blood pressure measurement. After an educational session, you will take the post-test.

1. List three variables that affect blood pressure measurement.

2. How long after the patient comes into the exam room should you wait before doing the blood pressure measurement?

3. What position should a patient be in when taking a blood pressure measurement?

4. Which arm is used for Blood Pressure measurement?

5. How do you determine the cuff size?

6. What position must the patient's arm be in when measuring blood pressure?

7. What part of the stethoscope is best used for blood pressure measurement?

8. Where does the observer place the stethoscope to measure blood pressure?

9. What number does the observer start at for blood pressure measurement?

10. What two sounds is the observer listening for?

explanations in the form of diagrams. The use of illustrations and diagrammatic representations is anticipated to increase the participants' understanding. The

demonstrations and laboratory activities will be conducted in adherence to the steps explained in table one and two. The developed PowerPoint presentation will facilitate the demonstration and education.

Lesson One: Variables and BP Measurement

The participants will be educated on the variables that affect BP measurement and how to consider or accommodate for the variables that can result in the inaccuracy of the measured BP. The patient-related sources of inaccuracy that the nurses will be taught to consider include caffeine, nicotine, or alcohol use; meal ingestion; a full bladder; exposure to cold; paretic arm; and white-coat effect (Kallioinen et al., 2017). Procedure-related sources of inaccuracy, which include insufficient rest period, body position; legs crossed at knees; unsupported back and arm; incorrect cuff size; placing the arm lower than the heart level; talking during measurement; excessive pressure on the stethoscope head; and fast cuff deflation rate will be discussed. In addition, observer-related sources of inaccuracy such as hearing deficit and Korotkoff sound interpretation will be explained.

Lesson Two: **BP Measurement Procedure**

The nurses will be taught to wait at least five minutes after the patient arrives before taking the patients' BP measurement. During the lesson, the DNP candidate will use standardized tables and figures to illustrate effective BP measurement techniques. Table one contains the steps that will be illustrated to the nurses.

Systematic BP Measurement Procedure

Key Steps for Proper BP Measurements	Specific Instructions
Step 1: Properly prepare the patient	1. Request the patient to sit on a chair with feet flat on the floor, back supported, and legs uncrossed. The nurse should wait until the patient is seated for at least five minutes without talking or moving before recording the first BP reading. 2. It is important that the patient has not had caffeine, exercised, or smoked in the last 30 minutes before BP measurement. The nurses will be required to ask the patients if they have taken caffeine, exercised, or smoked in the last 30 minutes. If they answer "Yes", the patients will be required to wait for 30 minutes before their BP is measured. 3. The nurse should ensure that the patient has emptied his/her bladder before measuring BP. 4. Neither the patient nor nurse should talk during the five minutes rest period before measurement. 5. Clothing covering the location where the cuff is placed should be removed.
Step 2: Using the proper technique for BP measurements.	1. Use a validated upper-arm cuff BP measurement device 2. Support the patient's arm at heart level (See Figure 1). 3. Use the correct cuff size. The bladder should encircle 75%–100% of the arm.
Step 3: Take the appropriate measurements that are required for the diagnosis and treatment of elevated BP or hypertension.	1. During a patient's initial visit, record BP of both arms. For subsequent measurement, use the arm with higher reading. 2. The repeated measurements should be measured After the intervals of one to two minutes.

Key Steps for Proper BP Measurements	Specific Instructions
Step 4: Accurate documentation of BP readings.	1. Record the first and last audible sounds for systolic and diastolic pressure, respectively. 2. The cuff should be inflated to at least 30 millimeters of mercury (mm Hg) above the point where the radial pulse disappears. 3. Deflect the cuff at a rate of 2 to 3 mm Hg per second.
Step 5: Provide BP readings to the patient.	1. Provide the patient with verbal and written readings. 2. Help the patient interpret the results.

Note: Adapted from: Muntner et al. (2019)

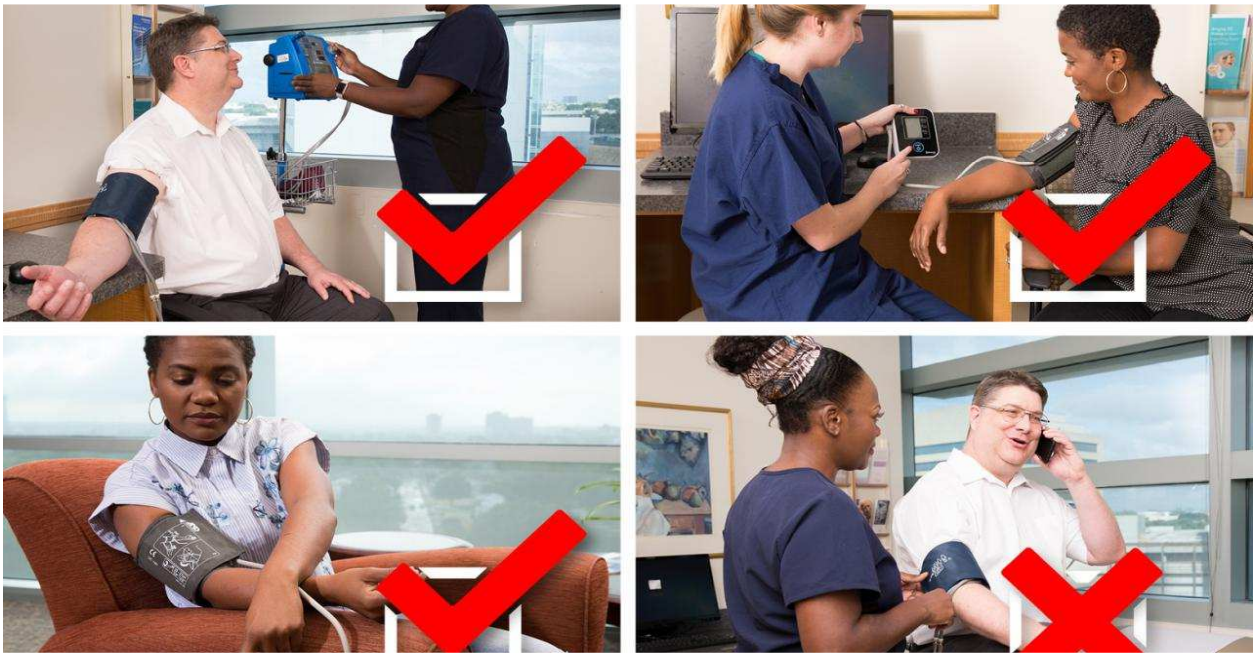


Figure 1: Arm positioning. Adapted from Berg (2018).

Cuff Sizes

Cuff Size	Arm Circumference, cm	Bladder Dimension (width× length), cm
Small adult	22–26	12×22

Cuff Size	Arm Circumference, cm	Bladder Dimension (width× length), cm
Adult	27–34	16×30
Large adult	35–44	16×36
Extra-large adult	45–52	16×42

Note: Adapted from Muntner et al. (2019)

Lesson Three: **Korotkoff Sounds and Stethoscope**

The third lesson will be focused on the stethoscope and Korotkoff sounds that are classified into five phases. Phase one is characterized by clear tapping sounds that gradually become louder. At phase two, the sounds change to a murmur with swishing. At the third phase, the sounds are loud and have a knocking quality but are lower than those in phase one. During the fourth phase, the sounds become muffled and have a swishing quality. The sounds disappear in phase five. The bell or the diaphragm of the stethoscope should be placed over the brachial pulse and not under the cuff. The stethoscope should also not touch the rubber tubing. In addition, there should be no air between the skin and stethoscope. Nurses should record the first and last audible sounds for systolic and diastolic pressure, respectively (Muntner et al., 2019).

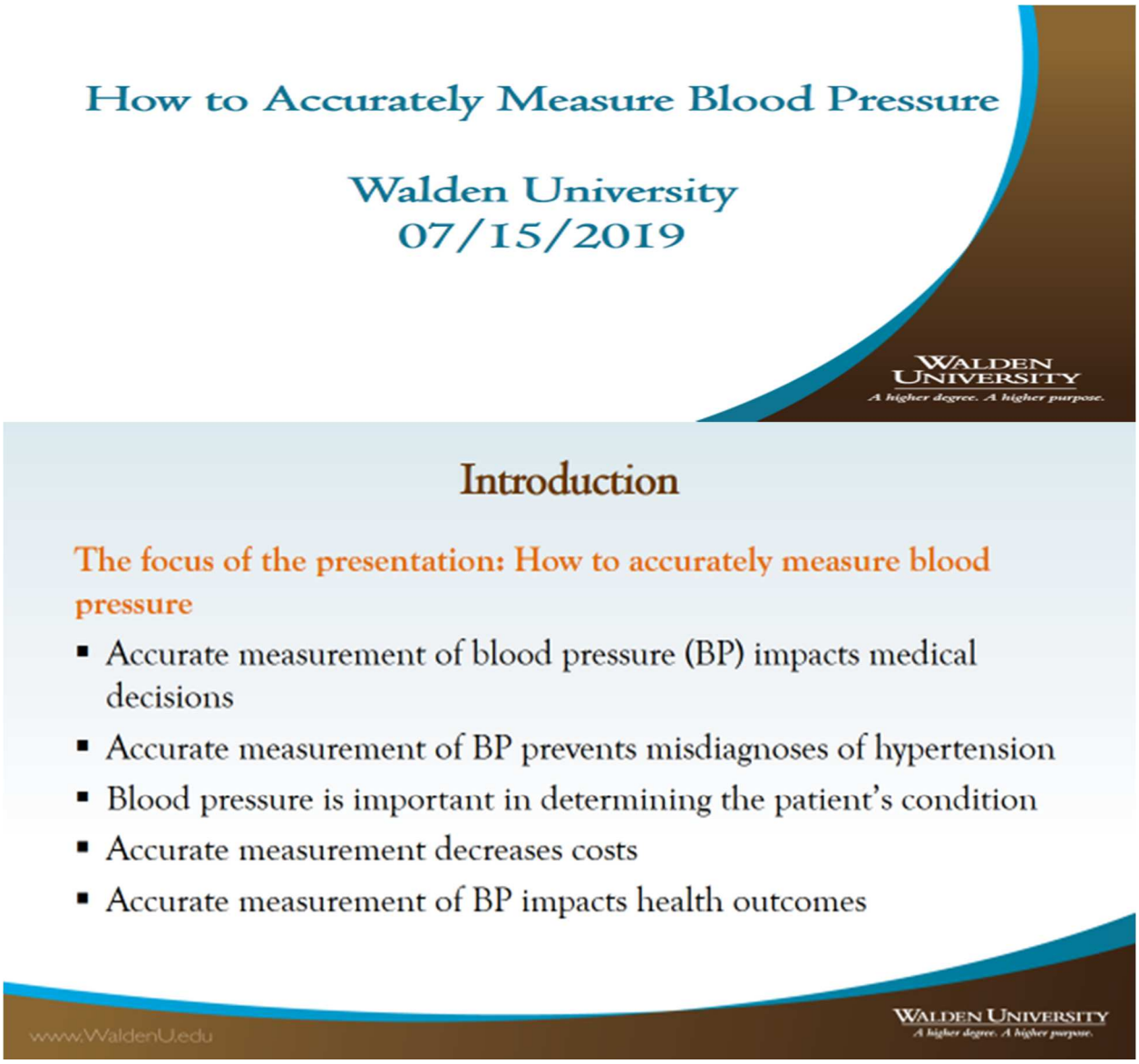
Session Three: Assessment

During the third session, the participants will be issued with the post-test form. After completing the form, the project lead will discuss the teaching with participants to acquire their opinion about the educational intervention. The project leader will then assess the post-test responses and compare them with the pre-test. It is anticipated that the educational plan will enhance the nurses' knowledge and skills to accurately perform BP measurements. In addition, the long-term expectation is that the educational plan will improve the facility's hypertension Survey of Healthcare Experiences of Patient (SHEP) score from 5/10 to 8/10. Session Four: Demonstration

The DNP student will show the nurses a sphygmomanometer and discuss the uses of the cuff, bulb, valve bladder, and manometer. A demonstration using a double-headed

stethoscope will be conducted. The nurse will be shown how to listen to the patients' blood pressure and discuss the techniques for cleaning the cuff and stethoscope in between use to remove ear wax on the equipment. In addition, the nurses will demonstrate taking a blood pressure to DNP student using a double headed stethoscope.

Appendix C: How to Accurately Measure Blood Pressure



Factors Influencing Accurate Measurement of BP

The main areas relating to accuracy are:

- Preparation of patients
- Preparation of equipment
- Use of proper cuff
- Type of monitor
- Understanding of the reading

Preparation of the Patients

During patient preparation, a nurse should do the following:

- Explain the procedure to a patient
- Advise the patient to remove any tight clothing covering the arm
- Advise the patient to empty his/her bladder
- Ask the patient to be seated
- Request the patient to relax before the procedure
- Advise the patient to close legs and keep feet flat on the floor

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Preparation of the Patients (Cont')

- Gain verbal consent
- Choose a comfortable place
- Patient to remain silent during procedure
- Ensure that the arm is stretched out, and supported, with elbow at heart level
- Ensure the that the patient is in a upright position
- No smoking or drinking tea or coffee 30 minutes before measuring BP

Preparation of Equipment

- Ensure BP monitoring equipment is recalibrated
- Ensure clean BP machine through the use of PDI Super Sani Cloth
- Determine suitable size of cuff based on circumference of the upper arm

Other equipment required are:

- Stethoscope
- Tape measure
- Spare batteries
- Approved cleaning wipe

Type of Monitor

- Type of monitor:
  - Aneroid devices
    - must be operated manually
  - Electronic devices
    - easy to use, reduces human error
    - usually self-inflates
    - provides a clear read out

Type of Monitor (Cont')

- Proper care and maintenance
  - storage
  - calibrated
  - cuff cleaning and disinfecting:

Use of the Cuff

- Using the correct sized cuff, pumped up cuff to 160 - 180 mmHg
- Use of circumference of the upper arm to determine the

Arm Circumference	Cuff Size
Less than 23cm	Small Adult
23cm to 33cm	Standard Adult
33cm to 50cm	Large Adult
51cm to 53cm	Adult Thigh Cuff

Figure 1. Arm circumference and Cuff size. Wirral Community (2016).

Understanding of the Reading

- BP readings between arms, each at a time
- Stethoscope sounds
- Understand that readings differ with sitting or standing because of forces of gravity
- Document BP reading in health records
- Record BP at least twice every time to calculate average and get accurate readings
- Repeat the BP measuring procedure after one minute

Appendix D: Pre-/Post-test Form

BLOOD PRESSURE MEASUREMENT OBSERVER EXAM
Pre/Post –Test Form

Employee Initials: _____
Date: _____
Trainer Name: _____

Please answer the questions below regarding accurate blood pressure measurement. After an educational session, you will take the post-test.

1. List three variables that affect blood pressure measurement.

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3. What position should a patient be in when taking a blood pressure measurement?

4. Which arm is used for Blood Pressure measurement?

5. How do you determine the cuff size?

6. What position must the patient's arm be in when measuring blood pressure?

7. What part of the stethoscope is best used for blood pressure measurement?

8. Where does the observer place the stethoscope to measure blood pressure?

9. What number does the observer start at for blood pressure measurement?

10. What two sounds is the observer listening for?

Appendix E: Content Expert Evaluation of the Curriculum Plan

Title of Project:
Student:
Date:
Name of Reviewer:

Products for review: Curriculum Plan, Suitability of Educational Plan, Implementation of Educational Content with Expert Evaluation Plan Form

Instructions Please review each objective related to the curriculum plan, content and matrix. The answer will be a "yes" or "no" with comments if there is a problem understanding the content or if the content does not speak to the objective.

Curriculum Learning Outcomes

1: To what extend are the learning objectives defined in the curriculum?

Met Not Met
Comments:

2: To what extend do the defined learning objectives align with the facility's objectives?

Met Not Met
Comments:

3: To what extend are the defined learning objectives addressed in the educational plan?

Met Not Met
Comments:

4: To what extend do you agree with the defined learning objectives?

Met Not Met
Comments:

Suitability of the Educational Plan

5: To what extend do you think the educational plan addresses the current needs of the facility regarding measuring BP?

Met Not Met
Comments:

6: To what extend do you feel the educational plan is appropriate for the target audience?

Met Not Met
Comments:

7: To what extend do you think the target audience will agree with the educational plan?

Met Not Met
Comments:

8: To what extend do you think the target audience will adhere to what they learn from the educational plan.

Met Not Met
Comments:

Implementation of the Educational Plan

9: Do you think the plan should be implemented in the facility?

Met Not Met
Comments:

10: Do you think that regular implementation of the educational plan is appropriate and helpful for the facility?

Met Not Met
Comments:

11: Do you think the educational plan will be beneficial to the facility and staff?

Met Not Met
Comments:

Appendix F: Content Expert Evaluation of the Curriculum Plan Summary

Not Met = 1 Met = 2
At the conclusion of this educational experience, learners will be able to:

Objective Number	Evaluator 1	Evaluator 2	Evaluator 3	Average Score
1.				
2.				
3.				
4.				
5.				
6.				

Appendix G: Pre-test/Post-test to Calculate the Content Validity Index

To calculate an I-CVI, experts are asked to rate the relevance of each item, usually on a 4-point scale. The scale most often used is: 1=not relevant, 2=somewhat relevant, 3=relevant, 4=highly relevant (Davis, 2012). Then, for each item, the I-CVI is computed as the number of experts giving a rating of either 3 or 4, divided by the number of experts: the proportion in agreement about relevance.

Remember that content validation is of an assessment, i.e., the relevance of the assessment's items for measuring the objectives of the curriculum. List the items in column 1 and the responses of the experts in columns 2-4 (if 3 experts). Then apply the procedure above to compute item CVIs (I-CVIs) for all items and place in column 5. Sum the I-CVIs and divide by the number of items to obtain the scale CVI (S-CVI).

For a five-item scale:

Item	Expert 1	Expert 2	Expert 3	I-CVI
1				
2				
3				
4				
5				

Each cell contains a rating (1, 2, 3, or 4) of the item defining that row by the expert defining that column.