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Preparing Staff Nurses for Timely Management of Hypertension in Acute Ischemic Stroke

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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,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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MS, Walden University, 2018

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Doctor of Nursing Practice

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Abstract

When a blood clot obstructs the flow of blood and oxygen to the brain, it can cause an ischemic stroke. Hypertension is the most important risk factor for ischemic stroke because it causes damage to the arteries, making them easy to burst or clog and subsequently increases the risk of stroke. Advanced treatments have been developed to dissolve clots and restore blood flow to the brain. Tissue plasminogen activator (tPA) has been clinically beneficial in acute ischemic stroke if it is given early and under the right conditions. Nurses can improve patient care through application of evidenced-based management. The purpose of this project was to find out whether using an evidence-based staff education module to promote timely management of hypertension in acute stroke patients who receive tPA treatment would improve nonneurology trained staff nurse's knowledge. The staff education module was developed using Rosswurm and Larrabee's model of evidence-based practice. Benner's novice to expert model was used to give a more objective way of evaluating the progress of teaching. The education was presented to 25 staff nurses, and a pretest and posttest were administered to determine a change in the nurse's knowledge. Results were analyzed and indicated that the educational activity affected the improvement of the nurses' test scores ($t = -3.08$, $df = 9$, $p = .0066$). The use of staff education module for timely management of elevated blood pressure in an acute ischemic stroke patient, promotes social change by providing enhanced staff knowledge and skills training that can lead to decreased patient mortality, morbidity, and reduced hospital costs and the need for long-term care.

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Dedication

This DNP Scholarly Project is dedicated to first and far most— the almighty God who led me in all my endeavors, my dear husband (Evarist Oguguo), and my wonderful children (Ezinne, Amarachi, Tochi, Kamsi and Obiuto). Thank you for your unconditional love, sacrifices, daily prayers, patience, support and encouragement. I can't imagine reaching this milestone without you all, and I couldn't ask for such greater blessings than my family. Let me also thank my beautiful mother (Lolo Chinyere) whose dream has always been to see me achieve a doctoral degree, as well as my late father (Chief G.O. Ogbuokiri). Although not here to witness, my father has always been my prayer link and a great support system before he passed. I will also thank my brothers and sisters, Adanna, Ndubuisi, Ulunma, Chinenye, Johnny, Chinedu and Uche, for their moral support.

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Section 1: Nature of the Project

Introduction

Stroke is also called brain attack. During a stroke, blood flow stops or is diminished in a certain part of the brain. The symptoms of stroke depend on the area of the brain that is not receiving blood. Stroke is the fifth cause of death in the United States, amounting to more than 13 million new diagnosed cases and 5.5 million deaths recorded each year, and the leading cause of serious, long-term disability in the United States (Ferrara, 2020). Furthermore, the World Stroke Organization estimated that more than 116 million will suffer long-term disability and death annually from stroke and as a result, one in four people from ages 25 years and older will have stroke. The American Heart Association (AHA) estimated that 142,000 people will likely die from stroke annually in the United States. The percentage of death caused by stroke from 2006 to 2016 increased by 3.7% in the United States (Ferrara, 2020). According to Ferrara (2020), 80% of strokes are ischemic, including its subtypes such as embolic and transient ischemic attack (TIA); the remaining 20% of strokes are hemorrhagic. An ischemic stroke (cerebrovascular accident [CVA]) is the sudden death of brain tissue that occurs when an area of the brain does not receive sufficient oxygen. This event can occur when a blood vessel that supplies the brain and central nervous system is blocked or significantly narrowed by the buildup of fatty deposits (plaque) along the vessel wall. Embolic stroke is caused by a clot or a piece of plaque floating in the bloodstream. If the clot becomes stuck in a blood vessel, blood flow to the brain is blocked or interrupted,

causing permanent loss of brain function, which affects different parts of body function. On the other hand, TIA is sometimes referred to as a “mini stroke” and it is an early warning that a stroke is coming; TIA is a temporary stroke. It usually does not cause any lasting damage. TIA should be taken seriously because it is an opportunity to prevent a future stroke. Furthermore, hemorrhagic stroke occurs when a small vessel in the brain weakens and breaks. Blood then spills into brain tissue, killing cells. Other brain cells die because the flow of blood is interrupted. Hence, it becomes necessary for nurses to be backed by evidence-based practices (EBPs) skills and competencies essential for stroke management on post tPA patients. Thus, in this DNP project, I addressed the gap in training and education of nonneuro nurses in the organization under study.

Studies have shown that timely and adequate management of HTN before, during, and after IV tPA (alteplase) administration in stroke patients can lead to a better treatment outcome (Ferrara, 2020). According to Ko et al. (2017), it is important to maintain a BP <180/105 mm Hg consistently, regardless of how many multiple BP agents or continuous infusions are administered after tPA treatment. However, providers must be careful to ensure that BP levels do not drop below 120/80 mm Hg post-tPA because hypotension has its own adverse effects, which can worsen or trigger symptoms again and results in unexpected outcomes (Ko et al., 2017). Developing a DNP staff education model will help prepare staff to learn and use current EBPs and required skills and competencies required for bedside nursing and management of stroke patient. Staff education can improve the knowledge of the bedside nurses caring for stroke patients receiving tPA.

When nurses are proficient in managing hypertension in poststroke patients, they will be in position to deliver better, safer, and more competent bedside care, and ultimately save more lives.

Problem Statement

Stroke is a medical emergency requiring urgent attention, assessment, and intervention in a timely fashion (Ferrara, 2020). EBP guidelines developed for stroke management can guide nurses to effectively manage stroke symptoms (Jones et al., 2018).

Complications can occur when the staff interventions are not in consistent with stroke current EBP guidelines. In addition to unexpected complications and outcomes, inadequate staff knowledge and skill training can lead to increased mortality, morbidity, hospital cost, and need for long-term care (Jones et al., 2018).

In the organization where I practice, acute stroke patients who need post-tPA management are usually transferred to the neuroscience intermediate care (Neuro IMC) and intensive care unit (ICU). Some of these patients are transferred from nearby hospitals with tPA already in progress and/or to initiate tPA or manage post tPA treatment symptoms such as slurred speech, weakness of the extremities, and other symptoms. As a result, the hospital experiences overflow and influx of stroke patients, and to control these influxes, the management moves stroke patients to other units that have inadequately trained staff to manage these patients. The importance of staff training on stroke care and maintaining appropriate blood pressure parameters cannot be

overemphasized and moving these patients into the care of staff who have not been trained to handle these population of stoke patients can have negative consequences. According to Rusanen et al. (2015), nurses should be professionally trained and well informed about the significance of managing and maintaining blood pressure levels of 180/105 mm Hg post-PA therapy. The practice of maintaining standard blood pressure levels can prevent potential life-threatening outcomes such as hemorrhagic transformation (Ko et al., 2017). Therefore, an evidence-based module should be developed and implemented to equip nurses and staff with the skills and competencies which are pivotal to effective maintenance of appropriate blood pressure level and achieving expected outcome for stroke patients.

Purpose Statement

My goal in this project is to address the knowledge gap among the nonneuro-trained IMC or ICU nurses who may have to care for the acute ischemic stroke post-tPA patients due to overflow of patients in the neuro IMC. To address the knowledge gap, the nonneuro-trained IMC or ICU nurse must have basic knowledge of the most crucial protocols for hypertension management in the acute ischemic stroke post-IV tPA patient. Furthermore, they should understand the evidence-based acceptable BP medication recommendations, treatments parameters, and expected outcomes. The guiding question for this DNP project was: Will an evidence-based staff education module management of blood pressure in acute ischemic stroke improve nonneuro nurses' knowledge?

The purpose of creating evidence-based quality improvement program and staff educational module about stroke is to increase the knowledge of bed side nurses and close the gap on stroke management awareness. It is vital to develop a compelling stroke education program to train nurses in a nonstroke unit so they can be better prepared in taking care and managing post-tPA patients. This DNP project may lead to improved nursing knowledge using clinical research practice best evidence for HTN management. According to Jones et al. (2018), specialized care given in stroke units has shown to improve outcomes for stroke patients. Therefore, nursing education regarding management of HTN post-tPA to nonspecialized stroke nurses is imperative and may improve nurses' knowledge about stroke, thus promoting better patient care quality and stroke management. It is imperative to create educational programs for nursing staff to keep them well-informed of basic knowledge and current EBPs so that nurses can play a pivotal role in stroke management with appropriate blood pressure treatment, thus promoting better care outcomes.

Nature of the Doctoral Project

My project site is in an urban hospital, which is also a teaching hospital that is staffed with doctors; nurse practitioners; physician assistants; nurses; interns; and nursing students in different specialties such as ICU, IMC, medical and surgical units, and emergency rooms. In this organization, the neuro IMC treats acute stroke patients who are transferred for post-tPA management; however, a need exists to also train other nurses who are not trained in stroke management but may have to manage such patients.

Subsequently, in this project, I sought to educate nonneuro nurses on blood pressure management on post-tPA patients. To carry out this project, I used the DNP manual recommendation and evidenced-based practice for development of staff education projects. Peer-reviewed articles from databases such as CINAHL, Medline, and PubMed are examples of primary sources that I used, in addition to nursing organization websites and white papers and AHA/ASA stroke EBP guidelines. According to Saba and McCormick (2015), literature reviews, systematic reviews, and evidence-based tools relevant to specific areas of interest that serve to improve the safety and quality of care can be found within nurses' organizations. To develop a credible, efficient, and useful model, it must be backed up with evidence-based research, which is why this educational module will be using all of these sources.

The program developed will implements a nursing stroke education program based on evidence. Registered nurses (RNs) currently in the intensive care unit (ICU), medical unit emergency room and surgical unit RNs were invited to participate in an education program on post-tPA HTN management. The EBP model for staff nurses was used to address the integration of EBP concepts in planning and delivery of patient care by the nurses. According to Buckwalter et al. (2018), the use of this practice model will circulate information; the use of research data for nurses and the outcomes of the implementation and use of EBPs by staff nurses increases the ability to have safe, cost-effective, and patient-specific intervention in patient management. Participants reviewed the educational module and evaluated the content, which was given after the program

training, capturing improvement in stroke knowledge (Mayer et al., 2005). Patricia Benner's novice expert model was used to give a more objective way of evaluating the progress of teaching. Managing knowledge of medical professionals within health care organizations is critical and it is vital to have basic knowledge in handling intensive cases in the health care organizations because nurses use their health care knowledge combined with their know-how and experience to deliver health care services.

Significance

Nursing is not only an art of caring, but it is also a science of healing. Thus, nursing professionals are using more EBP derived from best available research into clinical practice so that patients can receive effective and well-deserved quality care. Working with nurses who are guided by theories, backed with proper training, and ready to use current and best available evidence in their clinical practice is essential to meet the challenges of individuals with complex condition such as stroke. However, some nurses may not be adequately trained to care for or manage acute stroke patients receiving tPA treatment. Therefore, providing an evidence-based staff training that will prepare those nurses who have no specialty training, or the competencies required to effectively manage ischemic stroke patients under tPA administration, is critical for optimum outcome (McCollum et al., 2017). The stakeholders in the DNP project practicum site includes the clinical practice staff nurses and nursing education/professional development teams, critical care nurse leadership, and information technology (IT) teams. I set up a meeting with teams that partner to bring the education project from start to completion. I

then started to discuss the problem at hand, which is the nurses' education and clinical practice gap in blood pressure management in post-tPA stroke patients, methods to close the gap, and what efforts must take to ensure continuity of EBP. With the nursing, education, and professional development teams, I came up with settings, recommendations for learning, and measures to engage and complete education of the target learners, who in this case are the nonneuro-trained critical care nurses. Using the EBP recommendations gathered from the literature, the education team assisted in providing the auditorium for the education material content to be delivered. The content implemented a concise and user-friendly structure to grasp the attention of the learner while imparting intended knowledge and competency.

Summary

The health care sector is rapidly evolving as new and better healthcare practices are being discovered. Nurses are change agents in health care profession and should be champions when it comes to adoption and utilization of EBP to ensure quality care and patient satisfaction. The approach procedural steps to obtain information in the DNP project involve step-by-step strategy from the Walden University staff education manual. According to Walden's guidelines for the staff education manual, there is not necessarily any one individual model used for developing and delivering a staff education model because accessing and evaluating the needs, organizational structures, and budget will guide the concepts and processes (DNP Program Guide, 2019). However, the DNP project will require at least one theoretical model to guide the project development.

Patricia Benner's skill acquisition theory and evidence-based theory was used to guide this staff education program.

To conclude, the staff education module for treating and managing post tPA stroke patients used current best practice evidence on stroke management including blood pressure parameters and protocols to teach and improve staff knowledge. This will improve nursing ability to provide evidenced-based care to these patients and their families. In this section, I discussed the main idea and revealed the gap as to which this DNP project was addressed. In the following section, I discussed the background and gave a deeper context on the project.

Section 2: Background and Context

Introduction

My DNP project sites included the medical surgical unit, intermediate unit, emergency unit, and intensive care unit. The nursing practice problem identified in this project was the lack of knowledge for timely management of blood pressure in an acute stroke patient. Inadequacies in staff knowledge may be a contributing factor to early neurological deterioration and secondary complications that cause morbidity and mortality. A comprehensive evidence-based staff nursing educational module may serve as a guide to the nonneuro nurses. The guiding practice-focused question for my study was: Will an evidence-based staff education module for timely management of blood pressure in acute stroke improve nonneuro nurses' knowledge?

This DNP project will improve nurses' knowledge for timely management of elevated blood pressure in acute stroke patients, such as the medication administration process, by implementing a nurse staffing education module using evidence-based literature. A staff education module will not only provide the nonneuro nurses with needed knowledge and competencies for acute stroke management but will also improve performance. The introduction of the educational program will enlighten the nursing staff at the nonneuro units of evidence-based practice guidelines for the control and management of HTN on stroke in accordance with JNC-8 guidelines.

In Section 1, I talked about the different concepts, models, and theories that informed this doctoral project, assembling primary writings by key theorists and

foundational scholars. In Section 2, I explained the relevance of the project to nursing practice, the local background and context of the problem, my role as the DNP student, and the role of the project team. Section 2 also include the definitions of locally used terms or operational processes in the clinical setting other than those universally used and applied terms.

Concepts, Models, and Theories

Patricia Benner's Skill Acquisition Theory

Hubert and Stuart Dreyfus, the originators of the model in 1986, as published by the University of Medicine and Dentistry of New Jersey (UMDNJ), explained that for the novices, the major focus is mastering and adhering to the rules; they are not flexible and must followed as ordered and as they progress in the profession (advanced beginners). According to CurrentNursing, Patricia Benner explained that while adapting the Dreyfus model of skills acquisition stages, the concept of the expert phase is achieved through extended education and practicability of the already acquired nursing skills via research (Current Nursing, 2011). Using Benner's theory in the DNP project will help nurses gain experience and enlighten their skills on management of the stroke patient, by expanding their knowledge and skills through experience and education. They learn new practice and experience and understand the difference between a novice and an expert. According to the University of Medicine and Dentistry of New Jersey (UMDNJ) novices follow policy and yet are developing principles. They begin to match policy, principle, and experience to guide their professional actions (UMDNJ, 2012). Afterward, in the

competent stage, typically in the second to third year of experience, they can handle difficult or complex situations with policy. While still progressing, at the higher level (proficient), they can practice based on experiences, make use of critical thinking and judgment skills, and know what to expect in terms of goals and outcomes in presented situations (Current Nursing, 2011). Then, they learn to manage these complex situations and reflexively know how to handle the situations they are presented with. They are more flexible and independent with decision making. Also, they manage based on benefits and risk depending on vast background experience. The picture for them is no longer black and white—and is even beyond gray; at this level, they are now experts (Current Nursing, 2011). However, Benner and Dreyfuss concluded that it takes approximately 5 years for a professional to graduate through the stages from novice to expert. Yet not all novices make it to the expert level. Some, although others move forward, stop at the competent or proficient level. What distinguishes the rest from the expert is the expert's risk-taking ability and continuous practice (Kaminski, 2010). But beyond these two, professionals need each other's support and guidance to achieve the "medal" of expertise. Nursing as a professional is a continuous process and vast in scope. When in the novice stage, one needs assistance from superiors in learning and experience and as one works their way up, nursing professionals would be the guides of those in the novice stage until they achieve expertise; thus, the cycle thus continues. It is undoubtedly amazing to see the difference time makes, and likewise its contribution to professional, clinical, and critical thinking development for health care professionals. In the context of this DNP

project site, at some point the new graduate nurse, entering the clinical setting for the first time could be nervous or intimidated by the people around the professional due to overwhelming clinical pictures with the new module. It is not enough for nurses who do not have critical

care skills to become experts by handing resources such as literature or preceptors; that is why the DNP project will involve a well-suited teaching specifically designed for this group.

Rosswurm and Larrabee's Theory

Another theory that I selected to guide this project is Rosswurm and Larrabee's model, which is important to enlighten the nurses on an evidence-based module. According to Reavy and Tavernier (2008), using an evidence-based module to educate staff nurses is cost effective and provides patient-specific intervention that can improve patient safety and satisfaction. This model builds on concepts from the Iowa Model of EBP. The Rosswurm and Larrabee's provided the theoretical framework for implementing this EBP project. This theory provided knowledge to staff nurses in making EBP clinical changes. It deals with staff nurses and their involvement with the implementation and continued use of EBP in patient care, which will encourage nurses to take responsibility for establishing the connection with the patient to promote healing. According to Reavy and Traverier (2008), caring is critical in nursing practice because it promotes healing. Rosswurm and Larrabee's theory of caring with an evidence-based module indicates that medical care alone cannot bring about healing, but a

comprehensive approach to care will improve nurses learning and will promote better patient outcomes. However, to undertake this project using this model in the unit of this project site, there needs to be a recognized problem for which change is necessary. In this project site's neuro unit, a need exists for increase in using EBP in patient care. The process includes assessment, identification, and evaluation of the problem with EBP recommendations for effective and timely BP management after tPA infusions in patients diagnosed with acute stroke. The nursing educator and the unit director came up with settings, recommendations for learning, and measures to engage and complete education of the target learners, who are the nonneuro trained critical care nurses. Using the EBP recommendations gathered from the research conducted, the education team assisted me in the training with the education module content, including a pretest; the content was sufficiently clear and concise to attract the attention of the learner while imparting intended knowledge and competency.

Under the Rosswurm and Larrabee's theory, after assessment, the staff nurses reached a consensus that a need exists for the project with the EBP module based on their observations, questions, and experiences working with patients, identification and evaluation of the problem, analysis, and synthesis of best evidence discussed. They started with planning and implementation and evaluating was the final stage of integration and maintenance (Kathy & Susan, 2008).

Relevance to Nursing Practice

My DNP project is crucial to nursing; it provided the educational needs of the clinical staff and management and timely management of hypertension in acute stroke patients and helped inform and improve knowledge and skills using EBPs. Itpointed out whether timely treatment and management of elevated blood pressure during infusion of intravenous TPA to acute ischemic stroke patients actually leads to improved knowledge.

This education module helped to improve health outcomes of acute stroke patients under treatment with tPA after nurses were provided with proper education on the EBP guidelines. The project relates to nursing as it entails self-management support measures, intervention measures, adequate patient education, and dietary education for the staff of the clinic. Hypertensive patients have been determined to be susceptible to stroke and renal diseases. Implementing evidence-based guidelines improved patients' outcomes by helping to prevent these diseases. Therefore, this educational module, which is aimed at improving staff knowledge on evidence-based guidelines for HTN control and management, will relate to the provision of optimal care to the HTN patients in the unit. Providers and nurses will know the best practices, which will create a safe environment for the patient. In a case where the specialty unit is filled and there are no available beds for admission of patients getting TPA, the patient can be sent to nonneuro specialty units to be observed. Therefore, staff education of these nonneuro nurses is necessary for improved knowledge and better nursing performance.

Local Background and Context

There are over 750,000 new stroke cases each year in the US, making stroke the leading cause of adult disability, and the 2nd cause of death worldwide (Centers for Disease Control and Prevention [CDC], 2017). According to Morrison (2005), the Joint Commission (JC) in 2002 implemented disease-specific care (DSC) certification; however, DSC for stroke involves compliance with established clinical practice guidelines and national standards for stroke management (Morrison, 2005). Organizations seeking for DSC certification for stroke centers require compliance with the policies, procedures, and protocols for stroke management leading to best practices. The project is designed for an urban metropolitan level II trauma center in the eastern region of the United States, overseeing most patients in the city and also a stroke certified center. It served as the main source of primary care services in the city as other major hospitals around the area transfer their stroke patients. This increased the need for more stroke interventions by medivac and transportation to meet up with the demand in treatment for such patients. Patients are treated by National Institute of Health (NIH) neurology stroke certified physician/nurse practitioners and trained nurses who urgently triage the patient for treatment. According to the AHA/ASA, early thrombolytic or endovascular intervention for eligible ischemic stroke patients will reduce the morbidity and mortality in the stroke patient population (Powers et al., 2015). Stroke is an emergency and suitable treatment for qualified stroke patients is time sensitive; it requires urgent screening through imaging and the conduction of a quick neurological exam to

confirm appropriateness to qualify for tPA administration within 4.5 hours of initial appearance of symptoms. LKW is the cornerstone of early treatment of acute ischemic stroke (Powers et al., 2015). Therefore, the need for nursing staff to be knowledgeable in recognizing stroke symptoms and reacting appropriately if a stroke occurs becomes paramount in a stroke certified center (Cameron, 2013). According to Green et al. (2011), evidence-based best practice guidelines give a structural approach consistent with current best practices required for health care professionals across geographic locations, and across all care settings (Green et al., 2011).

The selected project was determined after researching and discovering the need to creating awareness of evidence- based practice in stroke management patient who has elevated blood pressure and are being treated with tPA. It is essential to enlighten the nurses on the evidence- based module for the promotion of improved patient outcome. The evidenced based guidelines with tPA treatment recommend that the patient's blood pressure should be maintained below systolic blood pressure of 180 MM Hg and diastolic blood pressure of 105 mm Hg to prevent hemorrhagic transformation. According to Goldstein (2014), maintaining certain blood pressure ranges can increase or decrease likeliness of hemorrhage. Blood pressure of systolic greater than 220 mm Hg or blood sugar greater than 170 mg/dL can lead to hemorrhagic effect (Goldstein, 2014). However, blood pressure below 110 within 24 hours after administration of TPA, could lead to a mild reduction in hematoma expansion (Akif et al., 2016). According to McEwen and Wills (2019), applying EBP in healthcare settings has many advantages such as meeting

the challenges of improving patient safety and quality of services, examining, and evaluating both formal and informal health information, and meeting the expectations related to new treatments and clinical decisions. The staff in the project site is facing major challenges in implementing the evidence-based protocol. They are not giving the appropriate treatment for controlling and managing the stroke patient's blood pressure due to their limited knowledge on the evidenced based protocol. Therefore, they are unable to adhere to the evidence-based guidelines for HTN control and management during care. This presented the reason for poor control of the blood pressure and no adherence to the evidence-based guidelines. The DNP staff education model is aimed at improving nurse's knowledge of evidence-based guidelines on timely management of the elevated blood pressure post tPA, for this will be an important aspect of providing optimal care for acute stroke treatment. The context applicable to the problem of inadequate management of stroke during treatment is an issue for the insurance company such as Medicare and Medicaid; and therefore, it is ultimately a burden to the state and nation.

Stroke, also known as Brain Attack, occurs when blood stops flowing to a part of the brain. This project deals mainly on Ischemic stroke which occurs when blood vessel in brain is partially or completely blocked. An ischemic stroke is the sudden death of brain tissue. Blood carries oxygen to all areas of the body. This type of stroke happens when blood does not flow to the brain normally and cannot get the oxygen it needs. Stroke is a medical emergency. Hemorrhagic stroke: occurs when a weakened small vessel breaks,

causing bleeding in the brain (Darger et al., 2015) In ischemic stroke, the use of tPA is used to dissolve the clot thereby allowing easy passage of blood into the brain. However, research has shown that for effective treatment of ischemic stroke with tPA, timely and adequate management of hypertension in patients with acute CVA is essential to achieving better outcomes. Most importantly, timely and appropriate management of elevated blood pressure should be ongoing after IV tPA (Alteplase) administration (Bowry et al., 2014). An EBP guideline for stroke management is used by health care professionals to manage stroke effectively and positively with minimal complications (Green et al., 2011). Management involves persistent attempts on using antihypertensive agents or continuous infusions to maintain BP reading of SBP less than 180/105 mmHg. On the other hand, it is also important to avoid lowering the blood pressure to less than 120/80 mmhg because neuro perfusion is altered and leads to undesired outcomes (Bowry et al., 2014). It is recommended to use continuous IV BP agents to assist in lowering the blood pressure (Bowry et al., 2014). Therefore, the aim or goal of the DNP project is to improve nurses' knowledge by educating them on the treatment and management of blood pressure on stroke patients with current evidenced practices.

Role of the DNP Student

Being involved in managing stroke patients as a first responder in one of the largest hospitals in the city influenced my knowledge regarding other nurses' experience in the management of post-tPA patients. I am involved in the running of "code one" wherever stroke is called in the hospital; however, I realized that the evidence-based staff

educational module could create awareness and enlighten nurses about the management of stroke regardless of their specialty, especially since stroke can occur in any unit. I realized the educational needs of the nurses regarding timely management of hypertension in acute stroke and perceived the lack of clinical skills in managing such patients. It is important that the nurses or providers involved in the care of the acute patients understand the rationale for adequate and effective management of hypertension when treating acute stroke with IV tPA. When hypertension is appropriately managed, the risk of intracranial hemorrhage (ICH) in the affected patient could be minimized and care outcomes can be optimized. Nurses must also educate the patient on what the procedure entails; including any protocols they are adhering to control hypertension beyond the prescribed ranges. These patients sometimes present from neighboring hospitals to initiate IV tPA and manage post treatment symptoms. However, because of occasional overflow needs, some of these patients may end up transferred to other critical care areas where the nurses are not specifically trained to manage these patient populations. Because of this, there is a need for nurses unfamiliar with the protocol to understand the importance of adequate blood pressure control post-tPA treatment. The staff education program will be developed following the guidelines in the DNP Staff Education Manual.

Summary

The above section provided the theoretical models and framework needed in the project to navigate implementation of the education module and elaborated on its

significance to nursing practice. The background of the project and plan was summarized explaining how the DNP student will develop the proposed evidence- based staff educational module on stroke management. The next section discussed and expands more on the DNP project's practice-focused question and explained the sources of the evidence for the doctoral project, including discussion of the analysis, synthesis, and summary.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this DNP project was to develop a staff educational module for the neuro specialty unit of an urban hospital to increase nurses' knowledge on management of blood pressure in acute stroke patients after tPA. In this project, I addressed the lack of knowledge in the staff nurses regarding the proper management of stroke patients, and the effect of timely blood pressure treatment after tPA treatment. I aimed to educate the participating clinical staff on the range for controlling BP and its management. In the last section, I discussed the development of this project, the use of the Rosswurm and Larrabee's model and Patricia Benner's theory to inform my project, as well as my role in the project. In this section, I discuss the sources of evidence, informed consent, and protection of participants, as well as the procedures that I conducted for collecting, analyzing, and synthesizing data and evidence.

Practice-Focused Question(s)

The aim of this project was to address the knowledge gap between the nonneuro trained IMC or ICU nurses who may occasionally care for the acute stroke post-tPA patients while they are boarding on their units because of an overflow of patients in the Neuro IMC. The practice-focused question was: Will an evidence-based staff education module for timely management of blood pressure in acute stroke improve nonneuro nurses' knowledge?

By way of addressing this gap, the nonneuro trained IMC or ICU nurse must have gained a basic understanding of the most crucial protocols for hypertension management in the acute stroke post-tPA patients. They had to understand evidence-based acceptable BP medication recommendations, treatments parameters, and expected outcomes. The implementation of the staff education module will educate the nurses on management of stroke patients and carefully observe for any change in the mental status, which could be as a result of poor blood pressure control. Implementing EBP, particularly using comprehensive high-quality clinical practice guidelines through a staff educational manual, could improve the quality of care given to stroke patients and improve staff knowledge.

Sources of Evidence

A comprehensive review of the current practice in this project site provided awareness of the staff's knowledge gap regarding proper management of acute stroke patients with elevated blood pressure after administration of tPA. There was a lack of evidence-based interventions, at the project site, to address the problem. Saba and McCormick (2015) suggested that nurses can find literature reviews, systematic reviews, or evidence-based tools relevant to specific areas of interest to improve the safety and quality of care within their organization. Sources that I used to design the education came from a literature search using the Walden library databases, such as the Cumulative Index to Nursing and Allied Health Literature (CINAHL), ProQuest, Cochrane Library, PubMed, Elton Stevens Company (EBSCO), and Google Scholar. Keywords guiding the

the literature search included ischemic stroke management, elevated blood pressure in stroke, treatment with tPA on acute stroke, patient outcomes, stroke treatment guidelines, evidence-based clinical practice for stroke management, and staff education module. When combining stroke AND use of tPA, the search yielded a total of 6,184 articles. However, when I used elevated blood pressure, stroke, andtPA, the search narrowed to 22 articles that were published in English from 2010 to 2020. Fifteen articles were relevant to the project question, which provided appropriate evidence to address the practice-focused question. During the literature review, the search is limited to relevant literatures that are specific to stroke, elevated blood pressure, and tPA, which are relevant to the project question.

The Disorders and Stroke tPA Stroke Study (NINDS) suggested the continuous infusion of antihypertensive drugs to reduce the risk of developing intracranial hemorrhage after treatment with thrombolytic therapy (Darger et al., 2015). Timely and adequate management of hypertension in patients with acute ischemic stroke is imperative to achieving better outcomes. More important, it is even crucial to promote positive care outcomes and is appropriate for management post-IV tPA (Alteplase) administration. Alteplase, a blood clot breaker is a highly potent drug that if not appropriately dosed, and the patient's blood pressure managed, can lead to adverse effects including angioedema, intracerebral hemorrhage, gastrointestinal bleeding, and so on. In worst cases, it may lead to death. It is important that the nurse or provider involved in the care of the acute patient understands the rationale for adequate and effective

management of hypertension when treating these patients with tPA. When hypertension is appropriately managed, the risk of ICH in the affected patient could be minimized and care outcomes optimized. The care provider must also educate the patient on what the procedure entails, including any protocols that they are adhering to control hypertension beyond the prescribed ranges. According to Ko et al. (2017), more than 60% of patients with acute stroke present with elevated BP within 1 hour of symptom onset. This can negatively affect the eligibility of and thus delay the timing of the tPA administration. The recommended door-to-treatment time of 60 minutes is significantly extended when timely management of elevated BP is not instituted. Quicker door to needle times is associated with a decrease in death rates and symptomatic ICH (Ko et al., 2017). Unfortunately, it is noted in some cases that tPA administration is delayed because immediate treatment is not initiated to lower the BP to values safe enough for tPA administration. According to Ko et al. (2017), persistent attempts must be made to lower BP to <180/105 mm Hg even if it involves using multiple BP agents or continuous infusions. In these attempts, it is also important to avoid having the patient go into hypotension, because this comes with its own adverse effects that may eventually lead to undesired outcomes. The use of continuous IV BP agents has been proven to be safe in tPA-eligible patients who present within 3 hours of symptom onset, without any adverse effects on expected clinical outcomes (Ko et al., 2017).

Evidence Generated for the Doctoral Project

Participants

I selected the participants from nonneuro ICU and IMC, emergency room, medical, and surgical units of the hospital. Located in urban metropolitan Level II trauma center in the eastern region of the United States, seeing most of the stroke patients in the city and a stroke-certified center most often receives stroke patients after tPA administration. Because of the volume of patients, bed availability can be difficult to obtain in the stroke specialty neuro units. Therefore, they have a high turnout of stroke patients to other units in the facility. The DNP target group included clinicians who are nurses at the bedside directly involved in taking care of patients but have not been specifically trained to manage stroke patients as they are not in a stroke specialty area. The nurses in these nonstroke specialty units are occasionally asked to participate in managing stroke patients for limited time until an appropriate bed become available to stroke patient in the specialty units. The participantswere 25 in number from ICU , IMC, emergency room nurse, medical unit nurse, and surgical unit nurse. These participants were chosen from the hospital nonneuro units to take part in the educational project. These participants are usually not involved in the treatment and management of stroke patients and have limited knowledge in managing stroke after tPA, because they were not trained in taking care of patient who are treated with tPA. The participants' general clinical nursing knowledge and years of experience fell within a range of 5 years to 20 years of nursing experience.

Procedure

A comprehensive literature research was performed, and current evidence was evaluated to identify relevant documents to support the development of this educational module. The DNP student addressed the gap on themanagement of stroke post tPA with the current evidence guidelines as the participants are not stroke certified and have a knowledge gap in the clinical guidelines for post tPA management. The DNP project tools that was used to collect evidence for this DNP project was an anonymous pre-test and post-test related to basic National Institutes of Health (NIH) stroke questions. Pre-test and post-test data was administered by the DNP student to the participants. The pre-test was completed by the staff to evaluate the staff knowledge of effective blood pressure management in post tPA patients. The education program was then presented by the DNP student, at the completion of the staff education module, the post-test was administered to measure participants knowledge acquisition. The questions on the pre-test were the same questions as the post-test. According to Liu and Maxwell (2020), the use of pretest and post-test questionnaires in measuring participant knowledge acquisition is important for determining the effectiveness of knowledge gained and discovering presumed effects the research outcome (Liu & Maxwell, 2020).

The project site is already a stroke certified organization and in order to continue to maintain their validity it is important for other units that may occasionally take care of stroke patient to be equipped with the evidenced based practices used in stroke treatment. Evidence has shown that the use of EBPs provides a structural approach which is

dependable on the current best practices required for health care professionals (Green et al., 2011). The DNP student handed out a detailed DNP project pretest materials to the participants and informed them to return the answered questions for review. The DNP student then conducted teaching at the agreed time and in the auditorium with PowerPoint presentation slides and handout detailed information about nursing responsibilities and tPA management. There was an outline for blood pressure check frequency and the neurological assessment to monitor change in mental status which could be as a result of elevated blood pressure greater than 180/105 mmHg consistently, or BP levels reducing below 120/80 mmHg. Use of antihypertensive agent via IV is needed to maintain blood pressure parameter recommended for stroke management (Ko et al., 2017). The DNP student outlined the blood pressure parameters and the appropriate medications to give which will not reduce the blood pressure drastically or cause reaction to the tPA. According to the Ferrara (2020), Stroke is a medical emergency, therefore immediate attention is given in assessment and intervention in a timely fashion. Also the AHA/ASA requires close monitoring after tPA by checking vital signs and neurological assessments for the first 24 hours of close monitoring, in addition to recording lower NIHSS assessment will lead to decreased hospital stays, and early discharge from the hospital (Faigle et al., 2015). The post-test questionnaires was presented to the staff when teaching was completed to evaluate the staff knowledge of effective blood pressure management in post tPA patients and participants knowledge acquisition (Liu & Maxwell, 2020).

The data obtained from these tests can be used by the organization learning management system to measure knowledge acquisition and determine whether the current system of blood pressure management and education module meets the educational needs of the staff nurses. Ensuring staff knowledge is vital for quality stroke management which is essential requirement when the organization seeks approval by the Joint Commission to maintain their accreditation as a primary stroke center (The Joint Commission, 2014).

Protection of Participants

Participant's confidentiality and privacy was maintained throughout the project. All evidence and data collected was anonymous and confidential. The DNP student requested Walden University's IRB approval and guidelines set forth in the educational manual before the implementation of the DNP project (DNP Program Guide, 2019). Once approved by Walden University IRB, a consent form for pre and post-test was given to the staff. The project was made voluntary and participants remained anonymous. Furthermore, the participants were notified that they have the right to join or withdraw from the project at their own will. The participants returned the pre- and post-test questions as part of the program event.

Analysis and Synthesis

To record and organize data collected from this DNP project, Microsoft Office Excel was used to evaluate the percentage change in test scores between pre and post-test. Finally, all information and conclusions obtained were condensed into a Microsoft

PowerPoint presentation, which will be presented to the educational department at this organization, for it to be included in their educational module.

Summary

The purpose of this DNP project is to improve staff knowledge on timely treatment of elevated blood pressure in acute stroke with the use of evidence-based staff education module. The module served as a reference tool for staff when managing post tPA patient with elevated blood pressure. The use of the evidence-based module will provide knowledge and skills that are essential for nurses at all levels to provide safe, quality patient care. The translation of knowledge into practice will lead to improved patient outcomes (Hande et al., 2017). The next section will outline the data analysis and results of the project in an organized and detailed manner, including the findings and implications that resulted from the analysis and synthesis of the evidence collected from literature review.

Section 4: Findings and Recommendations

Introduction

Studies have shown that timely and adequate management of hypertension before, during, and after IV tPA administration in stroke patients can lead to a better treatment outcome (Ferrara, 2020). However, inadequate staff knowledge and skill training can lead to increased mortality, morbidity, hospital cost, and need for long-term care (Jones et al., 2018). This project, which is taking place at a major trauma center in the metropolitan area in the northeastern region of United States, studies and identifies the lack of adequate knowledge seen in non-specialized nurses in managing elevated blood pressure in stroke patients, which means patients, may not be receivingadequate care. Because of how vast and diverse the project site is, there is commonly an influx and eventually, an overflow, of stroke patients into the unit, who may need management. This can cause a shortage of neuro rooms, thus creating a need for patients to be sent to units with inadequately trained nurses to facilitate the management of these stroke patients, which means patients may not be receiving adequate care. Generally, these nonneuro nurses may not adhere to EBPs regarding management of blood pressure in post-tPA patients, which could detrimentally affect patient outcome. Specifically, these nurses' lack of knowledge on managing and maintaining blood pressure levels of 180/105mmHg post-tPA therapy may introduce potential life-threatening outcomes such as hemorrhagic transformation (Ko et al., 2017). Therefore, the practice-focused question for this project was:,Can an evidence staff education module of timely management of elevated blood

pressure in acute ischemic stroke improve nurses' knowledge? The purpose of this staff education project is to address and bridge the gap in the nurse's knowledge on management of elevated blood pressure in acute ischemic patient by the use of evidence-based staff education module. The development of the DNP project is guided by the use of Walden University Manual for Staff Education module, using two frameworks: Patricia Benner's Skill Acquisition Theory and Rosswurm and Larrabee's theory of evidence-based theory.

A pretest and posttest were administered and used in collection of evidence in the project. The tools that were used to collect evidence for this DNP project includes anonymously pre-test and posttest questions, which were based on basic National Institutes of Health (NIH) stroke questions. Both the pretest and posttest were administered by the DNP student to the participants. The pre-test was completed by the staff on paper to evaluate the staff knowledge of effective blood pressure management in post tPA patients. After the completion of the staff education module, which was a PowerPoint presentation on how to use EBP to manage HTN in post-TPA patients, the same questions were reassigned to the participants to measure knowledge acquisition (see Appendix A). The DNP student made sure that the questions on the pretest and posttest were the same questions; this is vital because the pretest and posttest questions assigned on the learning management determine the effectiveness of learning. Research showed that the use of pretest and posttest questionnaires in measuring the participants' knowledge acquisition is used to determine effectiveness of knowledge gained and it is

rated as the best approach to discover presumed effects and the research outcome (Liu &Maxwell, 2020). A Microsoft Excel spreadsheet was used to collect the scores and organize the data in a table format. I then carried out a statistical analysis on the results to measure knowledge acquisition and determine whether the numbers depicted were accredited to the education activity.

Findings and Implications

After Walden University sent an IRB approval of my proposal, the participants for this project were selected. The invitation materials were placed in nursing stations and lunchroom's education boards in the designated units and the DNP student's phone number was made accessible to ensure easier contact, as the director of the units instructed. Participants confirmed their participation through phone call and emails and after 1 week, an email with the date and time for the meeting was sent to each participant. Participant selection was based on convenience sampling approach, which allowed them to participate based on their availability. Consent forms were signed, and participants were given information on the project.

There were 25 nonneuro nurses that participated in this staff educational training and all 25 of them answered all 10 questions in both the pretest and posttest. The tests encompassed the same questions and were ordered by increasing complexity. It took a total of 90 minutes to undergo the introduction, the pretest, the staff educational teaching, and the posttest. Using Microsoft Excel, a paired sample t-test was performed to analyze the scores and determine whether there were any significant changes in the test scores, as

well as to confirm if there was any association between the training and score improvement. A paired sample t-test is used to compare means from the same group at different times (Eddington, 2015). From the t-test is where the p value is obtained, which ranges from 0 to 1 (i.e., 0% to 100%). When the p value is within the lower range, one can assume that the data results did not occur by chance. A p value of .05 (or 5%) is usually accepted to mean the data is significant (Eddington, 2015).

After conducting and implementing the training, the scores for each participant's pretest and posttest scores were calculated and converted to percentages. These percentages were then used for the paired t-test. In this participant sample (N = 25), the overall pretest average was 69.82%. Their scores demonstrated that the non neuro nurses had some knowledge of blood pressure management on post tPA patients. After the teaching, the posttest scores improved to 92.27%, which demonstrated improvement and acquirement of knowledge on blood pressure management in post-tPA patients.

The statistical analysis also indicated that the educational activity affected the improvement of the nonneuro nurses' test scores ($t = -3.0777354$, $df = 9$, $p = .0066$). The p value of .0066 indicates that the data results did not occur by chance, implying that there is a significant association between the teaching and the improvement of the nonneuro nurses' knowledge.

The test questions were ordered by increasing difficulty with Questions 1 through 3 being the easiest and Questions 9 through 10 being the hardest. With further analysis of each individual question, the pretest and posttest results revealed significant improvement in

Questions 9 through 10. Question 9's score average improved from 25.6% to 85.5% whereas Question 10's score average improved from 12.3% to 64.5%. However, despite the significant improvement in these score averages, the posttest score, especially for Question 9, was still low, demonstrating the complexity of that question. This suggests the need for the implementation of continuous teaching of the staff educational module to these nonneuro nurses to ensure optimal and sustaining results of knowledge improvement.

Table 1

Comparison of Test Results

Test Question

Table 2

t-Test: Paired Two Samples for Means

Column1

conduction of this DNP project, considering it was conducted during the second surge of COVID-19 pandemic. This affected not only the amount of people who volunteered to participate in the project, but the duration of the project. Many nurses who participated in the project were afraid of coming to the project site frequently and staying for a longer period at the project site because they feared the possibility of contracting the coronavirus. Therefore, it took only about one month to complete the project. Due to COVID-19, recruiting participants was a tedious process because of the limited space available due to the social distancing and mask wearing guidelines. Another unanticipated limitation was the test-taking process. Because of the pandemic, some participants were in a haste to leave the study room where the project was conducted. This may have affected the accuracy of test scores. Although the DNP Project findings showed evidence that the education module increased nurses' knowledge on management of elevated blood pressure in acute ischemic stroke patients after tPA administration, these limitations including the duration of the project, testing time, and the number of participants may have affected the outcome of the results as greater participants would lead to a stronger and more accurate statistical analysis.

Recommendations

The use of an evidence-based staff education manual in treatment of elevated blood pressure in acute ischemic stroke post tPA patient involves the use of stroke guidelines which will effectively lead to better post tPA outcome. This is very important as tPA is one of the ways to treat stroke if patient qualifies for treatment; however, to

promote better outcome, blood pressure parameters should be maintained to prevent negative effect of tPA, such as hemorrhagic transformation. Recall stroke is one of the diseases that greatly reduce the quality and duration of life in adults; therefore, interventions for its management should be done in appropriate conditions and at the appropriate time for patients presenting with acute ischemic stroke. Moreover, there should be staff education and creating awareness on measures necessary to care for and manage such patients to avert disability in stroke patients.

When analyzing the pre-test completed by the participants, result showed that those who had general stroke knowledge scored 100% in the first three questions (see Table 1). The questions in the middle, number four and five, were also somewhat easy for them to answer. Questions six, through eight, however, were not easy for them, while nine and ten proved to be the toughest among the ten questions given in the DNP project pretest. Therefore, having the staff make it a regular obligation to do the teaching consistently, especially on the harder and unknown concepts, every 6 months to make sure the nonneuro nurses continue to retain the new knowledge and skills, is pivotal to fixing the knowledge gap and improving nurses' knowledge.

Strengths and Limitations of the Project

The staff education project had some identified strengths and limitations. One strength of the project was the willingness for staff nurses to volunteer. The participants devoted themselves by responding aggressively despite the pandemic and showed that they were willing to learn more about stroke management, even though that is not their

specialty. The unit directors for the project participants encouraged the project and allowed the posters advertised in their various units as announcement made, which helped in the recruiting process of participants in the education activities. Limitation brought up by the COVID-19 pandemic during the implementation of the project could have affected some or all the participants. The project was implemented during the COVID-19 pandemic and the project site were restricting large number of people staying in the same room, limiting the occupancy to size of 25 people in a room to maintain social distancing. Also, many people were uncomfortable to participate in any gathering because of fear of contracting the coronavirus. The number of participants included a small sample size of 25 people, which may not be the standard for intervention research.

Section 5: Dissemination Plan

Evidence-based module was designed for the staff education to improve knowledge acquisition of staff nurses by addressing the gap in practice seen at the project site. The project was developed with a strong foundation and development of an evidenced staff educational module that addressed the timely management of elevated blood pressure in acute ischemic stroke patient. The educational content designed for this staff education project served as a strong foundation for implementation of the module. The staff nurses will have access to the PowerPoint presentation at any time to review the education module and will be able to apply the knowledge they gained when treating stroke patients, incorporating plans of care which may promote better patient outcomes. Staff will maintain their confidence in management of stroke patients by maintaining annual stroke education review, which the organization set up for improvement.

The plan for dissemination of this staff education project is to present the results of the project to the "Code one" team, which represents the "stroke team" at the project site. The stroke team comprises of the stroke coordinators and one director, NIH attendants, and staff nurse who conducted the code one at the comprehensive stroke center at the project site. The project site has an annual course enrollment of which they conducted in the simulation training at the education lab; hence the stroke leaders will incorporate the module as part of the organization's stroke program. The Microsoft PowerPoint presentation will be provided, which would discuss the gap in practice site and the pretest/posttest project cumulative result from the staff education module.

After completion, the project would be submitted to ProQuest to be published in the official database.

Analysis of Self

Being involved in managing stroke patients as a first responder in the metropolitan area influenced my concern for basic knowledge for other nurses' experience in the management of post-tPA patients. I realized that the evidence-base staff educational module would create needed awareness and at the same time enlighten nurses about the management of stroke regardless of their specialty, in the event that a stoke occurs in any unit.

The DNP project provided me with the opportunity to incorporate EBP knowledge from standardized health practice gained through my doctoral studies into my nursing practice. Advanced practice nurses are positioned to assist with EBP adoption and useit as a marker of excellence (Stevens, 2013). As a nurse who coordinates stroke patients in a comprehensive stroke center—which is my project site, I find it convenient to consult treatment guidelines to ensure my stroke patients take advantage of the most up-to-date evidence available. In addition, the integration of EBP would reduce unnecessary harm in health care and improve overall patient outcomes. As a result, I took a leadership role in the educational needs of RNs caring for stroke patients, who showed a deficient in knowledge for stroke management, by using evidence-based care to improve patient outcomes. The use of analytic methods served to critically appraise existing literature on timely management of elevated blood pressure in the treatment of

acute stroke patients. However, the use of the staff educational module with evidence-based practice derived from scholarly nursing practice aimed at solving the gap in practice.

Although the project occurred during the COVID-19pandemic, which affected the number of participants and time spent at the project site, the staff education project was developed and executed successfully. Theory guides practice and makes practice more efficient and effective, thus leading to the development of improved patient care (McEwin & Wills, 2019). My educational experience and expertise in nursing practice prepared me to act as catalysts for enhancing patient care through EBP. I believe being adequately equipped to convey evidence to other nurse clinicians can at the same time create innovative approaches that would integrate evidence into practice to improve outcomes. As a DNP nurse scholar, I find myself well positioned to be a positive change agent able to effect institutional changes to improve healthcare delivery and outcomes through policy development.

Summary

As previously discussed, an ischemic stroke (CVA) is a medical emergency that must be treated right away; if not, it could result in permanent loss of brain function. Moreover, management of HTN is the most common modifiable risk factor for stroke and during treatment with tPA; therefore, blood pressure reduction reduces the rate of stroke recurrence (Matute et al, .2012). The aim of this DNP project was to improve nurses' knowledge on the importance of management of elevated blood pressure during the

management of post tPA stroke patient. The National Institute for Neurologic Disorders and Stroke Study (NINDS) suggested the continuous infusion of antihypertensive drugs to reduce the risk of developing intracranial hemorrhage after treatment with thrombolytic therapy (Darger et al, 2015). Therefore, any mistake in assessment of the patient can affect the care of patients. Because of how common stroke is, it is imperative that all nurses within a clinical site, including nonspecialized nurses, have some basic knowledge on how to manage stroke patients, especially HTN in post-tPA patients. Evidently, the goal of this DNP project was accomplished as demonstrated by the statistical analysis of the pretest and posttest scores. Analysis showed that the educational module increased nurses' knowledge on blood pressure management in post-tPA stroke patients. The educational program provided nurses the information needed to develop plans of care which incorporate evidence-based patient treatment for better outcome. The DNP project provided the treatment parameters to help prevent disparities in the way patients are treated when not admitted in stroke neuro unit. It would certainly be used as a staff educational module within the organization.

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Appendix A: Acute Ischemic Stroke Pretest and Posttest Questions

Pre-Test Questions

Please complete the anonymous pre-test questions, when finished a stroke educational module will be conducted, and then answer the post-test questions. (All the answers are written in bold.)

1. All of the following are non-modifiable risk factors for stroke except which one?
    A. Age
    B. Gender
    C. Atrial Fibrillation
    D. Race/Ethnicity
2. Patient J head CT show a small intracerebral hemorrhage. (ICH). Which of the following in the patient's medical history is the likely etiology of the hemorrhagic stroke?
    A. Atrial Fibrillation
    B. Hypercholesterolemia
    C. Diabetes
    D. Hypertension
3. What type of stroke patient will receive tPA if qualified for treatment?
    A. Hemorrhagic stroke
    B. Acute Ischemic stroke within 0-4.5 hours of onset of symptoms
    C. stroke patient with blood pressure 240/106 mmHg and unable to control blood pressure.
    D. None of the above
4. Hypertension is a risk factor for hemorrhagic stroke why would you not treat a blood pressure of 190/90 mmHg in an ischemic stroke patient in the emergency department?
    A. Aggressive treatment can result in hypotension which could threaten the penumbra.
    B. Inability to secure an IV site.
    C. Aggressive treatment could result in hypotension which could trigger respiratory arrest.
    D. Inability to secure consent for treatment
5. Which racial group has the highest incidence of mortality from stroke because of a higher prevalence of hypertension, obesity, and diabetes?

A. Hispanic/Latino Americans
B. Blacks
C. Whites
D. Native Americans

6. A stroke patient is being transported from a primary stroke center to a comprehensive stroke center. IV tPA was started prior to transferring and continued to infuse during the transport. The patient's blood pressure had been stable but suddenly increased to 190/90 mmHg with the tPA still infusing. What is the best action by the transport nurse?
    A. Allow the tPA to continue infusing while continue to monitor BP.
    B. Stop the tPA and make note of the time but take no further action.
    C. Assess for change in neurological status and notify medical command.
    D. None of the above

7. How frequent is vital signs in neurological assessment done immediately after tPA?
    A. Vital signs and neurological assessments is done every 15 minutes for two hours, every 30 minutes for 6 hrs and every 1 hour for 18 hrs
    B. Vital signs every four hours with neurological assessment
    C. Check for Angio edema and BP check every eight hours
    D. None of the above

8. Clinical practice guideline can be described as…
    A. Statements that include recommendation to optimize care.
    B. Recommendation that has been approved by American Heart Association/ American Stroke Association
    C. Order sets based on the preference of stroke neurologist or vascular neurosurgeon.
    D. Recommendations provided by joint commission after a certification visit

9. After Administration of tPA. The Patient blood pressure became 190/110 mmHg and patients slurred speech worsen. What is the standard parameter for blood pressure management post tPA?
    A. Maintain SBP < 180 and DBP < 100
    B. Maintain SBP 99/50 mmHg

C. Maintain SBP > 120 and DBP < 80
D. Option A and C

10. You administered needed labetalol 10 mg to your stroke patient for blood pressure (Bp) 208/108 and the time to be 9 am but at 12 noon you find the patient to be drowsy and worsen slurred speech. However, BP came down to 140/70 mmHg as required what is your next action?
    A. Document the new BP and continue with your next patient.
    B. Perform further neurologic assessment and notify provider of suspected hypo perfusion.
    C. Continue monitoring.
    D. None of the above

Post-Test Questions

1. All of the following are non-modifiable risk factors for stroke except which one?
    E. Age
    F. Gender
    G. Atrial Fibrillation
    H. Race/Ethnicity

2. Patient J head CT show a small intracerebral hemorrhage. (ICH). Which of the following in the patient's medical history is the likely etiology of the hemorrhagic stroke?
    E. Atrial Fibrillation
    F. Hypercholesterolemia
    G. Diabetes
    H. Hypertension

3. What type of stroke patient will receive tPA if qualified for treatment?
    E. Hemorrhagic stroke
    F. Acute Ischemic stroke within 0-4.5 hours of onset of symptoms
    G. stroke patient with blood pressure 240/106 mmHg and unable to control blood pressure.
    H. None of the above

4. Hypertension is a risk factor for hemorrhagic stroke why would you not treat a blood pressure of 190/90 mmHg in an ischemic stroke patient in the emergency department?
    E. Aggressive treatment can result in hypotension which could threaten the penumbra.
    F. Inability to secure an IV site.
    G. Aggressive treatment could result in hypotension which could trigger respiratory arrest.
    H. Inability to secure consent for treatment

5. Which racial group has the highest incidence of mortality from stroke because of a higher prevalence of hypertension, obesity, and diabetes?
    E. Hispanic/Latino Americans
    F. Blacks
    G. Whites
    H. Native Americans

6. A stroke patient is being transported from a primary stroke center to a comprehensive stroke center. IV tPA was started prior to transferring and continued to infuse during the transport. The patient's blood pressure had been stable but suddenly increased to 190/90 mmHg with the tPA still infusing. What is the best action by the transport nurse?
    E. Allow the tPA to continue infusing while continue to monitor BP.
    F. Stop the tPA and make note of the time but take no further action.
    G. Assess for change in neurological status and notify medical command.
    H. None of the above

7. How frequent is vital signs in neurological assessment done immediately after tPA?
    E. Vital signs and neurological assessments are done every 15 minutes for two hours, every 30 minutes for 6 hrs and every 1 hour for 18 hrs
    F. Vital signs every four hours with neurological assessment
    G. Check for Angio edema and BP check every eight hours.
    H. None of the above

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    E. Document the new BP and continue with your next patient.
    F. Perform further neurologic assessment and notify provider of suspected hypoperfusion.
    G. Continue monitoring.
    H. None of the above