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Staff Education on Antihypertensive Medication Compliance Post-Stroke

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Walden University

College of Nursing

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Ernestina Serwaa Bonsu
has been found to be complete and satisfactory in all respects,
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Walden University

2024

Executive Summary: Staff Education Project
Staff Education on Antihypertensive Medication Compliance Post-Stroke

by

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Executive Summary Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Nursing Practice

Walden University

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Summary

This Doctor of Nursing Practice (DNP) project was staff education to address the practice problem of staff knowledge deficit related to hypertensive medications compliance for post-stroke patients. The practice question was: Will staff education on antihypertensive medication compliance enhance nursing staff knowledge? It is essential to address the practice problem and question within the context of nursing practice because studies have shown that targeted nursing education promotes patient adherence.

Participants were 42 nurses from neurology units who were evaluated before and after face-to-face education sessions. Nurses completed a pre-education survey questionnaire first, followed by education sessions and a post-education survey questionnaire. Data was collected anonymously. A descriptive analysis, which summarizes data through fundamental quantitative measures was used for analysis.

The overall pre-education survey questionnaires responses ranged from 5.8 to 60.9. By contrast, the post-education survey questionnaires responses remained consistently high at 80 across all categories. This analysis shows that the staff education on antihypertensive medication compliance was significantly effective across all categories and increased nursing staff knowledge. Recommendations include targeted education and a continuous learning program for all nursing staff to help increase and sustain staff knowledge on antihypertensive medication compliance post-stroke.

The project has significant implications for positive social change, diversity, equity, and inclusion, as education intervention included all staff nurses, fostering equity in the workforce advancement. Enhanced nurse performance promotes better patient outcomes.

Background

Hypertension is regarded as a significant and controllable risk factor for initial and recurrent stroke. Stroke recurrence remains a significant concern in post-stroke patients, especially in patients with uncontrolled high blood pressure. Kohok et al. (2018) found that effective antihypertensive drugs cut the risk of having another stroke by 18%, and for every 10 mm Hg drop in systolic blood pressure, the risk of having another stroke dropped by 33%. Even though evidence and guidelines indicate blood pressure should be kept below 140/90 mm Hg after an ischemic stroke, many patients have uncontrolled high blood pressure for the first year after their first cerebrovascular event.

Numerous elements in the background connect to the reason for the practice change. However, as a neurological nurse practitioner in a comprehensive stroke center, I noted an increased rate of readmission among post-stroke patients within 3 months of their first stroke. Most of these patients presented with stroke-like symptoms in the setting of a hypertensive emergency. After carefully reviewing charts and the discharge process, a practice gap of inconsistent lack of evidence-based discharge instructions related to hypertension medication adherence was discovered. Effective hypertension control is essential for preventing stroke recurrence (Kohok et al., 2018), yet inadequate communication regarding medication adherence upon discharge has resulted in avoidable readmissions. The identified practice gap underscores the necessity for a comprehensive approach to enhancing nursing staff's comprehension of antihypertensive medication adherence.

This DNP project was conducted to address the practice gap by providing staff education on antihypertensive adherence for nurses in the neurology intermediate care

unit and medical neurology floor (neurology floors) following a stroke. The guiding practice question for this project was: Will staff education on antihypertensive compliance post-stroke enhance staff knowledge? This project aims to improve nursing staff's understanding of antihypertensive medication adherence following a stroke and promote reduction of the likelihood of stroke recurrence by providing nurses with evidence-based education. Improving nursing knowledge in this domain can promote patient compliance with antihypertensive treatment, consequently supporting opportunity to enhance long-term outcomes for stroke survivors (Parappilly et al., 2018). Additionally, enhancing nursing staff knowledge leads to consistent and easy-to-understand discharge instructions. Research has shown that patients without adequate discharge plans are more susceptible to therapy noncompliance, leading to increased emergency room visits and reduced satisfaction (Desai et al., 2021). This initiative underscored the efficacy of specialized staff education in addressing practice deficiencies, enhancing provider proficiency, and promoting improved patient outcomes in the intricate realm of post-stroke care.

Evidence, Strength, and Translation of Literature Review

The literature review for the project was conducted via PubMed and Cumulative Index to Nursing and Allied Health Literature (CINAHL). The 10 studies examined for this project underscore the influence of antihypertensive medication and patient education on stroke care and prevention. The key findings for the 10 articles show that antihypertensive medicine use lowers the incidence of recurrent stroke by 1.9% (Boncoraglio et al., 2020). Additionally, about 76% of patients lack an adequate understanding of stroke prevention (Sinha et al., 2020). Also, nurses are essential in

interventions that lower systolic and diastolic blood pressure, and the participation of nurses in patient education and support programs dramatically improved hypertension management with a mean drop in blood pressure of 2.84 mmHg systolic and 2 mmHg diastolic, enhanced medication adherence, and increased awareness of stroke risk factors (Parappilly et al., 2018). Lastly, educational programs positively impact hypertension knowledge, self-care management, and blood pressure control (Cakmak, 2021).

Overall, I had seven Level I sources, one Level II, and two Level III. The project findings demonstrated a solid and consistent link between antihypertensive control and good stroke management outcomes, especially when nurse-led education is included in the interventions. The evidence synthesis tool demonstrated robust, persuasive evidence and consistent outcomes from numerous high-quality Level I studies. This convincing and consistent evidence suggests that evidence-based practices (EBP) teams can possess increased confidence in best practice recommendations and should initiate organizational translation. The results underscore the necessity for extensive education and organized support to enhance patient outcomes in hypertension and stroke prevention.

Staff Education Project Development

The project model used for staff education was analysis, design, development, implementation, and evaluation, popularly known as the *ADDIE model*, which takes into consideration the learning theory, the learner's requirements and context, and methodologies for educating practitioners on evidence-based practices. The ADDIE model develops educational curricula or training programs to achieve specified learning objectives and behavioral modifications (Patel et al., 2018).

The sample size for the staff education initiative comprised 42 nurses. Thirty-five of the nurses completed both the pre- and post-education survey questionnaires. Three completed the pre-education survey questionnaires only. Four staff members completed the training sessions without completing any education survey questionnaires. The project was voluntary. Participants for the project included staff nurses from two neurology units. Selecting nurses from the two neurology units for this project was justified, as these nurses are directly engaged in managing and discharging stroke patients. Furthermore, nurses in the neurology unit are tasked with instructing patients on post-stroke care, emphasizing the significance of adherence to antihypertensive medication to reduce and prevent stroke recurrence.

There were seven teaching sessions, four at night and three during the day. The evidence collection process consisted of the administration of pre- and post-survey education questionnaires using the Likert scale survey model to evaluate effectiveness in knowledge of antihypertensive medication adherence for post-stroke patients. First, nurses completed a pre- education survey questionnaire to assess baseline knowledge of antihypertensive management compliance post-stroke. Education on antihypertensive adherence was provided after the pre-education survey questionnaires. The post-education survey questionnaires followed the teaching to evaluate the efficacy of the educational intervention. Nurses were directed to fold their education survey questionnaires and deposit them in an anonymous, sealed box. Data were collected after each education session. The data were analyzed using descriptive statistics that provided a clear summary of the effectiveness of the education intervention and helped summarize data through fundamental quantitative measures. The descriptive analysis also offered a

concise overview of the efficacy of educational intervention. The analysis facilitated the identification of areas requiring additional instruction, establishing a basis for future enhancements in nursing knowledge (Kaliyadan & Kulkarni, 2019).

Analysis of Results

Figure 1 compares five categories of pre- and post-education survey questionnaire data for the neurology intermediate care unit (IMCU) and medical neurology floor. The pre-education survey’s value fluctuated significantly, starting at 59.1 with a sharp drop to 5.8 for Category 2 and then gradually increasing to 60.9 for Category 5. On the contrary, the post-education survey questionnaire values remain consistently high at 80 across all categories. This analysis shows that the staff education on antihypertensive compliance was significantly effective across all categories and increased nursing staff knowledge.

Figure 1

Overall Pre-Education Survey Results and Post-Education Survey Results

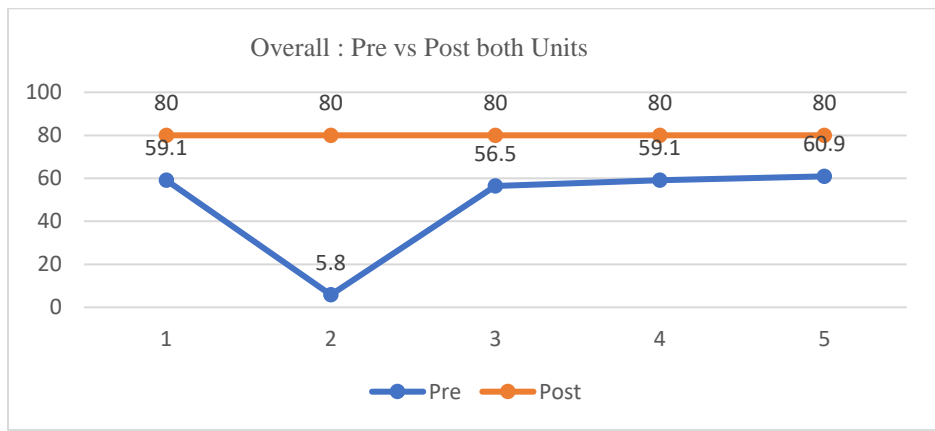


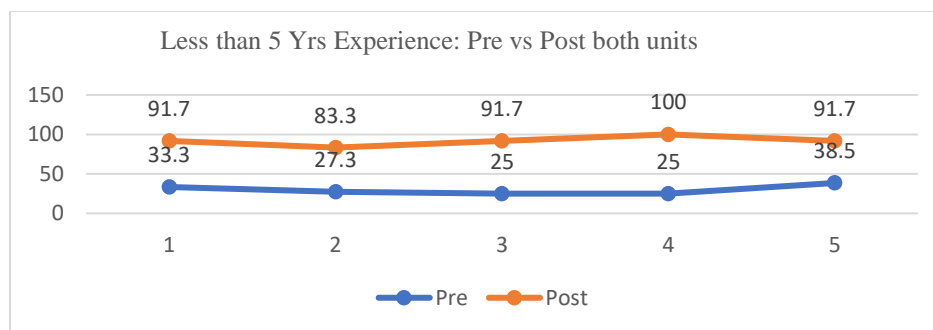
Figure 2 compares pre- and post-education survey questionnaires for five categories of staff nurses with less than 5 years of experience. The pre-education survey started at 33.3, dipping to the mid-20s and then rising to 38.5. The pre-education survey

values are significantly lower and more variable than the post-education survey values. The post-education survey started at 91.7, dipped to 83.3, and then rose to 100. The COVID-19 pandemic may have contributed to this finding as nurses received minimal hands-on training during this period. The post-education survey responses are much higher and more consistent than the pre-education responses in all areas.

The most notable distinction between pre- and post-education data is observed in Category 3, where the post-education score is 100, in contrast to a pre-education score of 25. The results indicate that the intervention was especially helpful in increasing staff knowledge for nurses with less than 5 years of experience. Of note, Category 3 assessed whether nurses received adequate training and education on antihypertensive medications post-stroke.

Figure 2

Pre-Education Survey Results and Post-Education Survey Results for Participants With Less Than 5 Years of Experience

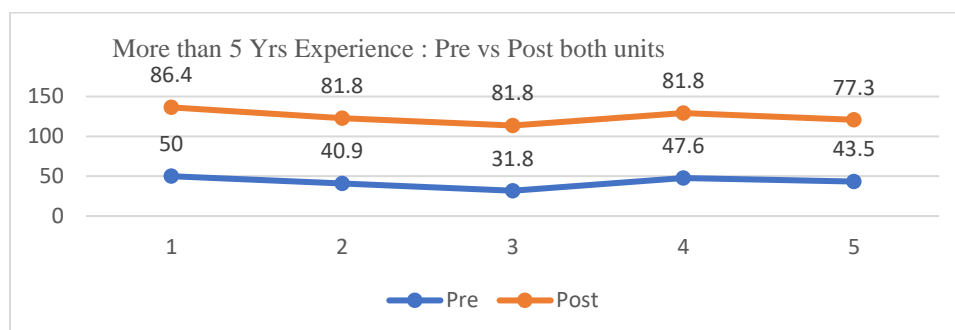


Next, Figure 3 compares the pre- and post-education survey questionnaire responses for staff nurses with more than 5 years of experience across five categories. The pre-education responses are consistently lower in contrast to the post-education survey responses. The pre-education survey responses started from 50 to the low 30s and

then rose to 43.5. On the other hand, the post-education survey started at 81.8, dipping to 77.8, and then rose to 86.4. Overall, the post-education survey responses show a marked improvement over the pre-education survey responses, indicating that the intervention positively affected staff nurses with more than 5 years of experience. Unlike the chart for those participants with less than 5 years of experience, the pre-education survey values for more experienced individuals start higher but still show improvement after the intervention.

Figure 3

Pre-Education Survey Results and Post-Education Survey Results for Participants With More Than 5 Years of Experience

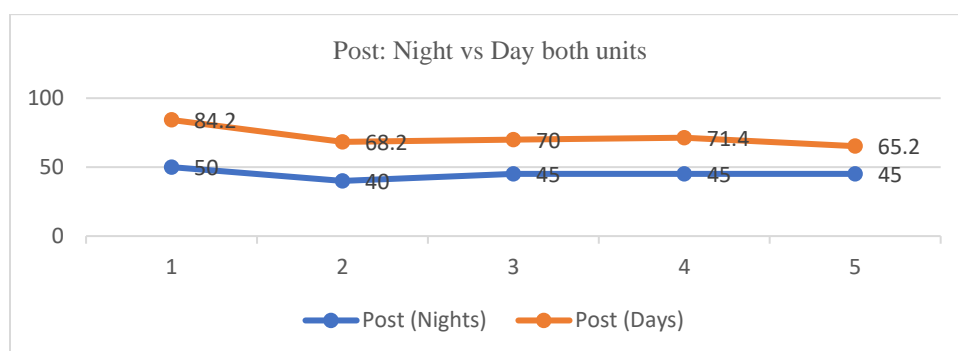


Finally, Figure 4 contrasts responses for post-education survey questionnaires based on whether the education occurred at night or during the day. Post-education response data for participants during the day begin in the 80s, decline to the 70s, and then to the mid-60s. The post-education response data for participants during nights began at 50 and stabilized in the mid-40s, signifying a consistent decline across all categories. The most substantial decline transpires between Categories 1 and 2 for post-education day responses, signifying a particular component affecting the day participants. The data suggest a more robust performance or response during the day than at night across all

categories. On the contrary, the interventions or conditions during the day may initially be more effective but taper off, while night interventions maintain a steadier, albeit lower, performance.

Figure 4

Post-Education Survey Results for Participants Attending Day Education Sessions and Participants Attending Night Education Sessions



Overall, improved performance was observed; more consistent and higher post-education survey questionnaire results followed the staff education sessions. Education had a stabilizing and enhancing effect, notably for less experienced nurses and during night shifts, despite some diminishing trends in specific post-education survey questionnaire responses, especially during day shifts. The initiative improved staff knowledge in antihypertensive medications for stroke patients.

Limitations

The sample size was small, with 42 participants. This makes generalizations challenging. Drawing definitive conclusions about huge populations from tiny studies is challenging, even when using probability sampling (Tipton, 2016). The study did not make provision for qualitative responses. Qualitative feedback can be used to find

quantitative data gaps, determine why certain groups improved more than others, and understand the participants' perspectives (Bazen et al., 2021). Qualitative responses would have helped explain why night nurses' scores were low across all categories. There is variation in experience, but there is no control over how different levels of experience might have influenced the absorption and application of the teachings. More experienced nurses had an advantage, skewing the results.

Impact on Organization and Recommendations

This project is essential beyond the local site because educational intervention can be modified and executed in other hospitals or healthcare systems to standardize discharge instructions and enhance antihypertensive adherence across various areas. The project could enhance best practices via publications, lectures, or professional associations, thereby contributing to worldwide standards in stroke care (Ravinetto et al., 2022). The significant improvement in post-education intervention, particularly in the less experienced staff, suggests regular staff education and training should be a cornerstone of quality care. The organization can create a continuous learning program for all staff, especially for new nurses. This can be done as an annual e-learning module in the workday. Additionally, the organization can develop targeted support for night shifts, such as additional resources, staffing levels, or mentorship programs to improve their performance and ensure quality of care across all shifts.

Lastly, the organization can encourage peer support and mentorship since less experienced staff showed a marked improvement by developing peer mentorship programs where more experienced staff guide and support newer team members. The project would contribute to improving the outcomes of post-stroke patients, as the pre-

and post-survey questionnaires response data highlight that targeted training improves nurses' knowledge of antihypertensive medication compliance for stroke patients, which can lead to enhanced patient care and operational efficiency. Enhanced nurse performance, especially among new nurses and during night shifts, leads to superior patient outcomes.

The project has significant potential implications for positive social change, diversity, equity, and inclusion. The intervention included all staff nurses, fostering equity in the workforce advancement. Enhanced nurse performance in this area results in better patient outcomes, reduced readmissions, and decreased healthcare costs, contributing to safer healthcare environments and better long-term health outcomes.

Conclusion

Hypertension is a significant and controllable risk factor for both initial and recurrent strokes. Despite recommendations for a blood pressure goal of < 140/90 mm Hg following ischemic stroke, hypertension frequently stays unmanaged in patients throughout the initial year post-stroke (Kohok et al., 2018). This DNP project was a staff education project to increase nurses' knowledge of antihypertensive medications and improve patient compliance. The DNP project on hypertension medication compliance indicates that focused staff education significantly enhances nurse knowledge. The project advocates for ongoing educational initiatives, especially for nurses with less than 5 years of experience and night shift staff, to maintain these advancements and enhance long-term patient outcomes in hypertension treatment following a stroke.

References

- Bazen, A., Barg, F. K., & Takeshita, J. (2021). Research techniques made simple: An introduction to qualitative research. *Journal of Investigative Dermatology*, *141*(2), 241–247.e1. <https://doi.org/10.1016/j.jid.2020.11.029>
- Boncoraglio, G. B., Del Giovane, C., & Tramacere, I. (2021). Antihypertensive drugs for secondary prevention after ischemic stroke or transient ischemic attack: A systematic review and meta-analysis. *Stroke*, *52*(6), 1974–1982. <https://doi.org/10.1161/strokeaha.120.031945>
- Cakmak, V., & Pakyuz, S. (2021). The effects of education given by nurses on rational drug use and health literacy of patients receiving hypertension treatment. *Journal of Nursing and Midwifery Sciences*, *8*(4), 246. https://doi.org/10.4103/jnms.jnms_168_20
- DeSai, C., Janowiak, K., Secheli, B., Phelps, E., McDonald, S., Reed, G., & Blomkalns, A. (2021). Empowering patients: Simplifying discharge instructions. *BMJ Open Quality*, *10*(3), e001419. <https://doi.org/10.1136/bmjopen-2021-001419>
- Kaliyadan, F., & Kulkarni, V. (2019). Types of variables, descriptive statistics, and sample size. *Indian Dermatology Online Journal*, *10*(1), 82. https://doi.org/10.4103/idoj.idoj_468_18
- Kohok, D. D., Sico, J. J., Baye, F., Myers, L., Coffing, J., Kamalesh, M., & Bravata, D. M. (2018). Post-stroke hypertension control and receipt of health care services among veterans. *The Journal of Clinical Hypertension*, *20*(2), 382–387. <https://doi.org/10.1111/jch.13194>
- Parappilly, B. P., Field, T. S., Mortenson, W. B., Sakakibara, B. M., & Eng, J. J. (2018).

Effectiveness of interventions involving nurses in secondary stroke prevention: A systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 17(8), 728–736. <https://doi.org/10.1177/1474515118779732>

Patel, S. R., Margolies, P. J., Covell, N. H., Lipscomb, C., & Dixon, L. B. (2018). Using instructional design, analyze, design, develop, implement, and evaluate, to develop e-learning modules to disseminate supported employment for community behavioral health treatment programs in New York state. *Frontiers in Public Health*, 6. <https://doi.org/10.3389/fpubh.2018.00113>

Ravinetto, R., & Singh, J. (2022). Responsible dissemination of health and medical research: Some guidance points. *BMJ Evidence-Based Medicine*, 28(3), 144–147. <https://doi.org/10.1136/bmjebm-2022-111967>

Sinha, R., Verma, P., Rohilla, K. K., & Kalyani, C. (2022). Hypertensive patients' knowledge, attitude and practice for stroke prevention in Uttarakhand, India. *National Journal of Community Medicine*, 11(10), 385–389. <https://doi.org/10.5455/njcm.20201002015318>

Tipton, E., Hallberg, K., Hedges, L. V., & Chan, W. (2016). Implications of small samples for generalization: Adjustments and rules of thumb. *Evaluation Review*, 41(5), 472–505. <https://doi.org/10.1177/0193841x16655665>

Appendix

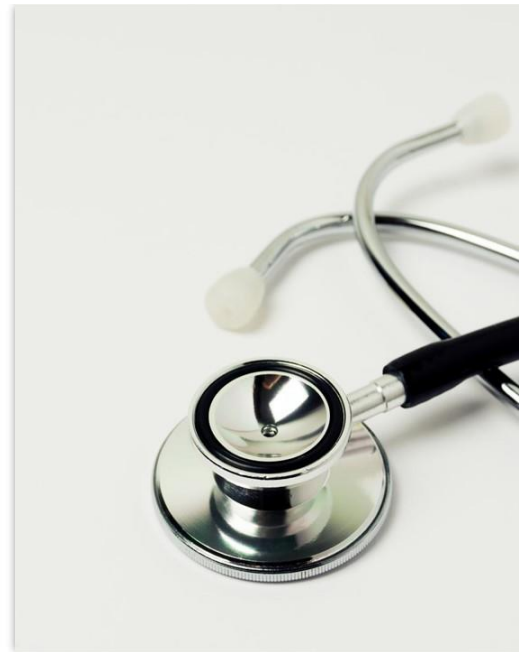
Questions	Pre – Survey Questionnaires				
1. How much do you agree in your confident ability level to effectively educate post-stroke patients about the importance of antihypertensive medication compliance?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
2. How much do you agree in your understanding to address the potential side effects and risk associated with common antihypertensive medications for post stroke patients?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
3. How much do you agree that you have received adequate training and education on antihypertensive medications for post-stroke patients?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
4. How much do you agree with your knowledge of optimal blood pressure for stabilized patient's post-stroke?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
5. How much do you agree with your knowledge of how post-stroke patients should monitor their blood pressure at home?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
6. How long have you been a nurse?					
7. What shift do you work?					

Questions	Post – Survey Questionnaires				
1. How much do you agree in your confident and ability level to effectively educate post-stroke patients about the importance of antihypertensive medication compliance?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
2. How much do you agree in your understanding to address the potential side effects and risk associated with common antihypertensive medications for post stroke patients?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
3. How much do you agree that you have received adequate training and education on antihypertensive medications for post-stroke patients?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
4. How much do you agree with your knowledge of optimal blood pressure for stabilized patient's post-stroke?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
5. How much do you agree that nursing staff will actively apply their education on antihypertensive medication compliance post stroke to improve patient outcomes?	① Strongly Agree	② Agree	③ Neither	④ Disagree	⑤ Strongly Disagree
6. How long have you been a nurse?					
7. What shift do you work?					

Staff Education on Antihypertensive
Medications compliance Post Stroke
Ernestina Bonsu
Walden University – DNP project

Objectives

- Equip staff with EBP knowledge to effectively educate their patients on antihypertensive medications post-stroke
- Empowering staff with knowledge of the potential benefits and consequences of blood pressure control and overall health for post-stroke patients
- Providing staff with strategies to promote medication compliance
- Measure outcome of project using pre-and post-survey questionnaires





Practice Problem and Practice Gap

- Practice Problem: Readmissions of post stroke patients related to hypertension due to lack of medication compliance
- Practice Gap: Lack of consistent evidenced-based discharge instruction related to antihypertensive medications

Why is this project necessary?

- It aims to increase staff knowledge of antihypertensive management to educate and support patients in adhering to their prescriptions.
- Enhance staff confidence and competence in providing post-stroke management of hypertension
- By addressing medication compliance, the project can contribute to reducing readmission rates and healthcare costs associated with stroke management





Evidence from Literature Review

- Research study by Lee et al. (2023) and Kurt (2022) investigated the influence of nurse-led interventions on hypertension treatment. The study's findings underscore the importance of nurse-led interventions in antihypertensive therapy, including improved adherence, a decreased risk associated with hypertension, and blood pressure control.
- Articles by Kurt (2022) and Cakmak et al. (2021) demonstrated the efficacy of nurse educational programs in improving patients' awareness and treatment of hypertension, resulting in higher compliance and autonomy.

Level	Strength	Overall Quality Rating (Strong, good, or low)	Number of Sources (Quantity)	Synthesized Findings With Article Number(s) (This is not a simple restating of information from each individual evidence summary—see directions)
Level I ▪ Experimental studies	Strong	Strong	7	<p>The article's principal theme is the importance of antihypertensive and nurse-led education in stroke care and recurrence prevention.</p> <p>Boncoraglio et al. (2020) and Guo et al. (2022) investigated the efficacy of antihypertensive therapies. Both studies found that antihypertensive drugs help prevent stroke recurrence; however, the impact on death is unknown.</p> <p>Gordon et al. (2023) and Parappilly et al. (2018) wrote articles about managing blood pressure after a stroke. The studies indicated low adherence to antihypertensive medications among stroke patients. They advocated nurse-led interventions and adopted universal guidelines for blood pressure control to enhance compliance and overall results.</p> <p>The critical subject of the articles for Lee et al. (2023) and Kurt (2022) was to investigate the influence of nurse-led interventions on hypertension treatment. The study's findings underscore the importance of nurse-led interventions in antihypertensive therapy, including improved adherence, a decreased risk associated with hypertension, and blood pressure control.</p> <p>Articles by Kurt (2022) and Cakmak et al. (2021) demonstrated the efficacy of nurse educational programs in improving patients' awareness and treatment of hypertension, resulting in higher compliance and autonomy.</p>
Level II ▪ Quasi-experimental studies	Strong	Strong	1	<p>Kunja's (2020) study examined the impact of educational programs on managing uncontrolled hypertension. The study found that structured health education can enhance the knowledge and behaviors of rural Chinese patients with uncontrolled hypertension.</p>
Level III ▪ Nonexperimental, including qualitative studies	Good	Good	2	<p>The main subject of the Sinha et al. (2020) and Pan et al. (2017) studies was to investigate the role of health education in hypertension treatment and stroke prevention. Both articles emphasize the importance of health education in treating hypertension and stroke recurrence. The study also found that a significant number of hypertension patients are noncompliant due to a lack of understanding about stroke prevention and that studies have shown that higher knowledge leads to improved compliance. The study advocated targeted education to improve outcomes.</p>

Methodology of Teaching

- The method/approach for the staff education is ADDIE Model
- The ADDIE model is a widely used instructional design framework that stands for Analysis, Design, Development, Implementation, and Evaluation.
- It provides a structured approach for creating effective educational and training programs.

Educational Process

- Pre survey to assess for baseline knowledge
- Staff Education
- Post Survey to assess staff knowledge after the education sessions



What is your knowledge on optimal blood pressure Post-stroke

- What is optimal blood pressure post stroke for stabilized patients?
 - For stabilized stroke patients recommendations are
 - Less than 140/90 mm/Hg



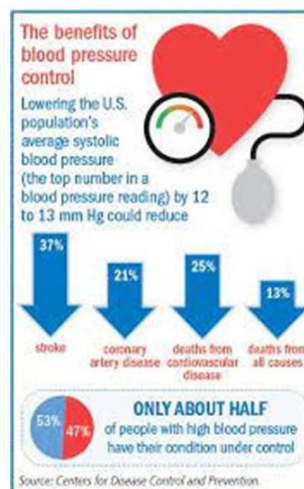
BLOOD PRESSURE CATEGORY	SYSTOLIC mm Hg (upper number)		DIASTOLIC mm Hg (lower number)
NORMAL	LESS THAN 120	and	LESS THAN 80
ELEVATED	120 – 129	and	LESS THAN 80
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 1	130 – 139	or	80 – 89
HIGH BLOOD PRESSURE (HYPERTENSION) STAGE 2	140 OR HIGHER	or	90 OR HIGHER
HYPERTENSIVE CRISIS (consult your doctor immediately)	HIGHER THAN 180	and/or	HIGHER THAN 120

How to determine if your patient have high blood pressure?

Understanding blood pressure readings per AHA

Why is it important to maintain optimal blood pressure in post-stroke patients

- Post stroke patients with acutely elevated and persistently high SBP had significantly increased risk of having vascular events, including recurrent stroke, all-cause death, or a composite of recurrent stroke, myocardial infarction, and all-cause death



Importance of Antihypertensive Adherence in Post Stroke Patients



Prevents stroke reoccurrence and further complications



Adherence plays a significant role in recovery and long-term well-being



Help manage other health conditions as many post-stroke patients have comorbidities such as heart disease and diabetes



Improve overall health outcomes

Consequence of Nonadherence of Antihypertensive Post Stroke



Increased risk of recurrent strokes



Worsening of Stroke Effects leading to potentially further brain damage and increased disability



Complication and other health issues

Common Antihypertensive Cheat Sheet

<p>BETA BLOCKERS</p> <ul style="list-style-type: none"> ✓ Suffix: "lol" ✓ SE: Causes Bradycardia ✓ Can mask s/s hypoglycemia (DM) ✓ Avoid in COPD/Asthma ✓ Can Cause Bronchospams ✓ Avoid abrupt cessation ✓ Abrupt cessation=rebound htn ✓ Ex: metoprolol, propranolol 	<p>CALCIUM CHANNEL BLOCKERS</p> <ul style="list-style-type: none"> ✓ Suffix: "-dipine" (some exceptions) ✓ Indication: Htn, Angina, Arrhythmias ✓ SE: Lower extremity swell, HA ✓ Ex: amlodipine, felodipine, ✓ More Ex: verapamil, diltiazem ✓ Caution in CHF patients=swelling ✓ Effective for African Americans ✓ Avoid grapefruit juice while on
<p>ANGIOTENSIN RECEPTOR BLOCKERS</p> <ul style="list-style-type: none"> ✓ Suffix "--sartan" ✓ Avoid and ACE+ARB=Renal failure ✓ SE: Similar to ACE. ✓ SE: Hyperkalemia, dizziness ✓ Angioedema is linked can happen ✓ Ex: losartan, olmesartan, valsartan ✓ Hold if renal failure <p style="text-align: center;">-Med Made Ez-</p>	<p>ACE INHIBITORS</p> <ul style="list-style-type: none"> ✓ Suffix: "-pril" ✓ SE: Dry cough, hyperkalemia ✓ Angioedema can happen ✓ Ex: lisinopril, enalapril, benzapril ✓ Prevents renal failure from htn/DM ✓ BUT: Hold if acute renal failure—can actually make worse! <p style="text-align: center;">-Med Made Ez-</p>

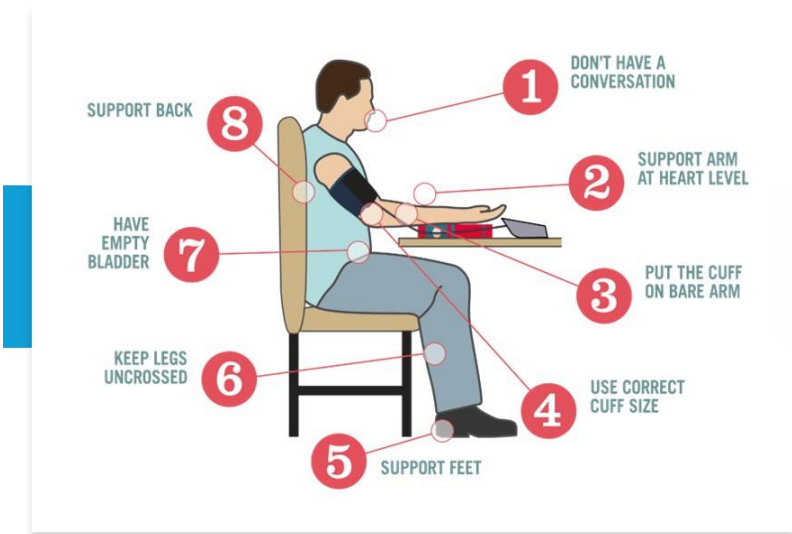
**QUICK
PHARM
REVIEW**
**ANTIHYPERTENSIVE
MEDICATIONS**

	ACE Inhibitors	Beta Blockers	Calcium Channel Blockers
Mechanism of Action 	Dilates blood vessels to increase the amount of blood pumped by the heart, while also lowering blood pressure.	Makes the heart beat slower and less forcefully, which in turn lowers blood pressure.	Relaxes and widens the arterial blood vessel walls. Some also slow heart rate.
Common Drugs 	Enalapril (Vasotec) Lisinopril (Prinivil) Quinapril (Accupril) Benazepril (Lotensin) Suffix: -PRIL	Metoprolol (Lopressor) Atenolol (Tenormin) Propranolol (Inderal LA) Bisoprolol (Zebeta) Suffix: -LOL	Nifedipine (Procardia) Nisoldipine (Sular) Amlodipine (Norvasc) Diltiazem (Cardizem) Suffix: -DIPINE
Nursing Considerations 	<p>Teach signs of angioedema of the lips, tongue and face. Any time there is swelling of the face, think ALWAYS. Angioedema can be life threatening!</p> <p>Teach patient to avoid potassium supplements, salt substitutes, NSAIDs (ACE inhibitors decrease potassium excretion in the urine which could lead to hyperkalemia).</p> <p>Teach side effects: HA, dizziness, fatigue and a constant dry cough.</p>	<p>Monitor patient for bradycardia and hypotension, including orthostatic hypotension.</p> <p>Always assess BP and HR prior to drug administration.</p> <p>Monitor patient for common side effects i.e. fatigue, pulmonary edema, and congestive heart failure.</p> <p>Since they can affect the airway, BBs are avoided in patients with asthma or COPD.</p>	<p>Teach common side effects:</p> <ul style="list-style-type: none"> Hypotension - change positions slowly peripheral edema - elevate legs Constipation - increase fiber and fluids Gingival hyperplasia - good dental hygiene <p>Monitor CBC, sodium, potassium, creatinine, BUN, LFTs and urinalysis. EKG</p> <p>Teach to avoid grapefruit juice (interaction)</p>

Monitoring and Follow ups

- Daily blood pressure checks before taking medications and as needed
- Regular check ups with primary care physician
- Medication review and adjustment by PCP when necessary
- Call primary care physician office with unmanageable side effects
- Do not wait until the last dose to call for refill. Call a week or more in advance





How to Teach Patients to Monitor their Blood Pressure accurately at Home

HOW TO GET YOUR BLOOD PRESSURE CHECKED

By AMERICAN HEART ASSOCIATION NEWS

The first step in controlling your blood pressure is knowing your numbers, and that requires an accurate BP reading. Here's how to do it right, whether you're at a clinic or at home:

BEFORE	DURING	AFTER
<p>30 MIN</p> <p>In the 30 minutes before your BP is taken:</p> <p>NO SMOKING NO CAFFEINE NO EXERCISE</p>	<p>1 MIN</p> <p>Make sure the cuff is the right size and in the right place.</p>	<p>1 MIN</p> <p>Wait 1 minute and retake your BP.</p>
<p>5 MIN</p> <p>In the 5 minutes before your BP is taken:</p> <p>SIT STILL</p>	<p>Keep your cuffed arm on a flat surface, like a table, & at heart level.</p>	<p>AVERAGE THE READINGS</p> <p>CONSIDER 3RD READING</p>
	<p>Sit upright, back straight, feet flat on floor.</p>	<p>Keep a log and bring to every check-up.</p>
	<p>DON'T TALK</p>	<p>Bring your device yearly to make sure it is accurate.</p>

Source: 2017 guidelines on diagnosing, treating and living with high blood pressure. Published: November 13, 2017

To Do List Prior to Discharge



Verify that the patient's home medication has been reconciled



Prescription ordered for hypertension if applicable



Follow up with primary care provider after discharge order placed



Educate the patient on the signs and symptoms of hypertensive emergencies and what actions to take if they occur

References

- Cabarak V., & Polyzou S. (2021). The effects of education given by nurses on rational drug use and health literacy of patients receiving hypertension treatment. *Journal of Nursing and Midwifery Sciences*, 8(4), 245. https://doi.org/10.4103/jns.s.nms.168_20
- Controlling blood pressure with fewer risks. *Harvard Health* (2017, August 31). Harvard Health. Retrieved May 20, 2024, from <https://www.health.harvard.edu/heart-health/controlling-blood-pressure-with-fewer-side-effects>
- Gebrayretsew, E., Bhagavathulu, A., Abebe, T., Tefera, Y., & Abegaz, T. (2019). Adverse effects and non-adherence to antihypertensive medications in university of gondar comprehensive specialized hospital. *Clinical Hypertension*, 15(1). Retrieved May 14, 2024, from <https://doi.org/10.1186/s40335-018-0104-4>
- Guo, Q.-H., Liu, C.-H., & Wang, J.-G. (2022). Blood pressure goals in acute stroke. *American Journal of Hypertension*, 35(6), 483–490. <https://doi.org/10.1092/ajh756002>
- Hearts in the Americas: Blood pressure measurement. (2024, May 20). <https://www.heart.org/en/health-topics/heart-disease/heart-attack/blood-pressure-measurement>
- How to accurately measure blood pressure at home. (2024, May 20). <https://www.heart.org/en/news/2020/05/20/how-to-accurately-measure-blood-pressure-at-home>
- Kurnia, A., Maliza, N., Rahmasudhi, F., Masaruch, N., Prasetyo, Y., Setyowati, C., & Khoirunnisa, O. (2020). The effect of educational program on hypertension management toward knowledge and attitude among uncontrolled hypertension patients in rural area of Indonesia. *Community Health Equity Research & Policy*, 4(2), 181–188. Retrieved June 11, 2024, from <https://doi.org/10.1177/072841202072846>
- Kurt D., & Garadogan, E. P. (2022). The effect of self-management support on knowledge level, treatment compliance and self-care management in patients with hypertension. *Acta Universitatis Carolinae - Medical Sciences*, 63(3). Retrieved June 2, 2024, from <https://doi.org/10.37474/2020.393.48>
- Lattanzi, S., Divani, A. A., & Silvestrini, M. (2021). Blood pressure trajectories after stroke: Do they matter? *The Journal of Clinical Hypertension*, 23(9), 1731–1733. Retrieved May 13, 2024, from <https://doi.org/10.1111/jch.14320>
- Le, M., Nguyen, T., Pham, T., Pham, T., & Tran, V. (2023). Effectiveness of a health education program in hypertensive patients with dyslipidemia and/or microalbuminuria: A quasi-experimental study in Vinh Long province, Vietnam. *Healthcare*, 11(15), 2208. Retrieved June 6, 2024, from <https://doi.org/10.3390/healthcare11152208>
- Phu, J., Lei, T., Hu, B., & Li, Q. (2017). Post-discharge evaluation of medication adherence and knowledge of hypertension among hypertensive stroke patients in northwestern China. *Patient Preference and Adherence*, Volume 11, 1915–1922. Retrieved May 23, 2024, from <https://doi.org/10.2147/ppa.s147600>
- Phuapitay, B. P., Field, T. S., Morrison, W. B., Sakakibara, B. M., & Eng, J. J. (2018). Effectiveness of interventions involving nurses in secondary stroke prevention: A systematic review and meta-analysis. *European Journal of Cardiovascular Nursing*, 13(3), 228–236. Retrieved June 1, 2024, from <https://doi.org/10.1177/1474511817729792>
- Sinha, R., Vem, A. P., Rohilla, K. K., & Kalyani, C. (2022). Hypertensive patients knowledge, attitude and practice for stroke prevention in uttarakhand, India. *National Journal of Community Medicine*, 13(10), 385–389. Retrieved May 22, 2024, from <https://doi.org/10.34555/njcm.2020100301311>