Hypertension Education to Enhance Health Literacy

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Hypertension Education to Enhance Health Literacy

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This Manuscript Partially Fulfills the Requirements for the Doctor of Nursing Practice Program and is Approved by:

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Approved: July 5, 2023
University of St. Augustine for Health Sciences
DNP Scholarly Project
Signature Form

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Title of DNP Project:

Hypertension Education to Enhance Health Literacy

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Abstract

Practice Problem: The health of patients suffers greatly when their health literacy is not addressed through evidence-based education material.

PICOT: The PICOT question that guided this project was, in adult patients with hypertension (P), how does evidence-based education material (I) compared to the current state of verbal instructions provided (C) affect health literacy rates based on the high blood pressure health literacy scale (O) within 12-weeks (T)?

Evidence: The literature evidence revealed three strong themes, which included information on who is most at risk for low health literacy levels, education delivery methods, and specific education to be used.

Intervention: This virtual intervention included a hypertension education format from the American Heart Association in both English and Spanish, when appropriate. The educational intervention was completed by the director at the clinic.

Outcome: The results demonstrated a change in health literacy following education delivery. The two-tailed Wilcoxon signed rank test was not significant based on an alpha value of .05, $V = 0.00$, $z = -1.83$, $p = .068$ for the full high blood pressure-health literacy assessment for the four participants; however, the clinical significance was meaningful.

Conclusion: The project was conducted in a free clinic for those who are marginalized. Four patients qualified based on the inclusion criteria, and each participant was given the health literacy assessment before and after receiving the evidence-based education material specific to hypertension.
**Hypertension Education to Enhance Health Literacy**

Health literacy can be considered an important vital sign to assess in healthcare. The concept of health literacy is often overlooked but is highly important for patient education and adherence to a treatment or medication regimen. Poor health literacy directly correlates with poor patient outcomes and adverse events (Berkman et al., 2011). The inverse of this is also true; high health literacy rates correlate with better patient outcomes and adverse events (Berkman et al., 2011). For this reason, the purpose of this project was to determine if evidence-based practice discharge material about hypertension can improve health literacy rates of hypertensive patients at a small free clinic in Florida that serves both sheltered and unsheltered patients.

**Significance of the Practice Problem**

Health literacy empowers patients to be active participants in their healthcare, and without it, patients are left as bystanders to their own healthcare. Low health literacy rates can have a significant impact on patient outcomes, which is impacted by their understanding of the care and instructions. Not addressing a patient’s health literacy level is an ethical and safety issue that could lead to a legal issue (Nairn, 2014).

Boslaugh (2022) explains that health literacy is essentially one’s healthcare knowledge, which includes the ability to find information and understand what the information means. The National Library of Medicine (2021) indicates that nearly 90% of adults struggle with some aspect of health literacy. The initial health literacy rates of the clinic in Florida are unknown, as health literacy rates have never been addressed within the clinic. It is important to understand that low health literacy rates do not necessarily mean low general literacy rates. A person can have a high literacy level and still have a
low health literacy level because they do not understand the medical terminology being used when their health status is being conveyed to them (National Library of Medicine, 2021).

Hickey et al. (2018) detailed that an astonishing number of American adults, 80 million, had limited or low health literacy. The Health Resources and Services Administration (2019) showed that those who were marginalized due to low socioeconomical status, those who were older, minorities, and those who were medically underserved had even lower health literacy rates. These individuals experienced a higher than usual use of emergency services compared to primary care. MacLeod and colleagues (2017) found that factors such as being older or a minority could predict lower health literacy rates, and poor health literacy rates can predict poor health status.

The health system as a whole and society can suffer greatly when there are low health literacy rates. Low health literacy rates result in unnecessary repeated care, higher mortality, and greater prevalence of disease burden. All of this combined comes at a significant cost to the health system and society; a report in 2020 by the UnitedHealth Group showed that in the United States alone, improvements in health literacy rates could result in healthcare cost savings of over 25 billion dollars and prevent nearly 1 million hospital visits in a year. This indicates that efforts to improve health literacy can help improve healthcare in general.

**PICOT Question**

The PICOT question used to guide the project was, in adult patients with hypertension (P), how does evidence-based education material (I) compared to the
current state of verbal instructions provided (C) affect health literacy rates based on the high blood pressure health literacy scale (O) within 12-weeks (T)?

**Population**

The participants included in the project were all adult patients within the clinic who had a diagnosis of hypertension. The clinic sees a mix of male and female patients 18 years of age and older; therefore, the participants were both male and female patients 18 years of age or older. The patients were of varying ethnicity and race. The clinic also saw a percentage of unsheltered or homeless individuals; however, both sheltered and unsheltered participants were included. The project also included patients of any educational level and employment status. The evidence-based discharge material was only given to patients with a diagnosis of hypertension, as this is the top international classification of disease (ICD-10) code for the clinic, which was all the time frame for the project would allow.

**Intervention**

The intervention for the project was to implement evidence-based discharge material specific to hypertension patients for providers to disseminate. A study by Hesselink and team (2014) reported that inadequate discharge material results in adverse events. DeSal et al. (2021) showed that limited or no discharge material hinders patients’ treatment compliance due to decreased health literacy. For this reason, the researcher used robust evidence-based discharge material from the American Heart Association (AHA) and made it readily available for providers. The evidence-based discharge material contained a description of the condition, an
explanation of potential warning signs and symptoms of hypertension, medication education, and lifestyle modifications.

**Comparison**

The comparison for the project was standard practice. Prior to the project at the clinic, there was no distribution of formal consistent discharge materials, except for the current state of simple verbal instruction from the provider.

**Outcome**

The desired outcome for this project was increased health literacy rates of patients. The Centers for Disease Control and Prevention (2022) uniquely defined health literacy as “the degree to which individuals have the ability to find, understand, and use information and services to inform health-related decisions and actions for themselves and others” (para. 4). Health literacy rates correspond with patient compliance levels; the higher the health literacy rate, the greater the compliance. The instrument used to measure health literacy outcomes was the high blood pressure health literacy scale (HBP-HLS). This was first published in 2012 by Kim and colleagues. The primary author granted permission to use the instrument. The instrument is a four-part health literacy evaluation. This was given to participants before the hypertension discharge teaching and then administered again during their follow-up visit. During the initial development and testing, the instrument was concluded to be both valid and reliable. The reliability was measured using the Kuder-Richardson 20 (KR-20). A KR-20 greater than 0.90 indicates good reliability (Zach, 2022). The KR-20 for the HBP-HLS is 0.98. The content validity index was used to measure validity. This was \( \geq 0.8 \), which to be considered valid; the index should be greater than 0.78 (Polit &
Beck, 2006). The literacy rates of the participants were analyzed using the demographic information and the Two-Tailed Wilcoxon Signed Rank Test.

**Timing**

The length of the study was 12-weeks. Patients were initially recruited over a two-week period. Those who needed a follow-up appointment per their provider’s instructions within the 12-weeks were addressed during the first two weeks and given the evidence-based discharge material. The health literacy assessment was administered during the initial appointment and again at the follow-up appointment.

**Evidence-Based Practice Framework & Change Theory**

The Johns Hopkin’s evidence-based practice (JHEBP) framework was used throughout the project. With permission, the JHEBP framework was used to guide the development and implementation of this project. The framework is a robust work plan that uses the practice question, evidence, and translation process, or PET process, to ensure that all aspects are included in a project and visualized in a Gantt chart layout (Dang et al., 2022). Each PET section has guided steps with additional appendices that were all applied to this project. The framework ensured that the practice question was pertinent, and the most current evidence regarding hypertension education and health literacy was appraised and used to select the appropriate discharge teaching for the clinic. The most beneficial component of the PET process for this project, translation, ensured that the project was properly conducted given the project manager’s inability to physically be at the clinic.

**Havelock’s Change Theory**
The project focused on changing health knowledge of hypertension to enhance health literacy and positively impact patient outcomes. Havelock’s change theory was used as the foundation for the implementation of the project. Havelock’s built upon Lewin’s unfreezing/refreezing theory. He emphasized the importance of unfreezing but created his own steps which included first building a relationship and then assessing for change (Udod & Wagner, 2018). The next steps are to acquire resources, choose the solution, gain acceptance, and lastly, maintain and separate.

Havelock’s change theory was most fitting for the project because the delivery of the evidence-based discharge material was individually reviewed with participants. The unfreezing part of the project was the lack of attention to administering evidence-based hypertension discharge material to patients. Havelock’s change theory promotes a more individualized approach to change and recognizes resistance to change. Havelock’s steps of building a relationship and gaining acceptance was important for this project to ensure that the participants were willing to accept the hypertension discharge material. This was done by utilizing the staff at the clinic who the participants were already familiar with. Havelock’s change theory was also important for ongoing needs assessments during the follow-up assessments. The theory emphasizes the need for knowledge building, which allowed for the healthcare provider at the clinic to continue to expand on the discharge teaching to further enhance the participants’ health literacy.

Evidence Search Strategy

The evidence search strategy focused on using PubMed, CINAHL Complete, and Medline. The keywords used in CINAHL Complete, and Medline were hypertension or HTN or high blood pressure or elevated blood pressure AND health literacy or health
education or health knowledge or health information or health understanding. Boolean operators were used to exclude coronavirus or COVID or COVID-19, as this topic has saturated evidence in the last two years but was not the focus of this project. The search was limited to academic journals only. The search was further limited to research written in English and published within the last three years to ensure the latest evidence was appraised. The geography was limited to only include the United States, as hypertensive management and health literacy can vary from country to country. The phrase hypertension education to enhance health literacy was used to search within PubMed. The search within PubMed was limited to the last 10 years, English, and adults for the same reasons noted earlier. Results that focus on electronic health education were all excluded, as the project setting and dissemination of hypertension education is in person.

**Evidence Search Results**

The initial search in all databases at University of St. Augustine resulted in 33,870 articles and 20 articles in PubMed. From there, the search criteria was applied, and this resulted in 253 articles to review for inclusion. Of the 253 articles, only seven were selected for the evidence synthesis. The articles that were excluded primarily fell into three categories that did not provide support for the project. The three main exclusion categories were articles discussing the health literacy of the providers rather than the patients, articles focused on electronic health (eHealth) or telehealth, and articles focused on homebased hypertension monitoring. Other articles were excluded if they discussed literacy of irrelevant topics or if the article was a discussion of education only. Only one systematic review and meta-analysis was retained for inclusion.
Although hypertension was not one of the non-communicable diseases included in the systematic review and meta-analysis that was retained, the statistical and clinical significance found in the study was important to include because it further supported the design of this project (See Figure 1 for the PRISMA flowchart).

The researcher used the JHEBP model to appraise each of the seven articles for the level of evidence and quality of evidence. Four articles were level III, quality A/B; two articles were level I, quality A; and one article was level II, quality A. The first four articles by Chapman et al. (2022), Hickey et al. (2019), Kim et al. (2022), and Odoh et al. (2021) were all cross-sectional surveys that were level III and quality A/B. According to Dang et al. (2022) to be considered quality A/B, most of the following criteria needs to be evident: good transparency about the data process, diligence in data interpretation, clear verification process, self-reflection, participant-driven inquiry, and an insightful interpretation. The cross-sectional surveys all have some amount of the criteria present. The two level I, quality A articles by Delavar et al. (2020) and Kurt and Gurdogan (2020) are both robust randomized control trials. In the JHEBP model, randomized control trials are considered the best and level I (Dang et al., 2022). For an article to be considered quality A, it needs to have “consistent, generalizable results; sufficient sample size for the study design; adequate control; definitive conclusions; consistent recommendations based on comprehensive literature review that includes thorough reference to scientific evidence” (Dang et al., 2022, p.5). The two randomized control trials met this criteria well. The fifth article to be included for the evidence synthesis was a systematic review and meta-analysis that was level II evidence and quality A by Heine et al. (2021). The JHEBP model indicates that a systematic review of a combination of study designs with
or without a meta-analysis is considered level II evidence (Dang et al., 2022). The quality criteria was the same as described for the other four articles (See Figure 2 for evidence search result).

**Themes with Practice Recommendations**

Health literacy is an important component of a patient’s health. The way it is delivered, the content that is delivered, and who it is delivered by were all important aspects to consider when the ultimate goal was improved outcomes for patients through enhanced health literacy. Further, it was important to understand those who had a greater need for education to enhance health literacy. Education delivery and education content were two strong themes throughout the literature as well as who is most at risk for low health literacy levels.

**Education Delivery**

Disease-specific, evidence-based education to enhance health literacy is necessary; however, who provides that education often varies. Education can be delivered by any member of the healthcare team, including but not limited to the primary care provider, the nursing staff, the pharmacists, or other staff such as therapists or a nutritionist. When it comes to education delivery, patients prefer to receive hypertension education directly from their primary care provider and are more likely to adopt healthy behaviors because of the education from their primary care provider (Chapman et al., 2022; Heine et al., 2021; and Kim et al., 2022). In healthcare, it is the responsibility of the healthcare providers, most importantly the primary provider, to appropriately educate patients.

**Education Content**
The type of education provided to patients to improve health literacy is also important. Lifestyle education seems to be preferred by patients and has the most impact on the patients’ overall knowledge, attitudes, and behaviors, thus improving their health literacy. When it comes to managing hypertension, patients want education about lifestyle management more often than medication education (Chapman et al., 2022; Delavar et al., 2020; Heine et al., 2021; Whelton et al., 2018). Lifestyle education is in line with the American Heart Association (AHA) and the American College of Cardiology (ACC) hypertension management guidelines (Whelton et al., 2018). In a systematic review by Heine et al. (2021), it was discovered that lifestyle management education had a significant impact on overall health literacy among a variety of non-communicable diseases. It can be inferred that the same would be true for hypertension, as it is one of the leading non-communicable diseases. Based on the evidence, lifestyle education should be provided to patients on a routine basis to enhance health literacy.

The literature provides substantial evidence that lifestyle education is equally as important as pharmacological education. Nevertheless, the areas of focus with lifestyle education vary. The AHA/ACC guidelines suggest education focused on diet modifications, exercise, and alcohol intake in addition to medication education (Whelton et al., 2018). When it comes to medication compliance as a component of health literacy, patients need lifestyle modification education in addition to medication education as evidenced by two level I, high-quality randomized control trials (RCT) (Delavar et al., 2020 and Kurt & Gurdogan, 2020).

**Education Need**
In healthcare, all patients need to receive education regarding their health. Some patients have high health literacy rates, and education is provided to build upon their knowledge. However, for other patients with low health literacy rates, simplified education is essential to ensure clarity and introduce the health topic to the patient. When it comes to low health literacy rates, those who are impacted by other social determinants of health such as low income, unsheltered, and minority status are most vulnerable and need simplified and focused disease-specific education (Hickey et al., 2019 and Odoh et al., 2021). This finding is clinically significant for the project since the clinic is a free clinic serving those who fall below the 200% Federal Poverty Guidelines, and the majority of patients are unsheltered and/or Hispanic.

**Practice Recommendation**

It is evident that some form of evidence-based education material provided to patients can have a significant impact on their health literacy and therefore their overall health. Each article was considered to be high quality and to provide unique conclusions for practice recommendations. A systematic review and meta-analysis by Heine et al. (2021) offered validation that lifestyle education enhances health literacy throughout a variety of non-communicable diseases. The RCT listed in appendix A showed that the same is true for patients diagnosed with hypertension. Further, the cross-sectional surveys in appendix A confirmed that education promotes healthy behaviors, thus enhancing health literacy and the understanding that patients prefer to receive hypertension management education from their primary provider in a simplistic form. Based on these findings, it was recommended that an evidence-based hypertension summary be provided to patients by their primary provider with detailed sections on
medication treatment and lifestyle management with specific emphasis on diet and activity. This practice change answered the PICOT question “in adult patients with hypertension (P), how does evidence-based education material (I) compared to the current state of verbal instructions provided (C) affect health literacy rates based on the high blood pressure health literacy scale (O) within 12-weeks (T)?”

**Setting, Stakeholders, and Systems Change**

The project setting was a small free clinic for the uninsured that also functions as a day shelter for unsheltered individuals in the area. The clinic is the only free clinic in the area that provides primary care. To qualify as a patient at the clinic, patients must be a resident of the county and fall below the 200% Federal Poverty Guidelines. There were between 200-250 established patients at the clinic; many were Hispanic and Spanish speaking. The vision and mission of the clinic are to provide quality and compassionate healthcare to uninsured and medically underserved patients. The need for this project was established through the medical director.

The medical director, the nurse practitioner, and the director of the clinic were the primary organizational supports for this project; together, they are the primary decision-makers. The stakeholders involved in the project were the patients, the nurse practitioner, the director, and the interim medical director. The patients were the stakeholders most impacted by the project. The nursing students were going to be the most crucial stakeholder in the project as they often act as medical assistants at the clinic. At the time of the project, there were no nursing students in rotation at the clinic; therefore, the director of the clinic became the most crucial stakeholder and the person who administered the HBP-HLS assessment and education. This will continue as long
as the director is available and remains engaged. There was a need for continued interprofessional collaboration between the nurse practitioner, the director, and the project manager. The clinic had been struggling financially and subsequently underwent changes that left the clinic short staffed and with limited leadership. This was foreseen as having a significant impact on the project but ultimately had no impact.

Table 1 outlines the full strengths, weakness, opportunities, and threats (SWOT) analysis. The strengths of the clinic included the dedication and compassion of the current staff along with the partnerships with various other organizations. These partnerships allow the clinic to function as a primary care clinic. The weakness of the clinic included recent reduction in force of staff, language barriers, and disorganization throughout the clinic. There were minimal opportunities for service at the clinic, however, one opportunity would have been the ability to leverage the nursing students who rotate through the clinic to assist with the project. The students ended up not taking part in the project. The largest threat was the potential for closure of the clinic due to financial constraints.

Beard and colleagues (2012) explained that any change that occurs at the point where providers interact with the patients is considered micro-level system change; meso-level system change is related to changes to programs and clinic services, and macro-level system change occur at the system level or broader organizational level. The system change level for the project was primarily at the micro level. The clinic was small and a single entity, therefore, the change did not impact a larger whole directly. There was a minor change in workflow for the nurse practitioner who was responsible for giving the patients the evidence-based hypertension education (see Appendix E).
This did not happen due to time constraints, so the nursing director became the one who administered the education.

**Implementation Plan with Timeline and Budget**

The implementation plan for the project was guided by four main objectives. The main objective for the project was to improve health literacy as a social determinant of health among underserved populations by 80% by utilizing EBP education and evaluation using the high blood pressure health literacy scale. The second objective of the project was to build the EBP skills of the provider to improve outcomes for patients by utilizing EBP hypertension education 100% of the time. The third objective was to improve the quality of life and self-care among hypertension patients by reducing medication titrations by 10% during the follow-up visit. The fourth objective was that patients would be able to accurately read 80% of words from the HBP-HLS assessment whether they read in English or Spanish.

The workflow of the nurse practitioner was initially thought to be most affected by the change, therefore, her involvement as the change champion was critical. However, the change champion changed to the nursing director right before implementation started. There was excellent interprofessional collaboration throughout the project between the project manager (PM), the nurse practitioner, and the clinic director. The PM was responsible for ensuring open lines of communication with the clinic. The PM needed to have strong and effective communication skills, especially written, because most communication was via email. The PM also needed to have strong decision-making skills and the ability to remain positive throughout the project.
The timeline (Appendix C) and budget (Table 2) for the project was the most difficult aspect of the project due to several factors. The timeline started with frequent meetings with the preceptor and mentor for guidance while composing the proposal. After the proposal was complete, the project was conducted over a 12-week period with week one starting with emails and Zoom calls to provide training on the use of the tool using clear communication. Weeks two through eleven consisted of continued emails. The first phase of the project was to administer the HBP-HLS (Appendix D) to all participants during their appointment. The nurse practitioner originally identified the nursing students who rotate through the clinic as the provider who would have administered the HBP-HLS assessment to the patients when they were there. The nursing students ended up not taking part in the project and the nursing director became the provider who administered the education. Once the HBP-HLS was performed, the director administered the EBP hypertension education (Appendix E) to all participants. This phase continued until all possible participants were reached. Phase two began during week four of the 12-week period.

Phase two was to readminister the HBP-HLS to patients who were scheduled for follow-up appointments during the project timeline. Data collection began in week two and continued through week eleven. Data analysis began once the first post-education on HBP-HLS follow-up assessment was performed. Havelock’s change theory was crucial during phase one. This was where the usual verbal education was replaced with the EBP education, and the nursing director’s workflow was most impacted and accounted for the building a relationship and diagnosing the problem stages. The acquire resources for change and choose the solution stages of Havelock’s change
theory was ongoing starting in week two when the EBP education was given to patients. *Gaining acceptance and maintain and separate* were the last stages of Havelock’s change theory, which were evident as the nursing director routinely gave the education.

The budget for the project was limited. The clinic did not have the financial means to support a tremendous amount of printing, so printing was kept to a minimum. The salary of the nurse practitioner and the clinic director was already covered by the clinic.

**Results**

All patients at the clinic were recruited as participants in the project. However, only those who had a planned follow-up appointment during the project time were included. This resulted in only four total participants. The implementation of the project was approved by the Evidence-Based Practice Review Council (EPRC) at University of St. Augustine Health Science and the nursing director at the clinic.

**Data Collection**

The data collected during the project was collected at two different points. The demographic information including age, gender, education level, sex, housing status, and hypertension diagnosis was answered using a paper survey handed to participants in the waiting room upon arrival (Appendix F). The demographic survey was important to gather information to better understand the HBP-HLS assessment and analyze the data. The HBP-HLS assessment was administered by the clinic nursing director in paper form. The HBP-HLS was administered during an appointment and before the hypertension education was given and then again when the participant followed up within the project time frame. The data was stored and maintained by the clinic nursing
director in a locked room throughout the project and later sent to the PM via e-mail to be analyzed. The integrity of data collection was maintained as only one individual administered the tool. A potential risk to patients was loss of confidentiality. However, all efforts were made to ensure there was no loss of confidentiality by not using patient identifying information in the data collection.

The statistical software Intellectus Statistics was used to conduct the data analysis. A Two-Tailed Wilcoxon Signed Rank Test was used to compare the ranked values of pre, and post education data sets and statistical significance was based on an alpha value of 0.05. The results of the assessment tool for each participant were analyzed as a whole and in three separate parts. The whole assessment was designated as HBP-HLS. The Print Health Literacy Subscale (PHL) had a total of 30 possible points. The Functional Health Literacy Subscale (FHL) has a total of 13 possible points. The Newest Vital Sign (NVS) had six questions about FHL. The Wilcoxon Signed Rank Test found that the results were not significant for the HBP-HLS, PHL, FHL, and the NVS and the differences between the pre-education data and the post educations were by random variation (Intellectus Statistics, 2022).

Clinical significance is just as important to evaluate as statistical significance because it is the clinical significance that indicates how meaningful the results were to patient care (Kim & Mallory, 2013. p. 152). The clinical significance was determined by the impact the study had on the setting. Therefore, clinical significance was determined by evaluating if there was any increase in HBP-HLS score for the intervention group because according to the Centers for Disease Control and Prevention (2022b), any increase in health literacy can help all individuals better manage their own health.
Two of the four participants had an increase in the printed health literacy (PHL) portion of the HBP-HLS. The other two participants achieved the highest score both pre and post education. The one participant within the age range of 18-24 and a high school diploma had the highest increase in their PHL, FHL, and the HBP-HLS post education (Appendix G) (Intellectus Statistics, 2022).

**Impact**

This project was needed in order to bring awareness to low health literacy and the impact it can have on patient outcomes. The implementation of disease-specific education to enhance health literacy at the clinic has helped to address the issue of low health literacy and the need for education from a trusted individual. The sustainability of the project at the clinic is limited due to uncertainty of the future of the clinic. However, the education used for the project is standardized education from the American Heart Association. By utilizing education that is reviewed and kept up to date by a reputable organization, the accessibility and delivery of the education will be more sustainable for the clinic and other healthcare organizations.

Low health literacy is a common finding and is not specific to one disease. For this reason, expanding the education beyond hypertension will be highly beneficial. The long-term effectiveness of the intervention can be evaluated by further monitoring the patients who participated in the study and seeing if their outcomes improve. This could be evaluated by looking at their blood pressure trends, medication dose, and their verbal statements of improved eating habits and increased activity.

There were many limitations to this project. The first limitation was due to the geographical location of the clinic in relation to the project manager. The PM was not
able to be physically present at the clinic and had to rely on effective communication skills through email. This limitation likely had the biggest impact on the low number of participants. The next limitation of the project was the time constraint the nurse practitioner at the clinic faced. This resulted in the director of nursing being the one to collect the health literacy assessment and administer the education. Although this was not ideal, this likely did not have any effect on the results since the director of nursing is a familiar and trusted person to the individuals at the clinic. The last main limitation to the project was low number of participants. Only four individuals were able to participate because all other possible patients did not need a scheduled follow up appointment within the project time frame. Overall, any increase in health literacy is clinically significant. Therefore, even with the limitations, the impact was meaningful.

**Dissemination**

The project results were disseminated in four main ways. First, at the conclusion of the data analysis, an executive summary was provided to the project site. The project was then presented virtually as an oral poster presentation to leaders and students at the University. Third, the project was shared with local providers who work closely with unsheltered individuals in the PMs hometown. Lastly, the full manuscript was submitted to the university’s Scholarship and Open Access Repository (SOAR).

**Conclusion**

The intention of the proposed project aimed to enhance health literacy of patients diagnosed with hypertension at a free clinic using evidence-based practice hypertension discharge teaching material. Health literacy is often overlooked by providers but needs to be a priority to improve patient outcomes. The literature showed that there is an
educational need and further that the education delivery and content is highly important. By gaining support of the clinics key stakeholders and optimizing the strengths and opportunities, the objectives of the project were achieved. The data was obtained and stored in a secure manner to ensure confidentiality of the participants. Statistical analysis before and after the hypertension material was provided to patients by administering the High Blood Pressure-Health Literacy Scale assessment was achieved. There was a small increase in the printed health literacy subscale (PHL) portion of the HBP-HLS. The results of the project were disseminated to pertinent and appropriate sources.
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affect%20their%20health%20and%20safety.


UnitedHealth Group. (2020, October). *Improving health literacy could prevent nearly 1 million hospital visits and save over $25 billion a year.*

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Table 1

**SWOT Analysis**

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<td>• Provide quality and compassionate healthcare to uninsured and medically underserved patients.</td>
<td>• Language barrier: majority of patients are Hispanic or Eastern European.</td>
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<tr>
<td>• Partnerships with various organizations throughout the county to provide patients with additional resources such as We Care Jax, Tobacco Free Florida, and Vision is Priceless.</td>
<td>• Medical assistant who spoke Spanish was terminated due to financial concerns.</td>
</tr>
<tr>
<td>• Respected clinic by patients that answers calls and returns calls, takes undocumented patients.</td>
<td>• Clinic recently went from five employees working 175 hours per week to two employees working 64 hours per week.</td>
</tr>
<tr>
<td>• Only free clinic that has a fully stocked medication room.</td>
<td>• Two employees over worked and lack of leadership throughout the organization.</td>
</tr>
<tr>
<td>• On site nurse practitioner</td>
<td>• Using nursing students as medical assistance. Creates a disorganized environment because the students come through for 1-2 days.</td>
</tr>
<tr>
<td>• Volunteer pharmacist</td>
<td>• Referrals to specialists and radiographic testing can sometimes have long wait times; currently GYN referrals are out 6+ months even for those marked urgent.</td>
</tr>
<tr>
<td>• Partnership with LabCorp to provide free lab work</td>
<td>• Partnership with larger healthcare organizations such as Baptist and Ascension St. Vincent’s through We Care Jax to provide patients with radiographic testing and specialty referrals.</td>
</tr>
<tr>
<td>• Patients are complementary and appreciative of the clinic</td>
<td>• Patients are complementary and appreciative of the clinic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Potential for growth and additional clinic hours.</td>
<td>• Potential for closure due to financial difficulties.</td>
</tr>
<tr>
<td>• Leverage student nurses further if available.</td>
<td>• Difficulty securing medical board.</td>
</tr>
<tr>
<td></td>
<td>• Decreased staffing.</td>
</tr>
<tr>
<td></td>
<td>• Currently has an interim medical director, failure to secure permanent medical director could result in potential closure.</td>
</tr>
<tr>
<td></td>
<td>• There are 10 other clinics in the area that offer primary care under sliding scale to similar patient population.</td>
</tr>
</tbody>
</table>
Table 2

*Implementation EBP project budget*

<table>
<thead>
<tr>
<th>EXPENSES</th>
<th>REVENUE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct</strong></td>
<td><strong>Billing</strong></td>
</tr>
<tr>
<td>Salary of participants @50.00/hr</td>
<td>$13,200</td>
</tr>
<tr>
<td>((NP + Director) x 12 hrs. per week</td>
<td></td>
</tr>
<tr>
<td>x 12 weeks) student’s</td>
<td></td>
</tr>
<tr>
<td>Supplies (HBP-HLS, EBP hypertension</td>
<td>$100</td>
</tr>
<tr>
<td>sheet)</td>
<td></td>
</tr>
<tr>
<td><strong>Indirect</strong></td>
<td></td>
</tr>
<tr>
<td>Equipment (Clip board)</td>
<td>$20</td>
</tr>
<tr>
<td><strong>Total Expenses</strong></td>
<td>$13,320</td>
</tr>
<tr>
<td><strong>Net Balance</strong></td>
<td></td>
</tr>
</tbody>
</table>
Figure 1

PRISMA Flowchart

Records identified through database searching (n=33,870) → Additional records identified through other sources (n=20)

Records after duplicates removed (n=33,890)

Records screened (n=253) → Records excluded (n=0)

Full-text articles assessed for eligibility (n=236) → Full-text articles excluded, with reasons (n=231)

Studies included in synthesis (n=7)

Figure 2

Evidence Search Results

Level I, Quality A/B
- Cross-sectional survey
  - Chapman et al., 2022
  - Hickey et al., 2019
  - Kim et al., 2022
  - Odoh et al., 2021

Level I, Quality A
- Randomized control trial
  - Delavar et al., 2020

Level II, Quality A
- Systematic review and meta-analysis
  - Heine et al., 2021

Kurt and Gurdogan, 2020
## Appendix A

<table>
<thead>
<tr>
<th>Citation</th>
<th>Design, Level Quality Grade</th>
<th>Sample Sample size</th>
<th>Intervention Comparison</th>
<th>Theoretical Foundation</th>
<th>Outcome Definition</th>
<th>Usefulness Results Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chapman, Marques, Picone, Adji, Broughton, Dinh, Gabb, Lambert, Mihailidou, Nelson, Stowasser, Schlaich, Schultz, Mynard, &amp; Climie, 2022</td>
<td>Cross-sectional Online Survey, Level III Quality Grade: A/B, High/good</td>
<td>465</td>
<td>Determination of need and preferences for education delivery by community members and providers regarding management of blood pressure. Statistical analysis was performed to find frequencies and results expressed in numbers and precents.</td>
<td>Not addressed</td>
<td>73% of participants preferred receiving education from their provider over any other method including social media. 57% of providers preferred a one-page summary to provide education to their patients.</td>
<td>Validates the need for evidence-based education from a provider. Providers prefer one-page summaries for education. *Adults want information delivered by their doctor on how to manage blood pressure via lifestyle and without medications providers identified that one-page summaries on specific topic would support patient education for blood pressure management *Neither adults or providers wanted to access information about blood pressure management via social media.</td>
</tr>
<tr>
<td>Kim, B., Jang, Kim, D. H., Lee, &amp; Kim, T. H., 2022</td>
<td>Cross-Sectional survey, Level III Quality Grade: A/B, High/good</td>
<td>213,900</td>
<td>The association between hypertension management education and the adoption of multiple healthy behaviors</td>
<td>Not addressed</td>
<td>Education can improve the adoption of multiple healthy lifestyles among hypertensive patients.</td>
<td>*Only 12.5% of participant reported receiving hypertensive management education.</td>
</tr>
<tr>
<td>Citation</td>
<td>Design, Level Quality Grade</td>
<td>Sample Sample size</td>
<td>Intervention Comparison</td>
<td>Theoretical Foundation</td>
<td>Outcome Definition</td>
<td>Usefulness Results Key Findings</td>
</tr>
<tr>
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<td>----------------------------------</td>
</tr>
<tr>
<td>Kurt, 2022</td>
<td>Randomized controlled intervention study, Level I Quality Grade: A/High quality</td>
<td>137</td>
<td>To determine the effects of self-management support given to patients diagnosed with hypertension on the hypertension knowledge level, treatment adherence and self-care management, and to examine the changes in patients' blood pressure after the self-care management support.</td>
<td>Not addressed</td>
<td>The intervention group showed a statistically significant improvement in hypertension knowledge level, treatment adherence, and self-care management after receiving education.</td>
<td>*Emphasizes the need for hypertensive education in primary care to improve patient outcomes. *Self-management education for hypertension significantly increased hypertension knowledge level.</td>
</tr>
<tr>
<td>Citation</td>
<td>Design, Level Quality Grade</td>
<td>Sample Sample size</td>
<td>Intervention Comparison</td>
<td>Theoretical Foundation</td>
<td>Outcome Definition</td>
<td>Usefulness Results Key Findings</td>
</tr>
<tr>
<td>----------------------------------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>Delavar, Pashaeypoor, &amp; Negaran, 2020</td>
<td>Randomized controlled trial, Level I</td>
<td>118</td>
<td>The intervention group received hypertensive self-management education. Control received routine care.</td>
<td>Not addressed</td>
<td>A decrease in mean blood pressure and increase adherence to medication after self-management hypertensive education tailored to</td>
<td>Hypertension education can increase health literacy and promote healthy habits as evidence by a clinically significant</td>
</tr>
</tbody>
</table>
**Citation**
Hickey, Masterson Creber, Reading, Sciacca, Riga, Frulla, & Casida, 2018

**Design, Level Quality Grade**
Cross-Sectional survey, Level III
Quality Grade: A/B, High/good

**Sample Sample size**
91

**Intervention Comparison**
Test of Functional Health Literacy in Adults (TOFHLA), Short Assessment of Health Literacy (SAHL), and the Short-Form Health Survey (SF-36v2) were used. Logistic regression analysis

**Theoretical Foundation**
Not addressed

**Outcome Definition**
The study results demonstrate differences in functional health literacy and quality of life among minority groups

**Usefulness Results Key Findings**
Hispanic adults have the poorest health literacy and general knowledge of their coexisting cardiac conditions

*The Fisher’s exact and the Chi-square tests were used for between-group comparisons respecting categorical variables. The independent-sample t test and the Mann-Whitney U tests were performed for between-group comparisons respecting numerical variables. The paired-sample t-test was employed for assessing within-group differences. The adjusted between-group analysis was performed using the analysis of covariance (ANCOVA) by considering baseline values as covariates.*

Health literacy was administered. Reduction in mean blood pressure and statistically significant increase in medication adherence.
<table>
<thead>
<tr>
<th>Citation</th>
<th>Design, Level Quality Grade</th>
<th>Sample Sample size</th>
<th>Intervention Comparison</th>
<th>Theoretical Foundation</th>
<th>Outcome Definition</th>
<th>Usefulness Results Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odoh, Vidrine, Businelle, Kendzor, Agrawal, &amp; Reitzel, 2019</td>
<td>Cross-Sectional survey, Level III Quality Grade: A/B, High/good</td>
<td>575</td>
<td>Logistic regression was used to assess the association between health literacy and self-rated health</td>
<td>Health Behavior Theory</td>
<td>Individuals who were health literate reported better self-rated health. 64% rated their health as good/very good/excellent and 68.3% felt extremely/quite a bit confident filling out medical forms alone.</td>
<td>Better health literacy rates results in better perceived health</td>
</tr>
</tbody>
</table>
### Appendix B

#### Summary of Systematic Reviews (SR)

<table>
<thead>
<tr>
<th>Citation</th>
<th>Quality Grade</th>
<th>Question</th>
<th>Search Strategy</th>
<th>Inclusion/Exclusion Criteria</th>
<th>Data Extraction and Analysis</th>
<th>Key Findings</th>
<th>Usefulness/Recommendation/Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heine, Lategan, Erasmus, Lombaard, McCarthy, Olivier, Niekerk, &amp; Hanekom, 2021</td>
<td>Systematic review and Meta-analysis, Level II Quality grade: A/High quality</td>
<td>Are health literacy interventions effective in promoting disease knowledge, attitude, and behavior across four chronic condition that drive the burden of non-communicable diseases.</td>
<td>Keywords relevant to health literacy, non-communicable disease, and countries listed as low to middle income. Searched in PubMed, Cochrane, Lilacs, ScienceDirect, Africa Wide, CINAHL, and Scopus.</td>
<td>The inclusion criteria was significant but included studies that focused on improving health literacy, and reported comprehensive measures of health literacy, or components thereof (knowledge, attitude, or behavior). Studies were excluded due to not being part of the diagnosis population in question or did not have an intervention group or control group. Geography and language was used to exclude studies as well as any study.</td>
<td>A custom template was used for data extraction. Effect size was calculated using Hedges-g. A random-effect model was used independent of the heterogeneity statistics.</td>
<td>A significant summary was found for disease knowledge (1.27, CI 1.05-1.49), attitude (1.17, CI 0.88-1.47), and behavior (1.20, CI 0.94-1.46)</td>
<td>Health-literacy interventions are effective in promoting disease knowledge, attitude, and behavior. Although hypertension is not directly evaluated, a variety of non-communicable disease are evaluated. This shows that education can improve health literacy and that there is a need for further studies specific to hypertension needed.</td>
</tr>
<tr>
<td>Citation</td>
<td>Quality Grade</td>
<td>Question</td>
<td>Search Strategy</td>
<td>Inclusion/Exclusion Criteria</td>
<td>Data Extraction and Analysis</td>
<td>Key Findings</td>
<td>Usefulness/Recommendation/Implications</td>
</tr>
<tr>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>other than randomized control study.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix C
### Project Schedule

| Activity                                      | NRR7801 | Week 1 | Week 3 | Week 5 | Week 7 | Week 9 | Week 11 | Week 13 | Week 15 | NUR7802 | Week 1 | Week 3 | Week 5 | Week 7 | Week 9 | Week 11 | Week 13 | Week 15 | NUR7803 | Week 1 | Week 3 | Week 5 | Week 7 | Week 9 | Week 11 | Week 13 | Week 15 |
|-----------------------------------------------|---------|--------|--------|--------|--------|--------|---------|---------|--------|---------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|--------|--------|--------|---------|---------|---------|
| Meet with preceptor                          | X       | X      | X      | X      | X      | X      | X       | X       | X      | X       | X      | X      | X      | X      | X      | X       | X       | X       | X      | X      | X      | X      | X      | X       | X       | X       |
| Meet with mentor                             | X       | X      | X      | X      |        |        |         |         |        |         |        |         |         |         |         |         |         |         |         |        |         |         |         |         |         | X       |
| Prepare project proposal                     | X       | X      | X      | X      | X      | X      |         |         |         |         |        |        |         |         |         |         |         |         |         |        |         |         |         |         |         |         |         |
| Receive University approval for project      |         |        |        |        |        |        |         |         |         |         |        | X      | X      |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Zoom calls with clinic to discuss project    |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |
| Implement project:                           |         |        |        |        |        |        |         |         |         |         | X      | X      | X      | X      | X      | X      |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |
| 1. Collect demographic information          |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 2. Administer HBP-HLS to all patients         |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 3. Give education sheet to hypertension      |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| patients                                      |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 4. Administer HBP-HLS again                  |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Data review and analysis                     |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Manuscript development                       |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Dissemination                                |         |        |        |        |        |        |         |         |         |         |        |        |        |         |         |         |         |         |         |        |         |         |         |         |         |         |         |         |         |         |         |         |         |

*HBP-HLS* stands for Health Belief Questionnaire-Health Literacy Scale.
Appendix D

High Blood Pressure Health Literacy Scale: HBP-HLS

(Four-part assessment with instructions for administering at the end)

Study ID: ________

1. Please read out loud the listed words below.

<table>
<thead>
<tr>
<th>List 1 (10)</th>
<th>List 2 (10)</th>
<th>List 3 (10)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Medication</td>
<td>17. Obesity</td>
<td>27. Monitoring</td>
</tr>
<tr>
<td>10. Weight</td>
<td>20. Swelling</td>
<td>30. Rehabilitation</td>
</tr>
</tbody>
</table>

# of correct answers
1. _____________ 2. _____________ 3. _____________

Example) Right= (+) Wrong = (-)
Functional Health Literacy Testing

2. Please read the following labels and answer the questions.

2-1. Medication label 1

**KIM TRAN 16 Apr 06**
**FF941858 DR. LUBIN MICHAEL**
**CARDIZEM**
**120MG**
Take one tablet by mouth three times a day.

2-1a. If you take your first tablet at 7:00 am, when should you take the next one?

__________ Wrong / Correct

2-1b. And the next one after that?

__________ Wrong / Correct

2-2. Medication label 2

**KIM TRAN 16 Apr 06**
**FF941862 DR. LUBIN MICHAEL**
**CAPTOPRIL**
**25MG**
Take medication on empty stomach one hour before or two to three hours after a meal unless otherwise directed by your doctor.

2-2a. If you have a lunch at noon and plan to take the medication **BEFORE a meal**, what time do you have to take the medication?

__________ Wrong /Correct

2-2 b. If you have a lunch at noon and plan to take the medication **AFTER a meal**, what time do you have to take the medication?

__________ Wrong /Correct

2-3. Normal blood pressure is **120/80**.

2-3a. Your blood pressure today is **140/100**. Is this normal?

Yes / No Wrong /Correct
3-4. Appointment slip

<table>
<thead>
<tr>
<th>CLINIC APPOINTMENT</th>
<th>LOCATION: 3rd floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLINIC: Cardiac</td>
<td></td>
</tr>
<tr>
<td>DAY: Thurs.</td>
<td>DATE: April 2nd</td>
</tr>
<tr>
<td>HOUR: 10:20 a.m.</td>
<td></td>
</tr>
</tbody>
</table>

YOU MUST BRING YOUR PLASTIC CARD WITH YOU

The following questions are about appointment slip.

3-4a. When is the appointment date?
April 2 other Wrong / Correct

3-4b. Where?
Cardiac clinic at 3rd floor other Wrong / Correct

4. Newest Vital Sign Test

⊙ Read to participant: This information is on the back of a bag of Ramen.

4-1 If you eat the entire bag, how many calories will you eat?
____________ Wrong / Correct

4-2 If you are allowed to eat 2,400 milligrams of sodium per day, how many servings of ramen can you have?
____________ Wrong / Correct

4-3 Your doctor advises you to reduce the amount of saturated fat in your diet. If you decide not to eat a bag of Ramen today, how many grams of saturated fat would you be reducing?
____________ Wrong / Correct

4-4 If you usually eat 2900 calories a day, what percentage of your daily value of calories will you be eating if you eat one serving of this Ramen?
____________ Wrong / Correct

Read to participant: Pretend that you are allergic to the following substance: MSG and shrimp

4-5 Is it safe for you to eat this Ramen?
____________ Yes/ No Wrong / Correct

4-6 (Ask only if the patient responds “no” to question 5): Why not?
______________________________________________ Wrong / Correct
Instructions for the HBP-HLS

In the first section, participants are asked to pronounce words, arranged in columns of increasing complexity. In this section, the administrator should provide the participant with a laminated copy of the word list from which subjects will read. Using the participant’s paper copy of the HBP-HLS, the administrator will mark if a word was correctly or incorrectly pronounced. The administrator should have a clipboard and pencil when testing participants. This procedure is used to help reduce shame, and to improve the objectivity of the scoring.

The test is to be administered one-on-one, rather than in a group setting. The examiner should be familiar with the pronunciation of words before administering the test. The examiner’s copy should not be visible to the subject. Should the subject be curious about the correct pronunciation of words, this should be deferred until after the test is completed.

For sections 2-4, please read ONLY the questions to the participant. Have them to read and interpret the LABELS themselves.

Many low- or non-literate subjects are very sensitive about their inability to read and should be treated at all times with courtesy and respect. Their inability to read should not be treated as blameworthy. Before beginning testing, make sure that those subjects who need eyeglasses or contact lenses are wearing them for the test.

*The HBP-HLS is an open access instrument and permission has been granted for use by the author
Appendix E

EBP Hypertension Education English and Spanish versions

What is Blood Pressure?
Blood pressure is the force of blood pushing against blood vessel walls. It’s measured in millimeters of mercury (mm Hg).

High blood pressure (HBP) means the pressure in your arteries is higher than it should be. Another name for high blood pressure is hypertension.

Blood pressure is written as two numbers, such as 110/78 mm Hg. The top, or larger, number (systolic pressure) is the pressure when the heart beats. The bottom, or smaller, number (diastolic pressure) is the pressure when the heart rests between beats.

Normal blood pressure is below 120/80 mm Hg. If you’re an adult and your systolic pressure is 120 to 129, and your diastolic pressure is less than 80, you have elevated blood pressure. High blood pressure is a systolic pressure of 130 or higher, or a diastolic pressure of 80 or higher, that stays high over time.

High blood pressure usually has no signs or symptoms. That’s why it’s so dangerous. But it can be managed.

Nearly half of the American population over age 20 has HBP, and many don’t even know it. Not treating high blood pressure is dangerous. High blood pressure increases the risk of heart attack and stroke.

Make sure you get your blood pressure checked regularly and treat it the way your health care professional advises.

<table>
<thead>
<tr>
<th>Blood Pressure Category</th>
<th>Systolic (mm Hg)</th>
<th>Diastolic (mm Hg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>LESS THAN 120</td>
<td>LESS THAN 80</td>
</tr>
<tr>
<td>Elevated</td>
<td>120-129</td>
<td>LESS THAN 80</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>130 OR HIGHER</td>
<td>90 OR HIGHER</td>
</tr>
<tr>
<td>Hypertension</td>
<td>(consult your doctor before making any changes)</td>
<td></td>
</tr>
</tbody>
</table>

Am I at higher risk of developing HBP?
There are risk factors that increase your chances of developing HBP. Some you can control, and some you can’t.

Those that can be controlled are:
- Cigarette smoking and exposure to secondhand smoke
- Diabetes
- Being obese or overweight
- High cholesterol
- Unhealthy diet (high in sodium, low in potassium, and drinking too much alcohol)
- Physical inactivity

Factors that can’t be modified or are difficult to control are:
- Family history of high blood pressure
- Race/ethnicity
- Increasing age
- Gender (male)
- Chronic kidney disease
- Obstructive sleep apnea
- Socioeconomic status and psychosocial stress are also risk factors for HBP. These can affect access to basic living needs, medication, health care professionals, and the ability to adopt lifestyle changes.

How can I learn more?
- Call 1-800-AHA-USA1 (1-800-242-8721), or visit heart.org/learnmore about heart disease and stroke.
- Sign up for our monthly Heart Insight e-news for heart patients and their families at heartinsight.org.
- Connect with others sharing similar journeys with heart disease and stroke by joining our Support Network at heart.org/supportnetwork.

What is High Blood Pressure?

- Don’t drink and avoid secondhand smoke.
- Eat a healthy diet that is low in saturated and trans fats and rich in fruits, vegetables, whole grains and low-fat dairy products. Aim to consume less than 1,500 milligrams of sodium (salt). Even reducing your daily intake by 1,000 mg can help.
- Eat fruits and vegetables. Aim for 3-5 servings of fruits and 3-5 servings of vegetables per day.
- Limit alcohol use to no more than one drink per day (if you’re a woman or non-alcoholic if you’re a man).
- Be more physically active. Aim for 100 minutes of moderate intensity physical activity or at least 75 minutes of vigorous intensity physical activity per week, or a combination of both, spaced throughout the week. Add muscle strengthening activities at least two days per week for new health benefits.
- Take medications the way your health care professional tells you.
- Know what your blood pressure should be and work to keep it at that level.

How can I tell if I have it?
The only way to know if you have high blood pressure is to get it checked regularly. For proper diagnosis of HBP, your health care professional will use an average based on two or more readings obtained on two or more visits.
What is High Blood Pressure Medicine?

Your health care professional has prescribed medication to help lower your blood pressure. Depending on your risk and blood pressure levels, you may need one or more types of medication to keep your blood pressure at a healthy level.

You may have to see your health care professional often until your blood pressure is under control. Every person reacts differently to medication. You may need a trial period before your doctor finds the best medication, or combination of medications, for you.

What should I know about high blood pressure medication?

- Different medications work in unique ways to help lower your blood pressure.
- HBP medication only works when you take it as prescribed.
- Medication shouldn’t be stopped without your health care professional’s approval.
- Even after your blood pressure is lowered, treatment usually continues for your lifetime to keep your blood pressure normal.

What types of medication may be prescribed?

One or more of these medications are initially used to treat high blood pressure:

- Diuretics - help control blood pressure by removing excess sodium (salt) and water from your body through urination. These are sometimes called “water pills.”
- Angiotensin-converting enzyme (ACE) inhibitors, angiotensin II receptor blockers (ARBs) and calcium channel blockers - relax and open up the narrowed blood vessels and lower blood pressure.

What are the side effects?

Some HBP medications can affect certain body functions. This may result in side effects, but the benefits of using them outweigh the risk of side effects in most people.

Some of the common side effects that may occur include:

- Weakness, tiredness or drowsiness
- Erectile dysfunction
- Trouble sleeping
- Slow or fast heartbeat
- Skin rash
- Feeling thirsty
- Cough
- Muscle cramps
- Headache, diziness or light-headedness
- Constipation or diarrhea

(continued)
**¿Qué es la presión arterial alta?**

La presión arterial es la fuerza de la sangre contra las paredes de los vasos sanguíneos. Se mide en milímetros de mercurio (mm Hg).

La presión arterial alta (HBP) significa que la presión en las arterias es mayor de lo que debería ser. Otro denominador de la presión arterial alta es hipertensión.

La presión arterial se expresa en dos números, como por ejemplo 120/80 mm Hg. El primer, o más grande, número (llamado presión sistólica) es la presión cuando el corazón está contraíendo el volumen de sangre que bombea a los pulmones y a todo el cuerpo. El segundo, o más pequeño, número (llamado presión diastólica) es la presión cuando el corazón descansa entre latidos.

La presión arterial es normal si está por debajo de 120/80 mm Hg. Si usted es adulto y su presión arterial medida entre 120 y 129, y su presión diastólica mide menos de 80, entonces tiene presión arterial elevada. La presión arterial alta es una presión sistólica de 130 o superior, o una presión diastólica de 80 o superior, que permanece alta con el tiempo.

La presión arterial alta generalmente no presenta signos ni síntomas. Por eso es tan peligrosa. Pero se puede controlar.

Alrededor de la mitad de la población de Estados Unidos de más de 20 años tiene presión arterial alta, y muchos ni siquiera lo saben.

No tratar la presión arterial alta es perjudicial. La presión arterial alta aumenta el riesgo de ataque al corazón y daño cerebral.

Asegúrese de revisar su presión arterial regularmente y de tratarla como su profesional de atención de la salud lo aconseje.

### ¿Tiene mayor riesgo de desarrollar presión arterial alta?

Hay factores de riesgo que aumentan sus posibilidades de desarrollar presión arterial alta. Algunos se pueden controlar, otros no.

Aquí hay algunos que se pueden controlar:

-  El tabaquismo y la exposición pasiva al humo del cigarro.
-  Diabetes.
-  Obesidad.
-  Dieta poco saludable (alta en sodio, baja en potasio, y beber mucho alcohol).
-  Falta de actividad física.

Los factores que no se pueden modificar a veces son difíciles de controlar en estos:

-  Antecedentes familiares de presión arterial alta.
-  Rasgos genéticos.
-  Envejecer.
-  Sexo (masculino).
-  Inmunosupresores crónicos.
-  Agenesias obstructivas del afecto.

### ¿Puede hacer algo al respecto?

- No fume y mantenga un peso saludable.
- Lleve una dieta saludable que sea baja en grasas saturadas y grasas trans, y rica en frutas, verduras, granos integrales y proteínas de fuentes bajas en grasas. Intente consumir menos de 1,500 miligramos de sal al día. Reduzca el consumo de sal en 1,000 miligramos por día también, y evite el aguacate.
- Como alimento más en panes, intente consumir de 3,000 a 5,000 miligramos de potasio a diario por día.
- Limita el consumo de alcohol a no más de un vaso por día y el uso de las mayores dosis de bebidas por día en los hombres.
- Usa más frutas frescasmente. Intente realizar 150 minutos de actividad física con intensidad moderada al menos 25 minutos de actividad física vigorosa a lo sumo, o una combinación de ambas, durante toda la semana.
- Este obtener más beneficios de a lo sota, agregar actividad de fortalecimiento muscular al menos dos días a la semana.
- Tome los medicamentos como le indique el proveedor de atención de la salud.
- Sepa cuándo debe ver a su proveedor y trabaje para mantenerlo en su rango.

### ¿Dónde puedo obtener más información?

- [Estar con Health.org](http://estar.heart.org) para aprender más sobre el enfriamiento de enfermedades y trastornos en adultos esenciales.
- [Subscribirse a Heartwire](http://www.heartwire.com) para recibir noticias y noticias electrónicas importantes de Healthwire, con poco o con problemas cardíacos y otros.
- [Consultar con sus propias personas: un proveedor de atención de la salud para su proveedor de atención de la salud](http://www.heart.org/util/health/research). Si no es una enfermedad médica de los miembros de su familia o amigos.

### ¿Tiene alguna pregunta para su médico o enfermera?

- Tómese unos minutos y escriba sus propias preguntas para la próxima vez que CONSULTE CE el profesional de atención de la salud.
- ¿Cómo sienta que me siento mejor?
- ¿Qué deberé hacer para mi presión arterial?
¿Qué son los medicamentos para la presión arterial alta?

Su profesional de atención de la salud le recetará medicamentos para ayudar a disminuir su presión arterial. Dependiendo de sus niveles de presión arterial y riesgo, puede necesitar un tipo de medicamento, o más, para mantener la presión a un nivel controlable.

Si siempre tiene que consultar a su profesional de atención de la salud con frecuencia hasta que su presión arterial esté bajo control. Cada persona necesita de diferentes maneras a un medicamento. Quizás necesite un periodo de prueba antes de que su médico encuentre el mejor medicamento, o una combinación de medicamentos, para usted.

¿Qué debo saber sobre los medicamentos para la presión arterial alta?

• Ofrezca medicamentos de manera única o combinada para ayudar a disminuir la presión arterial.
• Los medicamentos para la presión arterial alta sirven para reducir la tensión arterial en el paciente. Los medicamentos neutros utilizan la terapia de su profesional de atención de la salud.
• Evite el hábito de dejar que su presión arterial se mantenga en niveles elevados para mantener su presión arterial en niveles normales.
• No es necesario que se recuerde de tomar su medicamento a la misma hora de cada día. Existen medicamentos que se toman una vez al día.

¿Qué tipos de medicamentos se pueden recetar?

Existen varios tipos de medicamentos que se utilizan para el tratamiento de la presión arterial alta:

• Diuréticos: ayudan a controlar la presión arterial al reducir la cantidad de líquido que el cuerpo necesita.
• Betabloqueantes: pueden ayudar a reducir la tensión arterial y el ritmo cardíaco.
• Inhibidores de la enzima convertidora de angiotensina (ECA): pueden ayudar a reducir la tensión arterial.
• Beta-bloqueantes: pueden ayudar a reducir la tensión arterial.
• Diuréticos: pueden ayudar a reducir la tensión arterial.
• Betabloqueantes: pueden ayudar a reducir la tensión arterial.

¿Cómo puedo recordar cuándo tomar mi medicamento?

• Mientras toma el medicamento, tome la medida de presión arterial de la misma manera que le fue indicado.
• Tome su medicamento junto a un soporte de diabetes, para evitar olvidarlo.
• Si tiene varios medicamentos, espere al menos un minuto entre cada dosis.
• Compruebe los medicamentos que toma y cuantos tiempo ha pasado desde que los toma.
• Confía en sus habilidades y amigos que le ayude en esto.

¿Dónde puedo obtener más información?

Llame al 1-800-HANNAH o visite HealthRight.org para obtener más detalles.

¿Cómo puedo obtener la información de su médico o enfermera?

Tómese tiempo en hablar con su médico o enfermera para entender mejor qué está sucediendo a su profesional de atención de la salud.

¿Cuál es el próximo paso?

• Hablar con el medicamento del equipo del hospital.
• Programar una cita con su médico.
• Comprar medicamentos en su farmacia.
• Seguir la medicación de acuerdo a sus instrucciones.
• Recordar la medicación o ciertos medicamentos de cualquier otro tipo.
Appendix F

Demographic Survey

Participant ID________________

1. How old are you?
   18-24 ____
   25-34 ____
   35-49 ____
   50-64 ____
   65 or older ____

2. What is your gender?
   Female ____
   Male ____
   Prefer not to say ____

3. What is your highest level of completed education?
   Less than high school diploma ____
   High school diploma _____
   Some collage ____
   Collage degree _____
   Graduate degree _____

4. Do you have a primary residence?
   Yes ____
   No ____

5. Have you ever been diagnosed with hypertension, also called high blood pressure?
   Yes ____
   No ____
Appendix G

Intellects Statistics demographics and two tailed Wilcoxon Signed Rank analysis.

*Frequency Table for Nominal Variables*

<table>
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<td>50-64</td>
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<tr>
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<td>Some College</td>
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</tr>
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<td>College Degree</td>
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<tr>
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<tr>
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<td>No</td>
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<td>25.00</td>
</tr>
<tr>
<td>Missing</td>
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*Note.* Due to rounding errors, percentages may not equal 100%.

*Summary Statistics Table for Interval and Ratio Variables*

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<th>SD</th>
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<th>Min</th>
<th>Max</th>
<th>Skewness</th>
<th>Kurtosis</th>
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<tbody>
<tr>
<td>NVS_pre</td>
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<td>1.41</td>
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<td>3.00</td>
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<td>NVS_post</td>
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<td>1.50</td>
<td>4</td>
<td>0.75</td>
<td>3.00</td>
<td>6.00</td>
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</tr>
<tr>
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<td>4</td>
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<td>30.00</td>
<td>-0.02</td>
<td>-1.97</td>
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<td>PHL_post</td>
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<td>4</td>
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<td>30.00</td>
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<td>1.65</td>
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<td>11.00</td>
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</table>

*Note.* ‘-’ indicates the statistic is undefined due to constant data or an insufficient sample size.
Ranked values of PHL_pre and PHL_post

Ranked values of NVS_pre and NVS_post

Ranked values of FHL_pre and FHL_post

*The boxplot, or box and whisker plot, is used to visualize the distribution of a variable. The plot consists of a box corresponding to the inter-quartile range (IQR), which extends from the 25% quantile (Q1) to the 75% quantile (Q3), with a horizontal line indicating the position of the 50% quantile (Median). The lines extending out from the box, called whiskers, indicate the range from the smallest value (Lower Limit) excluding outliers to the largest value (Upper Limit) excluding outliers. Outliers are any points that fall outside the whiskers. (Intellectus Statistics, 2022).