

IMPROVING HEALTH LITERACY TO PROMOTE HYPERTENSION SELF-
MANAGEMENT IN THE PRIMARY CARE SETTING

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Abstract

Background: Hypertension carries a significant burden with nearly one third of U.S. adults having high blood pressure. Hypertension carries a significant cost of treatment and has been recognized as one of the highest burdens and threats to the medical and financial health in the United States (Kirkland et al., 2018). Health literacy directly determines the understanding of information and is fundamental in disease prevention and management and therefore plays an essential role in collaborative patient care. **Purpose:** Determine health literacy and provide the patient with an education intervention intended to improve knowledge and promote hypertension self-management in the outpatient setting. **Methods:** This quality improvement project used the Plan Do Study Act model and had patients complete a self-answer questionnaire that assessed health literacy status, beliefs and understanding of their diagnoses. Then the patients were provided with an educational brochure that provided easy to read information catered to all health literacies. **Results:** Patients reported the information provided to them was easy to read and they believed the information improved their knowledge and understanding of their diagnosis. **Recommendations:** Previous studies suggest that providers educate their patients with information that is easy to understand, including an educational brochure, websites, teach back, and the use of family/caregivers.

Key Words: Hypertension, Health Literacy, Education

Background/Significance

Hypertension carries a significant burden with nearly one in three US adults having high blood pressure. Hypertension is amongst the highest cost of treatment within the cardiovascular diseases and has been recognized as one of the highest burdens and threats to the medical and financial health in the United States (Kirkland et al., 2018). A study from 2018 surveyed health care expenditures among US adults with hypertension from 2003 through 2014 and found that 131 billion dollars, or greater than 3% of the national healthcare expenditure was spent on hypertension alone (Kirkland et al., 2018). On average the US American diagnosed with hypertension will pay around \$2,000 per year or pay five times more in outpatient cost than individuals without hypertension (Kirkland et al., 2018).

Hypertension is defined as a systolic blood pressure greater than 140 mm Hg and a diastolic greater than 90 mm Hg (Alexander, 2021). The Data from the Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7) guidelines suggest that there are stages in which hypertension can be categorized. There is a prehypertension stage, this is a systolic pressure of 120-139 mm Hg and a diastolic of 80-89 mm Hg. Stage 1 hypertension is considered any systolic pressure between 140-159 mm Hg and diastolic pressures between 90-99 mm Hg, lastly stage 2 is determined by a systolic pressure of 160 mm Hg or higher or a diastolic pressure greater than or equal to 100 mm Hg. In order for a definitive diagnosis of hypertension, there has to be two separate occasions where there are 2 elevated blood pressure readings (Alexander, 2021).

Health literacy is defined as the degree to which individuals have the capacity to obtain, process, and understand basic health information needed to make appropriate health decisions according to the U.S Department of Health and Human Services (ODPHP, 2021). Understanding

a diagnosis is extremely important in disease prevention and management and therefore plays an essential role in collaborative patient care. Often times health literacy can be determined by a patient's level of education such as High school, some college, or college graduate. Recent data from the Centers for Disease Control (CDC) reflects that individuals with a lower degree of education were often found to have a higher prevalence of hypertension than those with a college degree. The CDC reports that all adults whom graduated college had hypertension rates of 38.5% compared to those with a high school education or less (47%), and adults with some college education (50%) (Osthega et al., 2020).

At an internal medicine and primary care clinic in Greensboro, North Carolina, a significant portion of their patient population is diagnosed with hypertension. A majority of the patients have a difficult time managing their blood pressure and the causing factor is unknown. Is this due to lack of education from the providers? Could it be a result of poor health literacy, patients believing that their hypertension isn't a serious illness or disease, or poor understanding of their self-management regime is. There are many factors that could play a role in the lack of proper blood pressure management such as financial, socio-economic status, culture, race, gender, age, occupation, etc. Many of these factors are out of the providers and patients control and therefore focusing on issues that can be modified such as education from the provider and ensuring that the education provided is at a literacy level appropriate for the patient's needs.

Prevalence

Hypertension is the most common diagnosis amongst patients in the United States and is also the most common disease worldwide. In fact, according to Benjamin et al., (2019) the worldwide prevalence of systolic blood pressure greater than 140 mm Hg was estimated to be around 20.5% of the population in 2015. This has increased drastically from 17% in 1990.

Furthermore, Benjamin et al. reports that there are 3.47 billion adults worldwide with systolic blood pressures of 115 mm Hg or higher (2019).

Elevated blood pressure shows no prejudice and affects all populations, ethnicities, genders, and ages. However, there are a number of demographics that have shown to present with a higher prevalence of hypertension than others. According to Ostchega et al., (2020), non-Hispanic blacks were amongst the highest prevalence of hypertension in the ethnic populations with 57.1%, followed by Hispanic (43.7%) and the non-Hispanic whites (43.6%)

Hypertension has also been more prevalent in the male population 51% as opposed to the female population 39.7%. Age plays an important factor in the presence of elevated blood pressure, and the CDC finds that as age increases, the prevalence of hypertension increases as well. Individuals aged 18-39 have a hypertension rate of 22.4%, while those between the age of 40–59 had rates of 54.5%, and individuals 60 and older had a significant increase in hypertension to 74.5% (Ostchega et al., 2020).

Impact

Hypertension is the largest risk factors for stroke, myocardial infarction, kidney disease, and cardiovascular diseases. In fact, for every 20 mm HG increase in systolic pressure or 10 mm Hg increase in diastolic pressure, the mortality rate for stroke and myocardial infarct doubles (Alexander, 2021). If left untreated, hypertension is known to increase mortality by increasing risk for atherosclerotic disease by 30% and organ damage in 50% in just 8-10 years of hypertension onset (Alexander, 2021). The World Health organization reports that ischemic heart disease in the world's largest cause of death accounting for 16% of total deaths worldwide (World Health Organization, 2020).

With hypertension being so prevalent, it is very likely that a majority of advanced practice providers will care and treat patients with hypertension. With serious complications at stake, it is vital that providers provide the best treatment possible and collaborate with their patient to create a shared treatment plan. With that being said, providers must take the health literacy of the patient into consideration so that patient education is understood, and they are more likely to manage their elevated blood pressure.

Retinopathy, heart failure, and nephrosclerosis are just some of the common organ damages seen with uncontrolled hypertension. With hypertension being a major risk factors for stroke, heart attack and heart failure, properly managing and lowering blood pressure is essential in decreasing these risks. In the outpatient setting, patients diagnosed with hypertension are often responsible for managing their hypertension at home. This requires frequent blood pressure monitoring and understanding of the disease to obtain adequate treatment and management of blood pressure. Health literacy is a key factor in the self-management of diseases.

Purpose

The purpose of this project is to determine the health literacy of patients diagnosed with hypertension in the outpatient setting and provide and improve health literacy and understanding of their diagnosis. The specific aim of this project is to provide the patient with an education intervention intended to improve health literacy and promote hypertension self-management in the outpatient setting.

Review of Current Evidence

The search method for this review of current evidence included multiple sources and search engines, including Google Scholar, UNCG library, and PubMed. The search was

conducted by using keywords such as “hypertension”, “health literacy”, “education”, and “self-management”. Literature for this review was limited to be within the date range of 2018 to 2022 to ensure the most current and accurate data was utilized. Inclusion criteria for this project was any article that discussed health literacy and hypertension and articles that used the Newest Vital Sign (NVS) health literacy assessment tool. Any articles that included the pediatric population were excluded. A total of 17 articles were used for this literature review.

Hypertension and Knowledge (Health Literacy)

Through years of research and studies, evidence has shown that health literacy plays a dynamic role in individuals health. Low or limited health literacy is associated with undesirable health consequences and increased cost for the individual and the community (Karl & McDaniel, 2018). A study conducted by Persell et al. (2020) reported that patients who are within a community health center who have uncontrolled hypertension also presented with lower health literacy levels. Furthermore, these individuals with lower health literacy levels displayed poor self-management skills and medication adherence (Persell et al, 2020). Advancing health literacy among individuals within the community has the ability to drastically improve awareness of hypertension, potential complications associated with uncontrolled hypertension, and improve self-care behaviors (Javadzade et al., 2018).

Hypertension Education & Self-Management

Self-management of hypertension is vital within the management and treatment of hypertension. It is imperative that the health care provider and the patient work coincidingly to create and utilize an appropriate treatment plan to manage hypertension. The primary role as the health care provider is to assess a patient’s health literacy level prior to creating a medical

treatment plan and provide quality education that will reach their patient at their appropriate level of literacy (Ghezeljeh et al., 2018). Once established, the providers should continue to encourage and aide their patient in developing proper self-management strategies due to the fact that majority of hypertension management is completed outside of the office setting, such as within the patient's residence (Ghezeljeh et al., 2018). Several studies have shown that proper education and training is a building block to developing self-management behaviors (Ghezeljeh et al., 2018; Javadzade et al., 2018; Ozoemena et al., 2020; Yatim et al., 2019; Zhang et al., 2019).

Hypertension self-management education (HSME) and interventions should be uniquely tailored to the patient's preferences and health literacy levels according to Yatim et al. (2019). In fact, a recent study by Delavar et al. (2020) suggested that self-management education that is tailored to the patient's health literacy has vastly improved antihypertensive medication adherence.

Zhang et al. (2019) states that the health care provider or general practitioners' role is to simply provide the medical guidance for the patients using guides such as the chronic disease self-management program (CDSMP) as a guide. This program provides self-management techniques, medication adherence, and self-care skills that will allow the patient to be more successful managing their hypertension. This program is highly beneficial in improving patient's self-management skills and self-efficacy while also improving their quality of life and preventing complications from uncontrolled hypertension (Zhang et al., 2019). Additionally, there was a significant improvement in general health and literacy levels in the group who followed the CDSM (Zhang et al, 2019). Patients following the CDSM also were noted to have decreased fatigue, increased energy and improved self-efficacy (Zhang et al, 2019).

Calano et al. (2019) utilizes a community-based health program that was developed and tailored to the patient's educational needs, lifestyle, and environmental resources. This program focuses on the skill, attitudes, and knowledge-based needs of the hypertension population to facilitate adherence in self-management. The article mentioned that not only did health literacy and knowledge increase by 9%, but that there was also a significant decrease in the systolic and diastolic blood pressures just two months after following the interventions, accounting for over 25% of the improvements.

In summary, health care practitioners providing education and interventions that are tailored to the patient's needs provide a strong foundation to enable adequate self-management techniques within the hypertension patient population. Fortunately, there are many programs available for providers and patients that act as a guide for suitable hypertension management and self-care. Ghezaljah et al. (2018) suggests and supports the use of follow up educational interventions from the provider by phone or other social networking in creating a significant improvement in hypertension self-care behaviors.

Throughout the literature, there was quality information about health literacy and the effects on hypertension and other chronic diseases but there was minimal information regarding the distribution of health literacy levels among the different races, ethnicities, gender, environmental factors, and socioeconomic status. More information regarding the potential causes for lower health literacy would be beneficial so that providers and patients can improve or change these variables.

Conceptual Framework

For this DNP project, the Health Literate Care Model was used as the conceptual framework. This framework strives to use strategies that allow healthcare providers to approach all patients as if they may not fully understand health information (ODPHP, 2021). By using these strategies, they can communicate more efficiently and clearly to ensure patients can understand then follow up with confirmation that the information given by the providers was in fact understood.

The Health Literate Care Model uses a universal precautions approach which means that providers must treat all patients equally since they cannot accurately gauge health literacy in all the patients. It understands that health literacy is situational and evolving and therefore making information universally understandable is crucial. Delivery of the Health Literate Care Model is diverse amongst the organization but includes methods such as interpreter services, patient education, calling patients to confirm understanding of lab results or complex treatment instructions, and more (ODPHP, 2021).

This conceptual framework conforms well to this DNP project because the primary focus is on the health literacy of our patients and providing adequate information to the patients that is easily understood for all levels of literacy. This is thought to drastically improve the overall compliance and self-management techniques practiced by the patients and improve overall health outcomes. The Health Literate Care Model emphasizes self-management support by enforcing that the providers ask the patients to explain their condition in their own words and provide teach-back when given instructions to ensure understanding (ODPHP, 2021). Another important aspect to include in the providers role is to encourage questions from the patients so we may reduce uncertainty and support the patients concerns and give them the confidence they need to feel that they can manage their condition. Finally, this model suggests creating personal goals

with the patients that are realistic and attainable. Working together to create these goals will ensure that the patient feels included and that their voice is heard and they feel like they have a say in their health care.

Methods

Design

The patient population consisted of patients diagnosed with essential hypertension in the outpatient setting at a primary internal medicine clinic in Greensboro, North Carolina. The inclusion criteria included patients in this primary care office that are currently diagnosed with hypertension. During their visit, patients completed a self-answer questionnaire that provides insight on the patient's health literacy status. Then they were provided with an educational brochure that provided information on self-management methods and key facts regarding hypertension. Following reading the educational material they completed a Likert scale survey to reflect their beliefs and understanding of their diagnoses. Upon checkout, the patient deposited their completed NVS and Likert survey into a locked box. These qualitative results were later reviewed to determine if there was an improvement in the overall health beliefs and self-management of their hypertension. The projected outcome of this project was that the overall compliance with the hypertension treatment plan and self-management methods will be improved secondary to the educational brochure provided. Following data collection, an informal meeting was conducted so that staff were able to give their feedback on their experience with the educational material and if they believed it to be beneficial to the patients and their practice.

Translational Framework

This project follows the Plan, Do, Study, and Act framework (*PDSA directions and examples, 2020*). The plan consisted of working with a colleague and practitioners to determine areas of need within the internal medicine clinic. Stakeholders, including a nurse practitioner, supervising physician, and the project team members decided on hypertension and health literacy as a subject that could be improved at this specific primary care setting. In total, there were four certified medical assistants/nurses, one nurse practitioner, one physician assistant, and one medical doctor that aided in providing the educational brochure and surveys to the patient.

For the “Do” portion of the PDSA model, implementation of a health literacy tool was conducted in the examination rooms of the primary care office along with the educational brochure. On September 6th, 2022, there were 150 copies distributed throughout the office in the examination rooms. During the same site visit, an informal education was provided to the staff in regard to handing patients the brochures and surveys.

The health literacy measurement tool that was utilized for this project was the Newest vital sign tool (NVS). This measurement tool is a six-item survey that has been validated and used across multiple studies and various diseases (Huang et al., 2018). Some studies have shown the efficacy of the NVS tool with face to face administration, but a recent study also shows the efficacy to administer the questionnaire over the phone (Huang et al., 2018). In total, this questionnaire should take a patient around three to five minutes to complete. The use of this tool is easy for the practitioner and the patient, adding up the total scores from question one through six, giving a score of zero for incorrect answers or a score of one for correct answers yielding a total score range of zero to six (Huang et al., 2018). The higher the score, the higher the health literacy of the patient. For example, a score less than two is indicative of a high likelihood of

limited or poor health literacy, a score of two to three represents a low health literacy, and any score higher than three suggest adequate or good health literacy (Huang et al., 2018).

Along with the NVS tool, a brief questionnaire regarding the patients' health maintenance and management of their hypertension was included in the post educational brochure survey. This short questionnaire provided insight on patient's knowledge as well as thoughts and beliefs of hypertension. This questionnaire consisted of four simple questions for the patients, including "Have you received information in the past about my current diagnosis?", "Was the information given to me about my diagnosis prior to this brochure hard to read and understand?", "Was the information provided in this brochure was easy to read and understand?", and "This brochure helped me understand my diagnosis better?". Following the questionnaire, the same patients received an educational brochure that will aid them in health maintenance and hypertension self-management. The brochure was designed and written at an educational level that is conducive for those individuals with a lower health literacy level so that they can also have quality information regarding their hypertension management. For the "Study" portion of the PDSA model, the data collected from these surveys was used to determine if the implementation of an educational brochure was indeed helpful for individuals with hypertension. Finally, the "Act" portion of the PDSA model included continuing providing educational brochures to the patients in this primary care office if the patients and providers find them beneficial to the patients.

Legal/Safety

There was minimal risk for the patient's and staff as well as quality, safety, and legal risks for the project. There were no permissions necessary to conduct this project or for the use of the Newest Vital Sign tool.

Budget/Resources

The budget for this project, including supplies and incentives for the staff was limited to \$100. Half of the funds were used for brochure stands, printing cost, and pens for the patients to use to complete the surveys. The other half of the funds were used for supplying breakfast on the morning of September 6th, 2022, when the brochures were dropped off at the office.

Results

On September 6th, 2022, 150 brochures along with an NVS assessment tool and a four question Likert survey were left at the practice for patients to answer. After 5 weeks of survey collection, there was a total of 27 surveys and NVS tools completed and collected.

Data analysis

During this project implementation, there was no pre data collected for beliefs and knowledge on hypertension and therefore there was no benchmark to provide a statistical analysis or determine if the findings of the project were as hypothesized. Descriptive statistics from surveys completed by the patients were used to determine significance of this project.

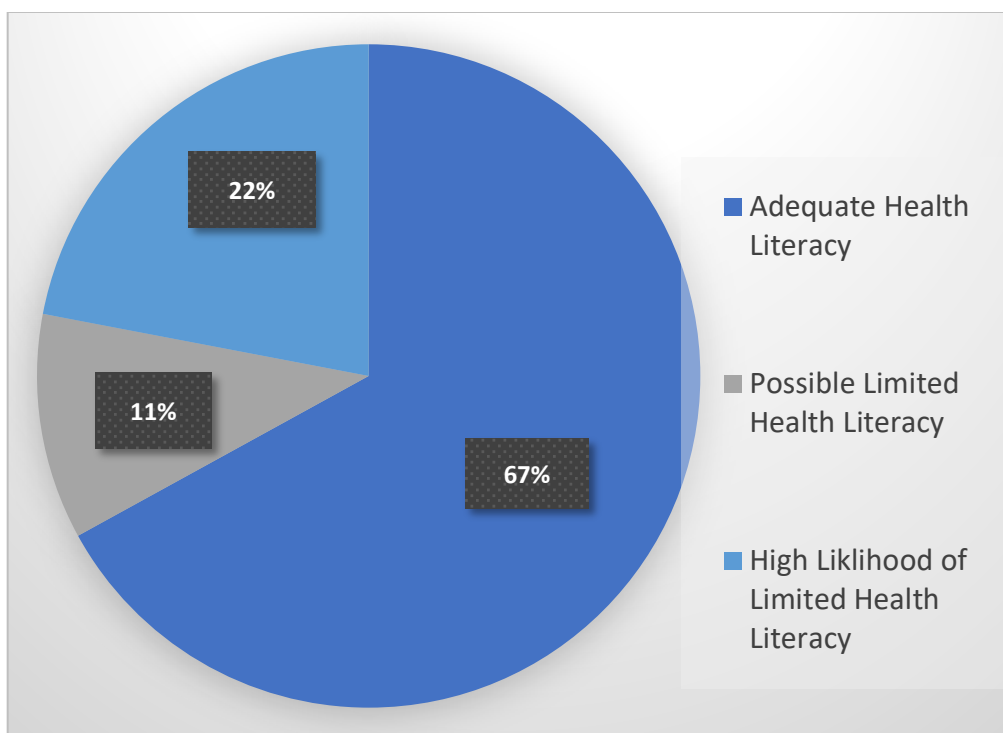
NVS Screening

On the NVS screening tool which determines health literacy, there were a total of 27 participants. It was found that 66.6 % (n=18) of them had a score between 4-6, meaning they

have adequate health literacy. 22.2% (n=6) individuals scored 0-1, meaning they had a high likelihood of limited health literacy and 11.1% (n=3) individuals scored between 2-3 meaning it is possible they have limited health literacy.

Figure 1

NVS Tool Results



Likert Scale Survey

When asked if a patient had received information in the past about their hypertension diagnosis, 40.7% (n=11) of the participants strongly agreed, 40.7% (n=11) participants agreed, and 18.5% (n=5) participants said they were neither agreed nor disagreed. Patients were then asked if they felt that the prior information given on hypertension was difficult to read, 11.1%

(n=3) participants strongly agreed, 22.2% (n=6) said they agreed, 37% (n=10) were indifferent, 25.9% (n=7) disagreed, and 3.7% (n=1) individual strongly disagreed. Of the 27 respondents, 44.4% (n=12) individuals strongly agreed that the information provided in the brochure given was easy to read, 44.4% (n=12) individuals agreed, and 7.4% (n=2) neither agreed nor disagreed. Finally, when the patients were asked if they felt the information in the brochure helped them understand their hypertension diagnosis, 37.5% (n=10) individuals strongly agreed, 51.8% (n=14) of the participants agreed, and 11.9 % (n=3) participants felt indifferent. This data is demonstrated in Figure 2 through Figure 5 below.

Figure 2

Survey Question #1

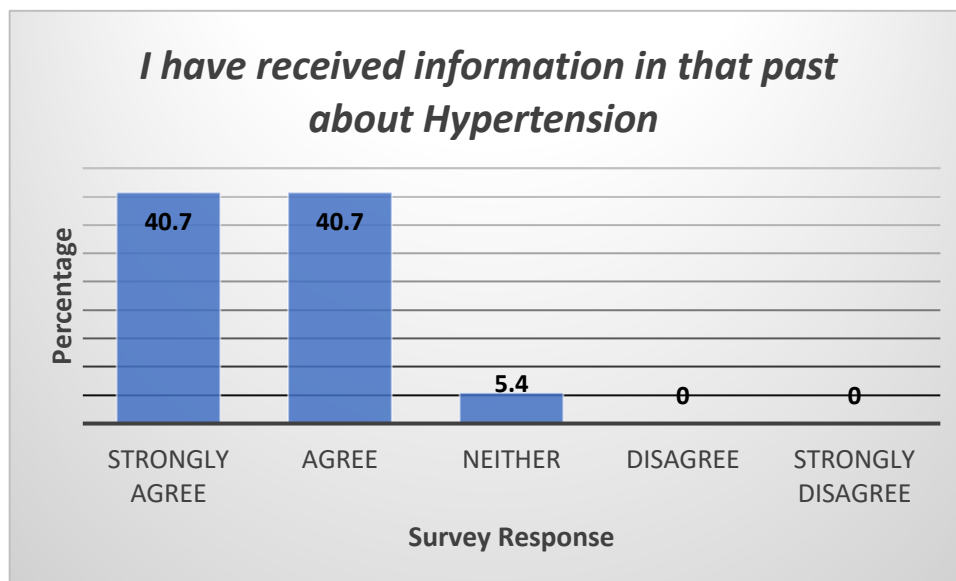


Figure 3

Survey Question #2

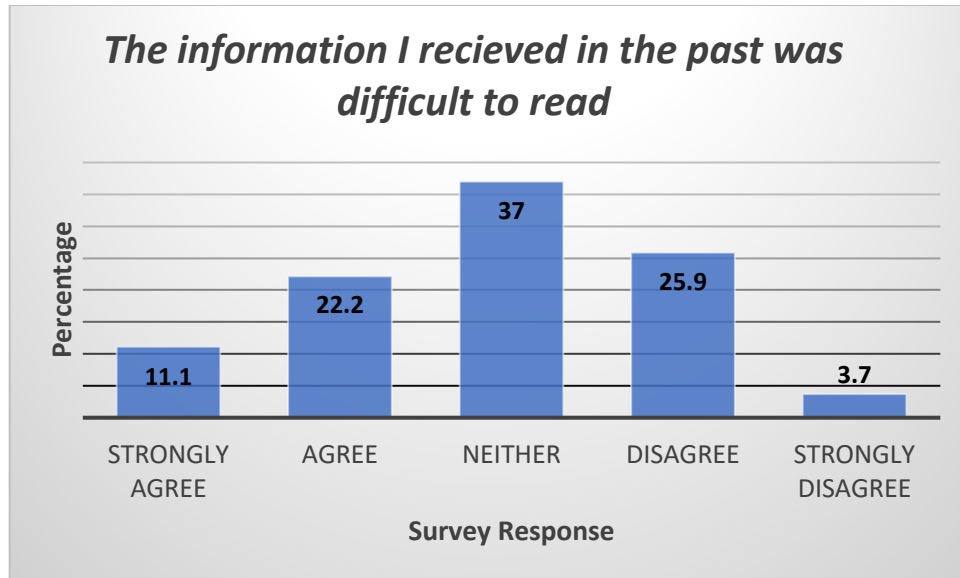


Figure 4

Survey Question #3

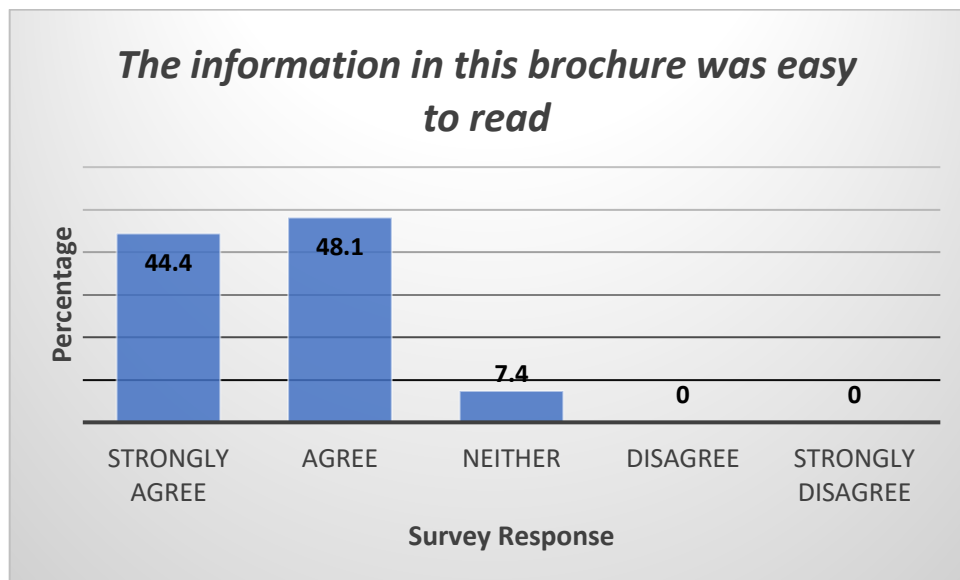
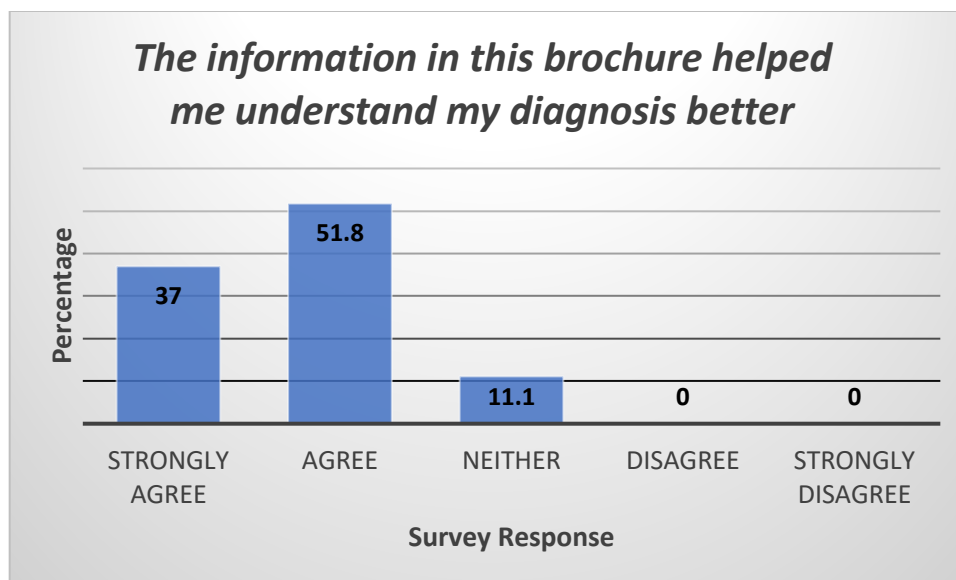


Figure 5

Survey Question #4



Discussion

Limited health literacy has been correlated with unfavorable health consequences that ultimately negatively affect the patients and their families. Therefore, the main purpose of this quality improvement project was to provide informative material that allows all literacy levels to comprehend and acknowledge their health concerns so that they may take an active role in their healthcare plan. Key findings in this project suggest that all participants regardless of health literacy levels found the educational material to be beneficial in understanding their diagnosis of hypertension and learning methods to effectively manage it.

Interpretation

Question one on the Likert scale shows a significant shift to the left that demonstrates that nearly all that patients received information previously regarding hypertension. Question two reflects if patients felt that the previous material was difficult to read. The responses were widely distributed in a symmetric unimodal fashion. This pattern demonstrates that there was no

significant difference in the patient's beliefs on this matter. Question three and four refer to the patient's beliefs on the readability of the educational material provided and if they found it beneficial. The data in Figure 4 and Figure 5 demonstrate a rightward skew showing that a majority of the patients found the information easy to read and beneficial in understanding their diagnosis of hypertension.

Overall the data gathered demonstrated that the education given was easy to read for all literacy levels. Also, regardless of having received previous information in the past or not, patients felt the information provided during this project improved their knowledge and understanding of their diagnosis. Although no statistical significance was found in this project, the purpose and implementation from this project could be extended throughout other institutions. Providing educational material that can target all health literacy levels can be easily adapted in any healthcare facility that believes their patient population would benefit from additional education regarding patients' health care diagnoses.

Although the information gathered during this project was limited, it remains consistent with previous studies that individuals with lower health literacies often have uncontrolled hypertension as mentioned by Persell et al. (2020). Also mentioned in previous studies, providing programs and or education to patients results in a boost in medication adherence, self-management skills, and self-care skills that help the individual improve their health and health literacy (Calano et al., 2019, Javadzade et al., 2018, Zhang et al., 2019).

The study conducted by Huang et al., in 2018 dives into the reliability and internal consistency of the NVS tool using the Cronbach's alpha which received 0.78 for numeracy literacy and 0.91 for document literacy. This has implied that the NVS tool has moderate to high reliability when determining health literacy in patients (Huang et al., 2018).

Conceptual and Translational Framework

The Health Literate Model was incorporated into this project by ensuring that any information provided to the patients in the educational brochure was easy to read and if patients had difficulty reading the material there was photos that provided descriptions as well. This model emphasizes the support of self-management in the health care setting and providing the patient with appropriate information based on the literacy needs of the patients to ensure they have the understanding and the means to care for themselves with the support of their healthcare provider.

This project used the plan do study act model to allow the participants to provide feedback regarding the educational material provided as well as provide them with an opportunity to write additional feedback. For the “Plan”, information was gathered at a primary care office to determine a diagnosis that is common and often not managed well and determine barriers as to why it is poorly controlled. For the ‘Do’ segment, researching various explanations for poor management of hypertension and how providing basic educational intervention improves overall management. With this information, a simple education brochure using lower health literacy and images was created and provided to the patients as a quality improvement project. The “Study” portion of this project consisted of using a Likert scale to obtain patient experiences with the information they received in the past compared to the one given. The “Act” consisted of using the data collected from patient’s perspective on the education provided, and using the positive feedback to drive continued use of the brochures. Only one participant submitted additional feedback.

Limitations

Limitations to the project include the lack of data collected. This project may have been more effective to have obtained a minimum of 50 completed surveys. Unfortunately, there were only 27 completed surveys, which does not provide enough data to accurately say if the information was useful to the patients. Another limitation that was found in this project is the lack of pre-data prior to the patients reading the brochure. Since the NVS tool and Likert scale were provided at the same time as the implementation of the educational brochure, it is possible there is bias regarding previous education given when compared to the material they received from this project. If this intervention were to be adopted outside of this patient population, there would need to be separate information provided. For example, the intervention could continue to be an educational brochure, but the information would change based on the patient population and diagnoses.

Recommendations

Further improvement for this project could include a pre-survey regarding prior information on a patients' diagnosis preceding any education to the patients. Following the implementation of education, a post survey would then be provided with the same questions regarding the patients understanding of their diagnosis and following the completion of reading.

Next steps for this project would include a survey at the patients follow up that determines if they felt the educational brochure that was provided to them helped them find ways to manage their hypertension and if they believed that they could sustain the positive changes they made. Another way to assess effectiveness of the educational material is to compare blood pressures on the date of the implementation to their follow up blood pressure months later.

According to Kurnia et al., health providers should consider providing education to any patient who is experiencing uncontrolled hypertension (2020). Persell et al. adds that these educational processes could be through the use of verbal or photographic information, information technology, and educating close family and friends (2020). Overall there should be more studies conducted to determine the long-term effects of providing educational interventions as well as clinical benefits (Javadzade et al., 2018).

Relevance and Recommendations for Clinical Practice

A project involving providing educational brochures to patients may pose some difficulty for sustainability. Brochures cost money to print, and they must be folded and dispersed. This takes time that is likely not available for primary care practitioners who have full schedule of patients who require the providers attention and decision making. Along with the busy schedules, many times these providers have limited time with the patient and are forced to focus on more pressing issues and therefore, an educational brochure may quickly and very easily be forgotten by the healthcare team. A recommendation for future clinicians and providers is to find a trustworthy educational website that they can quickly share a link to. In order for a website link to be feasible to patients, it should contain subsections that are dedicated to several of the chronic diseases that can most likely burden a patient, especially those with limited health literacy.

Conclusion

A majority of patients who suffer from hypertension have a difficult time managing their blood pressure. However it is uncertain if this challenge is a result of poor health literacy, lack of information provided to them, socio-economic status, or a belief that their diagnosis is unimportant, hypertension remains a threat to their overall health. It is crucial to the healthcare

providers to provide accurate and helpful information to these patients so that they can have the opportunity to familiarize themselves with proper self-management techniques. Providers can easily provide this information in the form of an educational brochure that caters to all literacy levels to ensure higher rates of understanding. This quality improvement project provided insight on the effectiveness of providing educational brochures to patients in the primary care setting. Educational materials that are easy to read were shown to be effective in helping patients understand their diagnosis of hypertension better despite their health literacy level.

Education is the foundation to the success of a patient and the management of their chronic disease such as hypertension. With time and effort, the providers can work individually with their patients to ensure they have the best knowledge base regarding their diagnoses. This in turn will improve their overall ability to manage their disease and to make lifestyle changes to effectively and positively impact their overall health. This in turn will substantially improve their health-related outcomes and decrease their mortality risk related to hypertension and its comorbid conditions.

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I have abided by the academic and integrity policy

Taylor Pridgen 4/4/22

Appendix A

Nutrition Facts

Serving Size $\frac{1}{2}$ cup
 Servings per container 4

Amount per serving

Calories 250 Fat Cal 120

%DV

Total Fat 13g 20%

Sat Fat 9g 40%

Cholesterol 28mg 12%

Sodium 55mg 2%

Total Carbohydrate 30g 12%

Dietary Fiber 2g

Sugars 23g

Protein 4g 8%

*Percentage Daily Values (DV) are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

Ingredients: Cream, Skim Milk, Liquid Sugar, Water, Egg Yolks, Brown Sugar, Milkfat, Peanut Oil, Sugar, Butter, Salt, Carrageenan, Vanilla Extract.

Score Sheet for the Newest Vital Sign Questions and Answers

READ TO SUBJECT:

This information is on the back of a container of a pint of ice cream.

1. If you eat the entire container, how many calories will you eat?

Answer: 1,000 is the only correct answer

2. If you are allowed to eat 60 grams of carbohydrates as a snack, how much ice cream could you have?

Answer: Any of the following is correct: 1 cup (or any amount up to 1 cup), half the container.

Note: If patient answers “two servings,” ask “How much ice cream would that be if you were to measure it into a bowl?”

3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes one serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?

Answer: 33 is the only correct answer

4. If you usually eat 2,500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?

Answer: 10% is the only correct answer

READ TO SUBJECT:

Pretend that you are allergic to the following substances: penicillin, peanuts, latex gloves, and bee stings.

ANSWER CORRECT?

5. Is it safe for you to eat this ice cream? **Answer:** No
6. (Ask only if the patient responds “no” to question 5): Why not? **Answer:** Because it has peanut oil.

Interpretation

Number of correct answers:

Score of 0-1 suggests high likelihood (50% or more) of limited literacy. Score of 2-3 indicates the possibility of limited literacy.

Score of 4-6 almost always indicates adequate literacy.

Appendix B

Post-Survey Questions

Please fill out the questions below:

I have received information in the past about my current diagnosis.

①	②	③	④	⑤
Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

The information given to me about my diagnosis prior to this brochure was hard to read and understand.

①	②	③	④	⑤
Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

The information provided in this brochure was easy to read and understand.

①	②	③	④	⑤
Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

This brochure helped me understand my diagnosis better.

①	②	③	④	⑤
Strongly Agree	Agree	Neither	Disagree	Strongly Disagree

Additional Comments: