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IDENTIFYING GAPS IN NURSING STUDENTS'
KNOWLEDGE OF HYPERTENSION

by

STEVEN PARKER

Presented to the Faculty of the Honors College of
The University of Texas at Arlington in Partial Fulfillment
of the Requirements
for the Degree of

HONORS BACHELOR OF SCIENCE IN NURSING

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2020

ACKNOWLEDGMENTS

First and foremost, I would like to express my gratitude for all of the friends I made through the Honors College and my clinical groups. Your optimism over the past few years was contagious and pulled me across the finish line. Thank you to the nursing students who took the time to complete my survey. Without your contributions, I would have no research to present in this paper. It is my hope that the information I learned from this study helps me become a better nurse.

I would also like to recognize the faculty members who helped me through this undertaking. Thank you to my faculty mentor, Dr. Xiao, who shared his expertise and was with me every step of the way during this nine-month partnership. Thank you to my clinical instructors, Mr. Wood, Mrs. Byars, Mrs. Otieno, Mrs. Ogidan, Mrs. Stehling, Mrs. Nickols, Mrs. Green, and Mr. Morr, who provided me with the nursing knowledge that will stick with me throughout my career.

Finally, I want to celebrate the achievements of my fellow 2020 graduates. We were given a unique set of challenges to overcome, and I am inspired by the dedication I saw my peers put in to achieving their goals. Congratulations to this year's graduating class. In the immortal words of Ms. Elle Woods, "we did it!"

April 30, 2020

ABSTRACT

IDENTIFYING GAPS IN NURSING STUDENTS' KNOWLEDGE OF HYPERTENSION

Steven Parker, B.S. Nursing

The University of Texas at Arlington, 2020

Faculty Mentor: Yan Xiao

Senior nursing students' knowledge of hypertension was analyzed in this work. Registered nurses with sufficient knowledge of hypertension have been shown to provide more effective discharge education to patients, promoting adherence and increasing blood pressure control. A ten-question, open-ended survey was sent to all 178 of the senior 2 nursing students enrolled in the on-campus BSN program at The University of Texas at Arlington. Responses to each question were tallied to determine significant gaps in nursing students' knowledge. Gaps of knowledge will indicate areas that should receive more attention in the nursing school curriculum. The survey found that while almost every respondent correctly identified the normal range for blood pressure in adults, most did not know the prevalence of hypertension among patients in inpatient units. The survey also found that most respondents did not know what percentage of discharged hypertensive patients achieve blood pressure control. Fewer than half of the respondents reported

that they would provide education at discharge to hypertensive patients. The findings of this study suggest that further education about the implications of hypertension should be added to the curriculum to make nursing students more effective caregivers.

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CHAPTER 1

INTRODUCTION

1.1 Research Question

The medical community has dubbed hypertension as “the silent killer,” and for a good reason. Uncontrolled hypertension damages vital organs and can lead to lethal diseases, yet nearly one in five people with high blood pressure are unaware of their condition (Hinkle & Cheever, 2018, p. 884-897). Hypertension is easily controllable with medication and lifestyle modifications, but adherence rates upon discharge remain low, indicating a disconnect between the patient and healthcare provider (Hyman & Pavlik, 2014). The purpose of this thesis is to identify gaps in nursing students’ knowledge that lead to ineffective discharge education and reduce adherence rates among individuals with hypertension.

1.2 Significance of this Research

Promoting the understanding of hypertension is necessary because it is a widespread and potentially lethal disease. Hypertension is seen in as high as 75% of the patients in the hospital. More than 6 million trips to the ED over a seven-year period were related to hypertension (Franklin & McCoy, 2017). Individuals with hypertension pay an average of \$2000 in additional healthcare costs, and medical costs associated with hypertension are estimated to be about \$131 billion annually (Kirkland et al., 2018).

By increasing patient knowledge and therefore adherence to discharge instructions, nurses can promote better health outcomes. Hypertension is the greatest risk factor for

stroke, coronary heart disease, heart failure, and chronic kidney disease (Burnier, 2017). If all individuals with hypertension reduced their systolic blood pressure to below 140 mmHg, up to one-third of all strokes and ischemic heart disease could be prevented (Winders et al., 2018). Preventing these costly chronic diseases saves money in medical expenses and promotes public health. Thus, it is imperative that research into improving knowledge of hypertension among nurses continues.

CHAPTER 2

LITERATURE REVIEW

2.1 Peer-Reviewed Research

Previous research has thoroughly established that adherence to prescribed antihypertensive medications is low, with reported estimates between seven percent and 66% (Hyman & Pavlik, 2014). Patients who do not adhere to their medication regimen are unlikely to see an improvement in their blood pressure. Fewer than 50% of individuals with hypertension achieve their goal blood pressures and remain at high risk for complications. One of the most significant determinants in medication adherence is the patient's knowledge of the disease process (Jankowska-Polanska, Uchmanowicz, Dudek, & Mazur, 2016). A patient who understands their condition is more likely to seek treatment and achieve blood pressure control. A review of clinical trials with rigorous treatment and frequent follow-up appointments show blood pressure control in as high as 80% of patients (Burnier, 2017).

2.1.1 The Importance of Hypertension Education

Studies repeatedly indicate that effective discharge education greatly improves compliance. Unfortunately, hypertension education happens far less often than it should. One survey of patients treated in the emergency department with high blood pressure found that only six percent were provided written materials addressing hypertension (Winders et al., 2018). Additionally, discharge is often rushed, leading to less time devoted to educating patients and worse health outcomes. One study found that poor discharge planning

increases the risk of rehospitalization 30 days after the initial discharge (Henke, Karaca, Jackson, Marder, & Wong, 2016).

2.1.2 The Gap in Existing Research

Research assessing nurses' knowledge of hypertension indicates that many have insufficient knowledge of hypertension detection (Serrat-Costa et al., 2016). A nurse without adequate knowledge cannot effectively educate a patient about hypertension management, potentially lowering adherence rates. However, there is a lack of research assessing nursing students' knowledge. The goal of this study is to identify weaknesses in the students' knowledge that can be improved upon to increase nurse understanding of hypertension, and therefore improve the quality of patient education.

CHAPTER 3

METHODOLOGY

3.1 Assessing Nursing Students' Knowledge with a Survey

This study will assess knowledge of hypertension among senior 2 nursing students enrolled in the on-campus BSN program at The University of Texas at Arlington. A link to an online survey using the platform Qualtrics was emailed out to students using a mailing list on Canvas. Ten survey questions were asked to assess participants' knowledge regarding the diagnostic criteria for hypertension, causes of hypertension, manifestations, and treatment modalities. An opened-ended response section asked students what information they would provide to a patient with hypertension at discharge.

3.1.1 Identifying Gaps in Knowledge

Each question was scored based on what percentage of students correctly identified the symptom or intervention. Responses to each question were compared to the best practices recommended by several professional organizations, including the American College of Cardiology, American Heart Association, and Joint National Committee. Questions where a high number of students failed to identify the symptom or intervention will be considered a gap in knowledge.

A gap in knowledge indicates a topic that nursing students are not well-educated on, resulting in an inability to inform the patient of these topics. By identifying gaps in the curriculum, the data will point to areas where further instruction needs to be provided to students. Ensuring students are educated on all areas of hypertension as a disease process

increases the likelihood that they will provide satisfactory discharge education in the hospital, and thus create better health outcomes for their patients.

Table 3.1: Hypertension Survey Questions

1. Approximately what percentage of patients in hospitals have high blood pressure?
2. Approximately what percentage of people with hypertension know that they have high blood pressure?
3. What percentage of patients discharged with blood pressure medications achieve blood pressure control (blood pressure within their target range)?
4. According to the Joint National Committee, normal blood pressure is considered systolic and diastolic
5. What do you think are the top 3 most important things to teach a patient with hypertension at discharge?
6. Fewer than half of patients adhere to their prescribed medication schedule when they are discharged from the hospital. What do you think you, as the discharging nurse, could do to promote patient adherence to their medication regimen?
7. If left untreated, hypertension can cause damage to multiple organ systems. Identify as many complications that result from hypertension as you can
8. Many patients report that they don't take their medications regularly because they can't afford their prescriptions. What nonpharmacologic measures can you identify that help control blood pressure?
9. A patient asks you what the symptoms of hypertension are. How do you answer their question?
10. Please identify as many risk factors for hypertension, nonmodifiable and modifiable, as you can.

Hi everyone,

My name is Steven and I am one of your Senior 2 classmates. As a member of the Honors College, I am doing a study to assess nursing students' knowledge about hypertension. I hope to identify what nursing school does and doesn't teach us about blood pressure in order to identify ways to improve discharge education for our patients.

I would appreciate it if you would consider taking a few minutes to complete the attached survey. It asks 10 questions regarding your knowledge of blood pressure and should take 10-30 minutes to complete. Participation is voluntary and you can quit the survey at any time if you wish. No personal information will be collected from this survey. I have implemented measures to ensure confidentiality, but it cannot be guaranteed.

In order to participate in this survey, you must be at least 18 years old and a Senior 2 nursing student enrolled in the on-campus BSN program. You cannot take this survey if you are in the accelerated online program or if you have dropped a class this semester. There are no class benefits for taking this survey. No compensation will be provided for taking this survey.

Survey link: https://qtrial2019q4az1.az1.qualtrics.com/jfe/form/SV_1TEr0zCPZDjxqTz
 Password: BSN2020

Thanks in advance!
 Steven Parker
 Steven.parker@mavs.uta.edu

Figure 3.1: Survey Invitation

3.1.2 Institutional Research Board Approval

Approval from the Institutional Research Board (IRB) was required for this study as the survey constitutes as human subject research. Human subjects protection training was completed by the student and faculty mentor, and IRB approval was obtained prior to surveying students [see Appendix A]. Participation in the survey was voluntary and answers were anonymous. No personal identifying information was collected from this study to protect subjects' confidentiality. Participants were informed about the nature of the study and given the option to opt out. There were no benefits for participating in this study nor consequences for not participating.

CHAPTER 4

DISCUSSION

4.1 Survey Results

A link to the survey on the platform Qualtrics was sent to all 178 senior 2 nursing students enrolled in the on-campus BSN program. The survey was open for a three-week period from January 30th to February 20th, 2020. Thirty-seven students participated in the survey, for a response rate of 20.8%. Of those 37, 30 respondents answered every question, for an attrition rate of 18.9%.

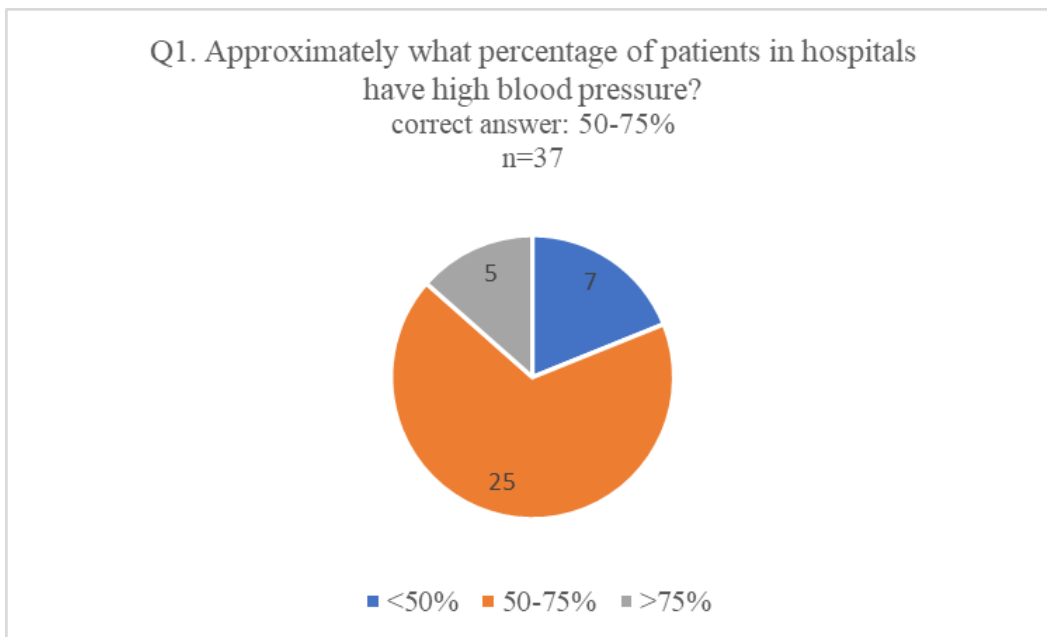


Figure 4.1: Responses to Survey Question

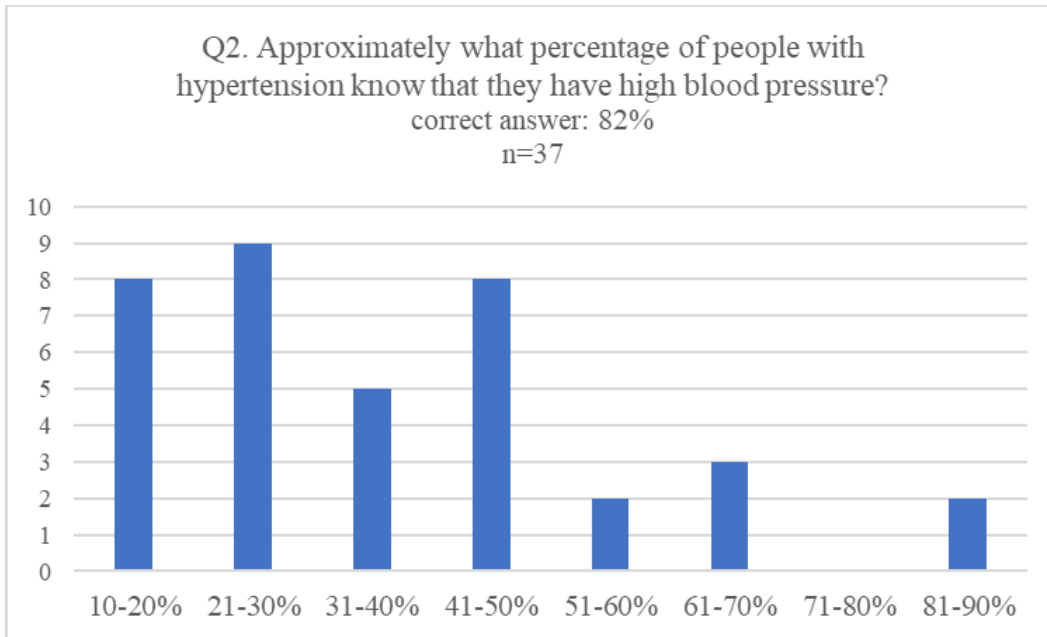


Figure 4.2: Responses to Survey Question 2

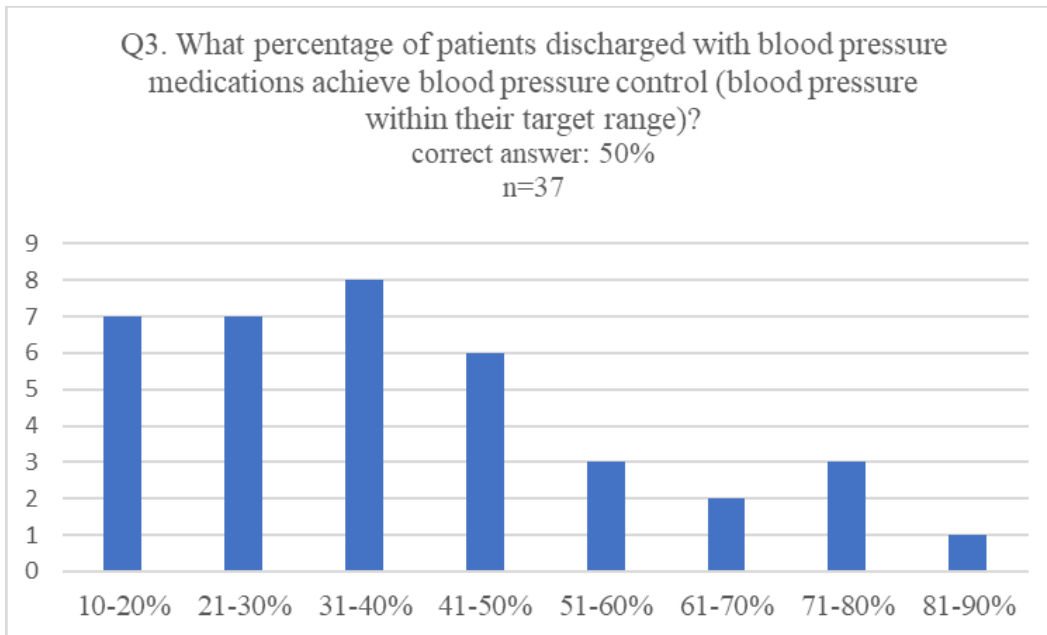


Figure 4.3: Responses to Survey Question 3

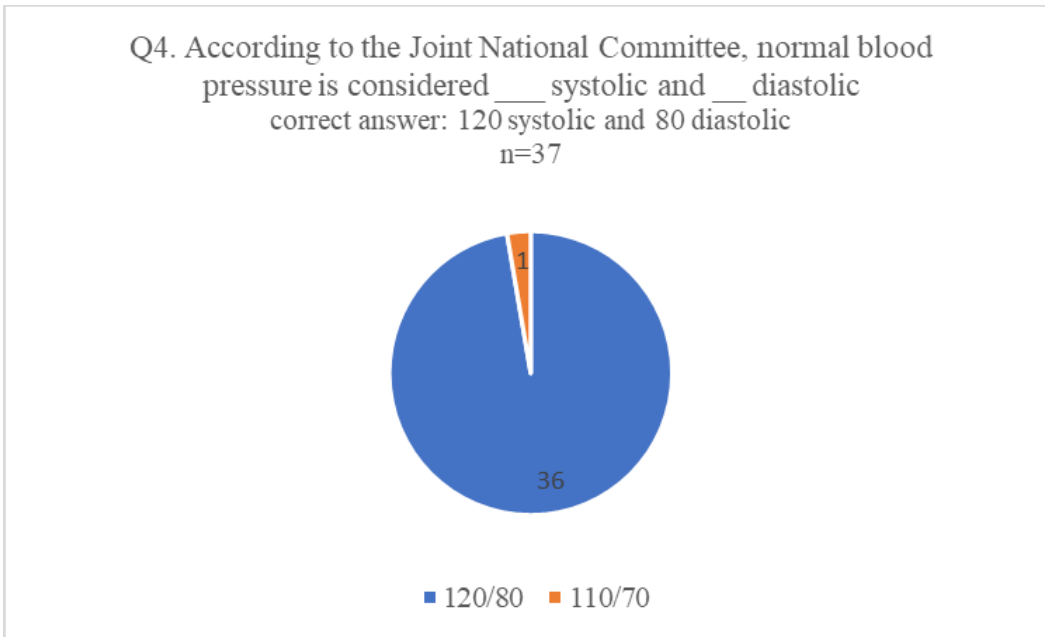


Figure 4.4: Responses to Survey Question 4

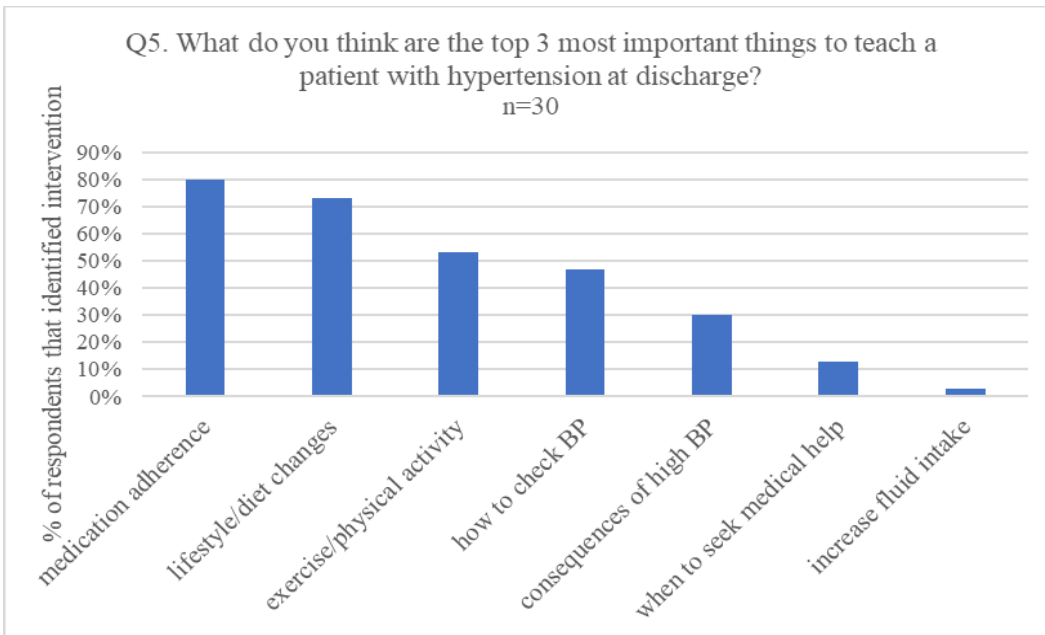


Figure 4.5: Responses to Survey Question 5

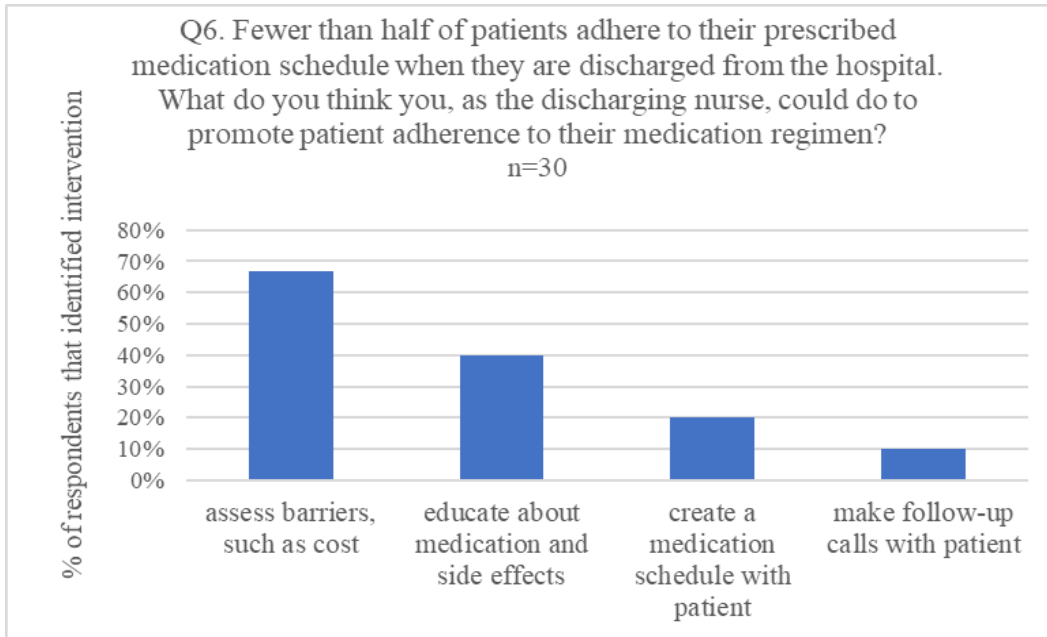


Figure 4.6: Responses to Survey Question 6

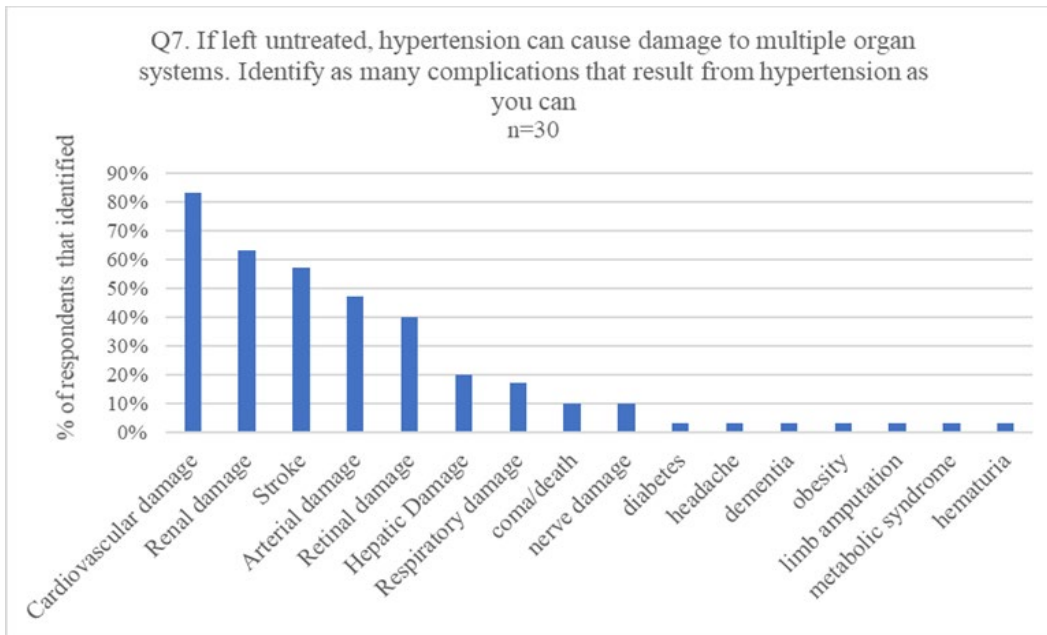


Figure 4.7: Responses to Survey Question 7

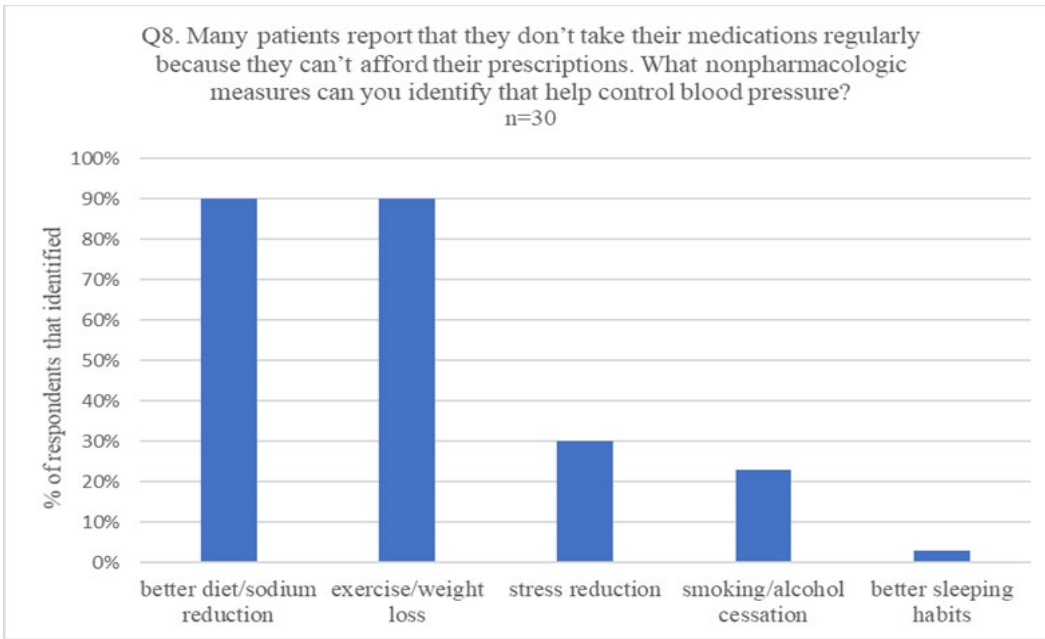


Figure 4.8: Responses to Survey Question 8

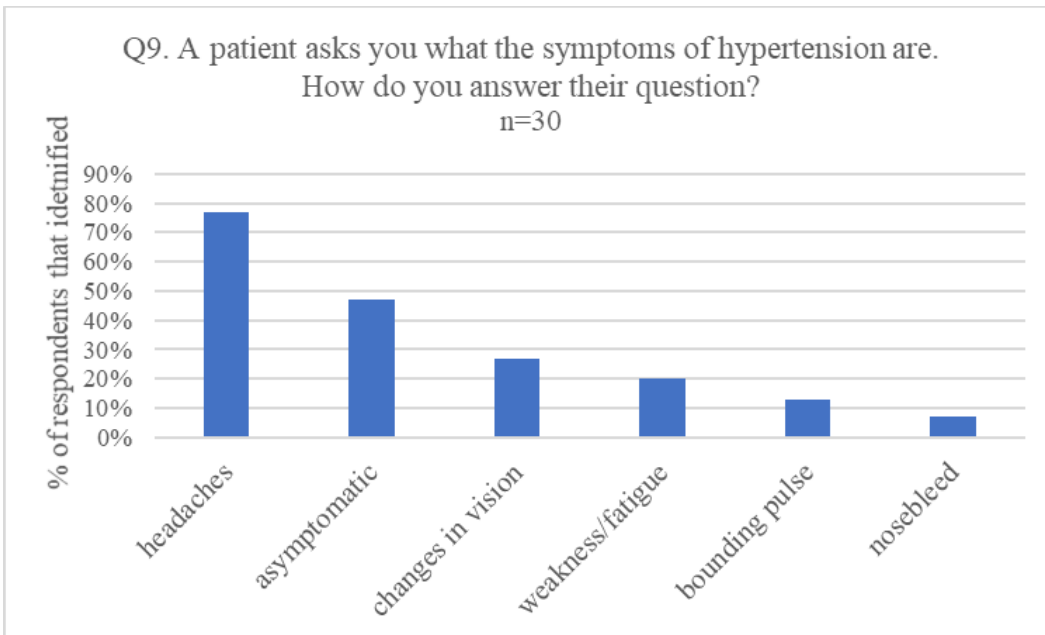


Figure 4.9: Responses to Survey Question 9

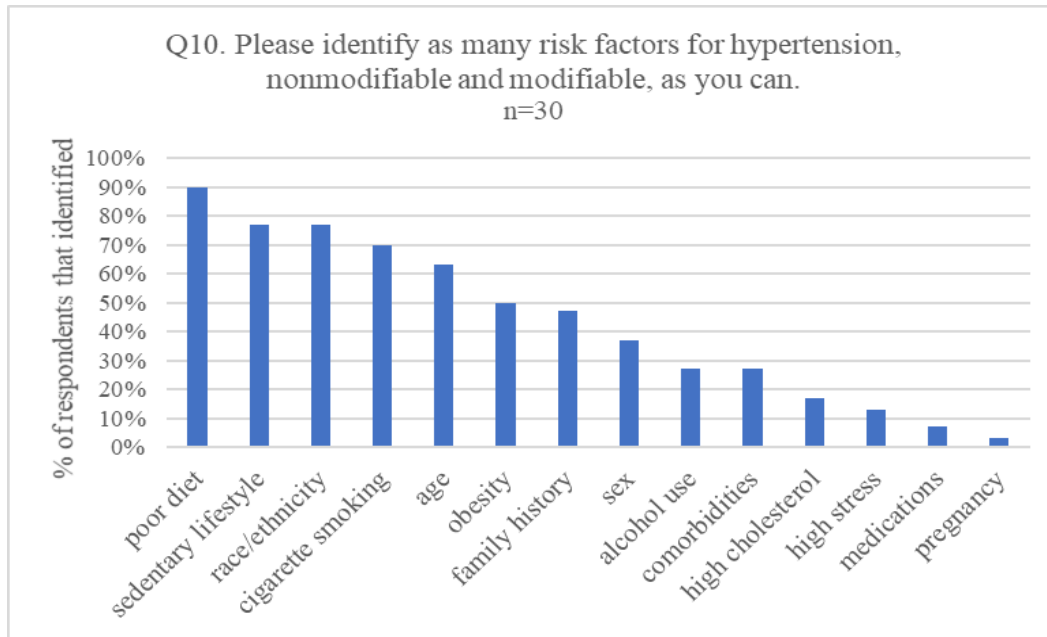


Figure 4.10: Responses to Survey Question 10

4.2 Response Analysis and Discussion

Overall, most students seemed to possess a basic knowledge of hypertension. All but one respondent correctly identified normal blood pressure as 120/80, as defined by the Joint National Commission (Hinkle & Cheever, 2018, p. 884).

Hypertension is considered “the silent killer” because it is mostly asymptomatic, though some individuals may experience headaches related to high blood pressure (Hinkle & Cheever, 2018, p. 894). Only about half of the respondents identified hypertension as asymptomatic. However, nearly 80% identified headaches as a possible symptom.

Weight loss, salt reduction, physical activity, decreased alcohol consumption, and smoking cessation are nonpharmacologic interventions that have been shown to control blood pressure (Weber et al., 2013). All of these interventions were correctly identified, with 90% of participants naming both dietary changes and exercise as treatments.

Untreated hypertension can damage many organ systems in the body. Every increase of 20 mm Hg systolic above the normal level doubles an individual's risk for having a heart attack or stroke (Hinkle and Cheever, 2018, p. 884). Over 80% of respondents identified potential cardiovascular damage as a result of hypertension, and 57% identified the risk for strokes. There is also a significant relationship between high blood pressure and kidney disease (Weber et al., 2013). 40% of respondents identified renal damage as a possible result of hypertension. Vascular damage caused by hypertension can result in clinical manifestations related to organs served by the involved blood vessels. These changes can result in optic and cerebrovascular damage. (Hinkle and Cheever, 2018, p. 887). About half of the respondents identified vascular damage as a result of hypertension, and 40% noted the potential for optic damage.

Respondents were also able to identify many of the risk factors for developing hypertension. The biggest risk factors include advanced age, excessive alcohol consumption, genetic predisposition, family history, African American ethnicity, obesity, sedentary lifestyle, and poor diet, particularly excessive sodium intake. Other potential contributing factors include smoking, high levels of stress, and sleep apnea (Hinkle and Cheever, 2018, p. 888). Over half of the respondents were able to correctly identify four of the greatest risk factors- poor diet, sedentary lifestyle, ethnic background, and age. While cigarette smoking, a possible contributing factor to hypertension, was named by 70% of students, only 27% named alcohol consumption as a risk factor. Consuming more than two drinks per day can increase blood pressure and therefore is a significant risk factor that was overlooked by a majority of students (Weber et al., 2013).

4.2.1 Application to the Clinical Setting

While a majority of respondents appear to have sufficient knowledge of hypertension as a disease process, the results of the survey show a deficiency in knowledge when asked to apply concepts to a clinical setting. It is estimated that between 50-75% of patients in the hospital have high blood pressure (Franklin & McCoy, 2017). 68% of respondents answered within this range, while 19% underestimated the prevalence of hypertension.

When asked what percentage of individuals with hypertension were aware of their condition, answers varied significantly. Respondents guessed numbers as low as 10% and as high as 90%. According to the National Health and Nutrition Examination Survey (NHANES) conducted from 2009 to 2012, 18% of surveyed adults were unaware that they had high blood pressure, meaning 82% of adults know (Hinkle and Cheever, 2018, p. 885). Almost every respondent significantly underestimated the number of hypertensive adults who were aware of their condition, as the mean answer was 39.4%.

Only about half of patients discharged with blood pressure medications achieve blood pressure control (Burnier & Egan, 2019). Responses again varied greatly, ranging from 14% to 82%. The wide range of answers with no consensus suggests that respondents were not educated about awareness of hypertension among hypertensive adults.

When asked to name the most important things to teach a hypertensive patient at discharge, 80% of respondents said they would teach the importance of adhering to the prescribed medication regimen. Nonpersistence is one of the most common causes of poor medication adherence and uncontrolled hypertension (Burnier & Egan, 2019).

Studies show that educating patients on their prescribed medication and scheduling follow-ups can greatly improve adherence rates and improve blood pressure control (Burnier, 2017). 40% of respondents stated that they would educate patients about their medication and possible side effects.

CHAPTER 5

CONCLUSION

5.1 Study Limitations

The low level of participation in the survey was a weakness and may have resulted in response bias that skewed the results. No incentive was given to encourage participation in the survey, which may have contributed to the low response rate. The survey also had a significant attrition rate, with seven of the 37 participants not answering the short-answer questions. A higher response rate may have more accurately reflected the knowledge of the surveyed population.

Further, only one cohort of students enrolled in one BSN program was surveyed. The findings of this study suggest gaps in the nursing program at The University of Texas at Arlington, but may not be representative of nursing students in institutions across the United States. Future research should be done to survey nursing students across the country to examine hypertension education at the national level.

5.2 Recommendations

Despite the above limitations, this study identifies several gaps in knowledge among a significant number of respondents. Nursing students seem to possess a basic knowledge of the pathophysiology and characteristics of hypertension, but require further education on applying knowledge to a real patient care scenario. The findings of this study suggest that The University of Texas at Arlington should revise the curriculum to add more focus on teaching students how to provide discharge education to patients. Discharging

patients is a responsibility many nurses complete daily, and improving the quality of their instructions may have a profound impact on a patient's health.

5.3 Drawing Conclusions

As the number of hypertensive adults in the United States increases, nursing programs will need to provide students with comprehensive education about the disease. Providing accurate and concise education to patients before discharge is imperative to promote compliance and medication adherence. Nursing programs should place a greater emphasis on discharge education to promote patient health outside of the hospital.

APPENDIX A
INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL



November 22, 2019

Steven A. Parker
College of Nursing
The University of Texas at Arlington

Protocol Number: 2020-0103
Protocol Title: *Identifying Gaps in Nursing Students' Knowledge of Hypertension*

APPROVAL OF MINIMAL RISK HUMAN SUBJECTS RESEARCH WITHOUT FEDERAL FUNDING

The University of Texas Arlington Institutional Review Board (UTA IRB) or designee has reviewed your protocol and made the determination that this research study involving human subjects is approved in accordance with UT Arlington's [Standard Operating Procedures \(SOPs\)](#) for minimal risk research. You are therefore authorized to begin the research as of **November 22, 2019**.

Note that this project is not covered by UTA's Federalwide Assurance (FWA) and the researcher has indicated it will not receive federal funding. You must inform Regulatory Services immediately if the project may or will receive federal funding in the future, as this will require that the protocol be re-reviewed in accordance with the federal regulations for the protection of human subjects.

As Principal Investigator of this IRB approved study, the following items are your responsibility throughout the life of the study:

UNANTICIPATED ADVERSE EVENTS

Please be advised that as the Principal Investigator, you are required to report local adverse (unanticipated) events to The UT Arlington Office of Research Administration; Regulatory Services within 24 hours of the occurrence or upon acknowledgement of the occurrence.

INFORMED CONSENT DOCUMENT

The IRB approved version of the informed consent document (ICD) must be used when prospectively enrolling volunteer participants into the study. Unless otherwise determined by the IRB, all signed consent forms must be securely maintained on the UT Arlington campus for the duration of the study plus a minimum of three years after the completion of all study procedures (including data analysis). The complete study record is subject to inspection and/or audit during this time period by entities including but not limited to the UT Arlington IRB, Regulatory Services staff, OHRP, FDA, and by study sponsors (as applicable).

MODIFICATIONS TO THE APPROVED PROTOCOL

All proposed changes must be submitted via the electronic submission system and approved prior to implementation, except when necessary to eliminate apparent immediate hazards to the subject. Modifications include but are not limited to: Changes in protocol personnel, changes in proposed study procedures, and/or updates to data collection instruments. Failure to obtain prior approval for modifications is considered an issue of non-compliance and will be subject to review and deliberation by the IRB which could result in the suspension/termination of the protocol.

ANNUAL CHECK-IN EMAIL / STUDY CLOSURE

Although annual continuing review is not required for this study, you will receive an email around the anniversary date of your initial approval date to remind you of these responsibilities. Please notify Regulatory Services once your study is completed to begin the required 3-year research record retention period.

HUMAN SUBJECTS TRAINING

All investigators and personnel identified in the protocol must have documented Human Subjects Protection (HSP) training on file prior to study approval. HSP completion certificates are valid for 3 years from completion date; the PI is responsible for ensuring that study personnel maintain all appropriate training(s) for the duration of the study.

CONTACT FOR QUESTIONS

The UT Arlington Office of Research Administration; Regulatory Services appreciates your continuing commitment to the protection of human research subjects. Should you have questions or require further assistance, please contact Regulatory Services at regulatoryservices@uta.edu or 817-272-3723.

REGULATORY SERVICES The
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BIOGRAPHICAL INFORMATION

Steven Parker was born in Moscow, Idaho. Born to a father in the United States Marine Corps, he spent his childhood living in seven states and Okinawa, Japan. During his time at The University of Texas at Arlington, he was a member of the Health Innovation Constituency Council (HICC) and was actively involved in the College of Nursing and Health Innovation. After taking a course on pediatrics Steven realized he wanted to use his nursing career to care for children. After graduating, he will become a medical-surgical nurse resident at Cook Children's Hospital in Fort Worth.