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Barriers in Hypertension Management among Culturally Diverse Patients in an Urban Urgent Care Setting

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ABSTRACT

BARRIERS IN HYPERTENSION MANAGEMENT AMONG CULTURALLY

DIVERSE PATIENTS IN AN URBAN URGENT CARE SETTING

Hypertension is the leading cause of deaths related to cardiovascular disease conditions. A vast number of patients are not taking their medications as prescribed by the physicians. This non-adherence to hypertensive treatment plans results in increased numbers of cases of unstable blood pressure. Medication adherence will help to manage the controllable cardiovascular diseases and will automatically decrease the incidences of emergent cases in hospitals and urgent care clinics. It will further decrease the costs of diagnostic evaluations used during the emergent visits. This decreased patient load in the emergency rooms will improve quality patient care. The study timeframe of data collection and result analysis was from September 14, 2018 to October 30, 2019. This pilot study identified a relationship between medication non-adherence rate and number of barriers. The greater the barrier, the higher the non-adherence rate. With the help of open-ended questions, the study identified multiple barriers which are consistent with medication non-adherence rates.

Navpreet Kaur
May 2019

BARRIERS IN HYPERTENSION MANAGEMENT AMONG CULTURALLY

DIVERSE PATIENTS IN AN URBAN URGENT CARE SETTING

by

Navpreet Kaur

A project

submitted in partial

fulfillment of the requirements for the degree of

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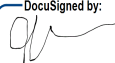Doctor of Nursing Practice:

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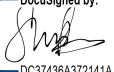

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Chapter 1: Introduction

Heart disease is the leading cause of death and a major risk factor of cardiovascular diseases. According to the Centers for Disease Control and Prevention (CDC, 2017), in the United States, approximately 75 million adults suffer from hypertension, while about half of that number have uncontrolled blood pressure. A common reason for uncontrolled hypertension is treatment non-adherence (CDC, 2017). Treatment non-adherence refers to patients not following their treatment plans as given by their providers (CDC, 2017). Non-adherence to medication increases the number of hospital admissions, healthcare costs, morbidity, and mortality. In the United States, doctors write approximately 3.8 million prescriptions every year, yet 1 in 5 prescriptions are never filled. Among the filled prescriptions, about 50% are not taken as prescribed with regard to dose, frequency, and duration. In light of these factors, promoting and facilitating improved medication adherence can ease the economic and health burden that non-adherence creates (Neiman et al., 2017).

Background

Controlling hypertension helps improve patients' cardiovascular health (Neiman et al., 2017), but controlling it requires taking prescribed medications consistently. Medication adherence can decrease hospital costs by decreasing unnecessary hospital admissions due to hypertensive urgency. Medication adherence is a complicated behavior that depends on both intentional and unintentional factors. Neimen et al. (2017) identified the following intentional factors: (a) cultural beliefs, (b) attitude, (c) not taking medications as prescribed, and (d) medication side effects. Unintentional factors include: (a) the need to follow multiple drug

regimens, (b) failure to refill medications, and (c) a lack of education related to the medications (Neiman et al., 2017). In Neiman et al.'s study, the majority of medication non-adherence occurred in patients on multiple drug regimens. However, non-adherence stems from a combination of various factors. It occurs when patients fail to start their prescription medications on time, fail to incorporate medications into their daily routine, or fail to continue to take their medications for their disease condition.

A Healthcare Informatics report explained that countries are spending a large amount of money to increase patient compliance with medications. If patients start taking medication as prescribed, the healthcare industry can save on expenditures such as utilization of health care services and cost of patient care in urgent hospitalization visits (Vrijens, Antoniou, Burnier, de la Sierra, & Volpe, 2017). Iuga and McGuire (2014) determined that the cost of medication adherence related to disease management is less compared to the cost of hospitalization due to non-adherence. Medication adherence helps manage controllable diseases and can automatically decrease the impact of emergency cases in hospitals and urgent care clinics. In addition, medication adherence further decreases the cost of diagnostic evaluations used during emergency visits, decreases the patient load in the emergency room, and increases the quality of patient care by reducing the number of patients (Iuga & McGuire, 2014).

Problem Statement

Many researchers sought to study adherence to hypertensive medication with regard to disease management. However, they examined very narrow populations despite the diverse population in the United States. In addition, numerous research studies used close-ended

questionnaires, which limited patients' responses related to the problem. In this research study, researchers used open-ended questionnaires, which gave the participants' more freedom to express feelings related to the non-adherence of hypertensive medications.

Holt et al. (2013) conducted telephone interviews and surveys to gather data related to barriers in hypertension management that cause non-adherence. Because the telephone interviews allowed for only verbal interaction, the researchers could not determine if the respondents were the patients themselves or their family members, leading to potentially biased results. Therefore, in the completed research study, the researcher collected data at Urban Urgent Care during face-to-face encounters with the patients. This approach increased the accuracy of the results, as the researcher personally gathered the patients' responses. Such an approach also enhances patients' confidentiality due to fewer individuals having access to the data. Although Tong, Chu, Fang, Wall, and Ayala (2016) sent survey questionnaires through the mail to collect patients' responses, this method excluded the homeless population and those unable to provide mailing addresses. This researcher avoided this issue by conducting the study at a physical location. The researcher recruited patients during office visits and gathered responses during physical encounters. This process decreased the kind of bias found in the studies included in the literature review.

Purpose of the Project

In this Doctor of Nursing Practice (DNP) project the researcher sought to identify the barriers causing non-adherence to treatment plans among individuals 45 to 60 years old. The researcher's goal was to obtain information on cardiovascular health by identifying the barriers

causing non-adherence to hypertension treatment plans. Healthy People 2020 has 24 objectives and among them is the plan to increase prevention of heart disease and stroke and improve patients' cardiovascular health. Hypertension is one of the underlying causes of cardiovascular diseases (CDC, 2017). The identification of barriers revealed the reasons for medication non-adherence, which will help clinicians work to reduce the non-adherence rate. Mahmoudian, Zamani, Tavakoli, Farajzadegan, and Fathollahi-Dehkordi (2017) found that controlling hypertension can decrease morbidity and mortality rates related to cardiovascular disease and stroke. Medication adherence can also help control hypertension. Medication adherence is a complicated behavior that involves patients, family members, providers, and patients' health beliefs (Mahmoudian et al., 2017). It is imperative to educate patients and family members about related treatment benefits and uncontrolled blood pressure-related complications in order to increase adherence and decrease the risk of stroke and heart attack.

Theoretical Framework

The health belief model (HBM) is a psychological model that describes health behavior related to the disease condition as per patient perception. The HBM is one of the most commonly used models to understand health behavior. It is intended to motivate people with positive aspects related to their health condition and remove any negative behavior that impacts their health with maintenance of regular healthy behaviors. This model is useful in nursing and in other health care settings to modify patient behavior to improve the prognosis (Burke, Butt, Glanz, Rich, Rimmer & Stewart, 2017). This model anticipates that a patient's health behavior is influenced by their beliefs and perception of the disease or condition; these beliefs create a threat

toward health that can be removed with health education (Burke, et al., 2017). Before applying this model, it is necessary to know about patient beliefs and the behaviors that hinder treatment plans. The HBM has the following six components: (a) perceived susceptibility, (b) perceived severity, (c) perceived benefit, (d) perceived barrier, (e) cues to action, and (f) self-efficacy (Burke, et al., 2017).

The six components of HBM play an important role in changing patient behavior. The first component of HBM is perceived susceptibility. It is a persons' perspective of becoming ill and understanding certain steps that are required to decrease the negative effects of the disease on their health. People usually do not accept their disease condition until they learn more about the risks and severity of disease (Tarkang & Zotor, 2015).

The second component of HBM is perceived severity, which is the perception of severity and consequences related to disease. It does not mean that after perceiving susceptibility patients start taking action, but they must be aware of the serious and life threatening consequences related to the disease in order to take action. The HBM states that people will not change their health beliefs if they are unaware that hypertension can cause severe damage to their health (Tarkang & Zotor, 2015).

The next component of the HBM is perceived benefits, which refers to one's belief that certain actions and health behavior can decrease the impact of a disease or condition (Tarkang & Zotor, 2015). For instance, patients must be aware of the benefits of hypertension medications as opposed to the side effects so they can start taking medication to control hypertension. In the perceived barrier component, a person believes behavior change could have negative impacts

(Tarkang & Zotor, 2015). For example, a hypertensive patient takes medication but when they run out, they must go to the doctor for the prescription and then to the pharmacy. It wastes their time or they may not have access to transportation. Removing the barriers of obtaining prescription refills may include using home delivery if there is a lack of transportation. If such barriers could be removed the negative impact on health can be minimized.

Tarkang and Zotor (2015) listed the second to last component as cues to action, which are the influences and behavior that motivate the patient to act according to the decision making process. For instance, this could involve providing a pill reminder so a patient can take medications on time. Cues to action work when patients are ready to take certain actions and are aware of the positive impact of the action on their health. Cues to action require an impulsive behavior and a willingness to complete certain actions that make a difference in their lives (Tarkang & Zotor, 2015).

The last component is self-efficacy, which refers to individuals' capacity to learn or apply what they learned to real life. The person removes all the difficulties in order to take the needed action and move forward (Tarkang & Zotor, 2015). For instance, if a patient is unable to receive medication due to a lack of transportation they will set up a home delivery system to receive medications on time.

Chapter 2: Literature Review

Rimando (2015) used a qualitative descriptive design to study barriers and facilitators of hypertension management in underserved African American older adults. Rimando enrolled 28 African American males and females recruited from a clinic in the Southeast. Participants met the study inclusion criteria if they were 55 years or older with hypertension, whether or not their hypertension was controlled. The author used semi-structured interviews to collect the qualitative data. The interview questions focused on knowledge related to hypertension, exercise, nutrition, stress management, and barriers to self-management of hypertension. The outcome variables were hypertension behavior, interaction with the healthcare provider, and social environment. Rimando analyzed the interview results to identify any themes present in the content and concluded that various factors influenced patients' abilities to manage hypertension. The common identified factors were poor social status, lack of motivation, and fear of physical activity-related injuries. Facilitators helped the patients in hypertension control, such as support from society, family members diagnosed with hypertension or diabetes, and weight loss. This study helped identify social determinants that affect hypertension management. Rimando (2015) mentioned a limitation of the study was that participants might have responded about their hypertension self-management behaviors in a socially desirable way. Another limitation was that Rimando conducted the study at one clinic that excluded the entire urban population in the area; thus, the results are not generalizable to various clinics.

Holt et al. (2013) used a cross-sectional approach to study sex differences in barriers to antihypertensive medication adherence. The researchers enrolled 2,194 participants recruited from a large managed care organization in southeastern Louisiana. The participants were 65 years and older with the diagnosis of essential hypertension. The authors collected data using the 8-item Morisky medication scale. They evaluated the risk factors related to low adherence with the help of telephone surveys and administrative databases. In using the chi-square test to evaluate the low medication adherence between men and women, Holt et al. (2013) found no statistical significance. Using a sex-stratified multivariate model, the authors evaluated the association between a participant's characteristics and medication adherence. The common factors related to a low adherence rate were medication costs and following limited lifestyle modifications to manage blood pressure. Decreased libido was the only factor determined to have a significant impact in men. On the other hand, the factors affecting only women were depressive symptoms and limited collaboration with the provider. A strength of the study was its large sample size and participant diversity. A limitation of the study was the fact that a large number of research participants did not respond to a sexual functioning question, which affected the results from other participants.

Tong et al. (2016) used a stratified sampling method to study non-adherence to antihypertensive medication among hypertensive adults in the United States. The participants enrolled in the study with the help of a survey. The researchers sent a consumer style survey to 20,000 individuals and 10,328 responded. Researchers sent a second healthy style survey to

6,253 individuals and received 4,198 responses. The authors used the univariate and multivariate logistic regression assessments to assess the correlation between non-adherence of medication and independent variables. Of the respondents with hypertension (27%), 30.5% were not adhering to their medications. A higher rate of non-adherence occurred among young Hispanic adults with low income and those diagnosed with depression (Tong et al., 2016). The most common barrier was inability to afford their medications (37.2%). One strength of the study was that the authors conducted the survey via mail, which reduced patients' commute times. A limitation of the study was that it required English proficiency and the mailing addresses of the participants, which excluded all non-English-speaking and homeless individuals.

Allen, Brownstein, Escoffery, and Satsangi (2016) used the qualitative and quantitative methods to study Community Health Workers (CHWs) as allies in hypertension self-management and medication adherence in the United States. Allen et al. (2016) enrolled 265 CHWs from 19 states with the help of an online survey and 23 telephone interviews. The participants had to be CHWs, older than 18 years, and fluent in English. The survey included 56 Likert scale-based, multiple-choice, open-ended questions. The authors used a qualitative approach with 21 open-ended questions to evaluate the CHWs' support of hypertensive patients. They transferred all data into SPSS version 22 for evaluation and analyzed the data with the help of a descriptive approach. They evaluated interviews using a thematic analysis. The CHWs explained that most of their roles were patient driven, and they used multiple strategies to reduce barriers in hypertensive patients. The CHWs were able to fill medications on time, which

reduced the barrier of the lack of refills. One strength of this study was its large sample size from 19 states. One limitation of the study was the participation of only one type of healthcare team member (i.e., CHWs), which provided a narrow response.

Hall, Lee, Clark, and Perilla (2014) used a cross-sectional correlational design to study adherence to hypertension treatment among Latino migrant and seasonal farmworkers (MSFWs). Hall et al. (2014) enrolled 45 MSFWs recruited from two farmworkers' health clinics in the southeast region of the United States. The inclusion criteria for the study were MSFWs 20 to 60 years old, who were diagnosed with hypertension in the past 6 months, and taking antihypertensive medications. The authors collected data with the help of the Morisky medication adherence scale, the blood pressure self-care scale, the blood pressure knowledge scale, the perceived stress scale, the acculturation rating scale for Mexican Americans-II, and a short assessment of health literacy for Spanish-speaking adults. They used descriptive statistics to analyze the data. The Morisky medication adherence scale showed a low medication adherence rate (51%). The blood pressure control indicated higher health literacy and acculturation among MSFWs. The blood pressure knowledge scale perceived that stress related to disease condition, acculturation, healthcare education, and availability of healthcare services affected 49% of the blood pressure self-care. A strength of the study was its evaluation of medication adherence using three types of variables (i.e., medication adherence, self-care, and blood pressure control). A limitation of the study was that it measured blood pressure control only on one occasion, which could have caused bias in blood pressure results.

Bazargan et al. (2017) used structured face-to-face interviews and visual inspections of participants' medications to study non-adherence to medications among older African American adults. Bazargan et al. (2017) enrolled 400 individuals recruited from South Los Angeles. They conducted medication bag assessments for the evaluation of factors associated with medication adherence. They examined factors such as complex medication schedules, polypharmacy, duplication of medications, and use of incorrect medications. Two professional individuals conducted a visual inspection of medication bags. The authors evaluated individuals' drug regimen complexity with the help of the medication regimen complexity index. They also used a descriptive analysis to evaluate the frequencies, mean, and standard deviations of the variables. Barzagan et al. (2017) examined the non-adherence of medication related to complex drug schedules with a chi-square test and evaluated the non-adherence association to demographic characteristics and various factors using multiple logistic regression. Participants took an average of 5.7 prescription drugs, and 56% of participants were not aware of the benefits of any medication. A limited number of participants knew the prescription strength of their medications. In addition, 37% of participants reported having stopped taking one of their prescription medications. The individuals with knowledge related to medication dosage, schedule, and benefits were seven times more likely to have medication adherence than individuals without this knowledge. Participants with less complicated medication treatment showed double the compliance rate than those with more complex medication schedules. The multivariate analysis indicated an association between low medication adherence and copayments, knowledge about the medication, and memory deficits. One strength of the study was its large sample size. A

limitation of the study was its examination of only patient-related factors, leading to narrow results. The authors should have also evaluated providers to measure barriers related to patients' medication non-adherence.

Polanski et al. (2014) used a qualitative design to study patients' barriers related to primary medication adherence. Polanski et al. enrolled 26 patients recruited from Northeastern states. The eligibility criteria were age greater than 25 years and not having picked up any hypertensive medications within 30 days of their refill dates. The authors asked the participants questions based on three different types of focus group discussions: (a) perceptions of the hypertension diagnosis and hypertension medications; (b) barriers causing noncompliance, such as medication side effects, transportation issues, and personal and cultural beliefs; and (c) decisions related to medication administration and the patient-provider relationship. The authors employed a descriptive analysis to analyze demographic data and a thematic analysis to analyze focus group answers. The common factors affecting patients' perceptions were distrust of medication, anger regarding the disease condition, and suspicion of the provider. The identified barriers were fear of side effects, higher costs of medications, lack of transportation, and confusion about generic medications. The patients wanted detailed conversations with their providers and hoped for trustworthy relationships with their caregivers. One strength of the study was the diversity of participants selected from the three Northeastern states. A limitation of the study was the patient selection on a volunteer basis, which excluded all patients who had refilled their medications on time.

Chapter 3: Methodology

Participants

The research began after receiving Internal Review Board (IRB) approval from Fresno State University and permission from an urban urgent care clinic. This researcher adopted a quantitative and qualitative mixed approach that included 30 participants who were conveniently sampled. The inclusion criteria for the participants were that they were between 45 and 60 years old with a diagnosis of hypertension and were taking one or more antihypertensive medications. Recruitment occurred at the urgent care clinic when patients made general visits during open business hours. The rationale for selecting this location was the fact that the researcher saw, on average, 5 to 10 hypertensive patients per day. The researcher selected volunteer participants from those individuals who showed interest and were willing to sign a consent form. This approach ensured diversity throughout the participant population, as the urgent care clinic is a multicultural clinic.

Sampling Procedures

The research study was open from September 14, 2018 to October 30, 2018. The 30 participants were recruited during regular visits to the urban urgent care clinic. The researcher used the convenience sampling method for recruitment. The inclusion criteria of the study were: (a) participants were between 45-60 years of age and English speaking, (b) diagnosed with hypertension, and (c) taking one or more hypertensive medications to control high blood pressure. The exclusion criteria were (a) non-hypertensive patients, (b) patients younger than 45 years and older than 60 years, (c) gestational hypertensive patients, (d) population outside of urban urgent care, (e) individuals with co-morbidities, and (f) non-English speaking. The

researcher explained the procedure as well as all disclosures to the patients. The research participants were asked to sign a consent form to participate in the study. The participants were free to withdraw from the research study at any time by simply removing their consent forms.

Research Design

The research design for this study included a mixed quantitative and qualitative method. The researcher collected quantitative data using demographic questions alongside the Morisky Green Levine scale (MGL) (Morisky, Green, & Levine, 1986). The MGL test is a public use scale, so no permission was required to adopt it for the research study. The demographic questions were created by the researcher to collect data regarding participant demography and included questions on ethnicity, primary language spoken, age, and gender. The MGL questions were: (a) "Do you ever forget to take your medicine?" (b) "Are you careless at times about your medicine?" (c) "When you feel better, do you sometimes stop taking your medicine?" and (d) "Sometimes you fell worse, when you take the medicine, do you stop taking it?" The researcher used chi-square tests of association to evaluate the significant relationship between number of barriers and non-adherence. The researcher also evaluated the relationship between ethnicity and non-adherence. The chi-square test is singularly effective in evaluating relationships between two categorical variables (Heavey, 2015).

The qualitative data were collected with the utilization of the following four open-ended questions: (a) "What are your reasons for not taking your medications? List any three." (b) "What are your reasons for not filling your prescriptions on time? List any three." (c) "What are

the reasons for not visiting your primary care physician? List any three." (d) "What helps you take your medications? List any three reasons." These questions were created after the literature review setting in order to explore more deeply the different barriers causing non-adherence to hypertension treatment plans. The researcher used a thematic approach to the data analysis in order to elaborate upon various barriers related to medication adherence. The quantitative data was transferred to SPSS version 24. The qualitative data was transferred to NVIVO 12. The researcher reevaluated the data to ensure accurate results. The researcher locked all data in a secured electronic file, limiting access to the researcher only. After transferring results to SPSS and NVIVO 12 the researcher shredded the questionnaires.

Chapter 4: Results

Quantitative Data Analysis

The quantitative data were evaluated in SPSS version 24 using descriptive statistics. A chi-square test of association was also used to evaluate the relationship between number of barriers and non-adherence and the relationship between ethnicity and non-adherence.

Participants

Thirty participants were included in the research study based on the inclusion and exclusion criteria. The frequencies and percentages for the participants' demographic characteristics appear in Table 1. The largest percentages of participants were female (53.3%, *n* = 16), Asian (36.7%, *n* = 11), 55-60 years of age (46.7%, *n* = 14), and English as a first language (33.3%, n = 10). The bar charts for these demographics appear in Figures 1, 2, 3, and 4.

Table 1

Frequencies and Percentages of the Participants' Demographic Characteristics

Demographic	*N*	%
Ethnicity		
Hispanic	7	23.3
Caucasian	5	16.7
African American	4	13.3
Asian	11	36.7
Others	3	10.0
Total	30	100.0
Age		
45-50 years	6	20.0
50-55 years	10	33.3
55-60years	14	46.7

Total	30	100.0
Gender		
Male	14	46.7
Female	16	53.3
Total	30	100.0
Language		
English	10	33.3
Spanish	7	23.3
Chinese	2	6.7
Korean	1	3.3
Hindi	4	13.3
Other	6	20.0
Total	30	100.0
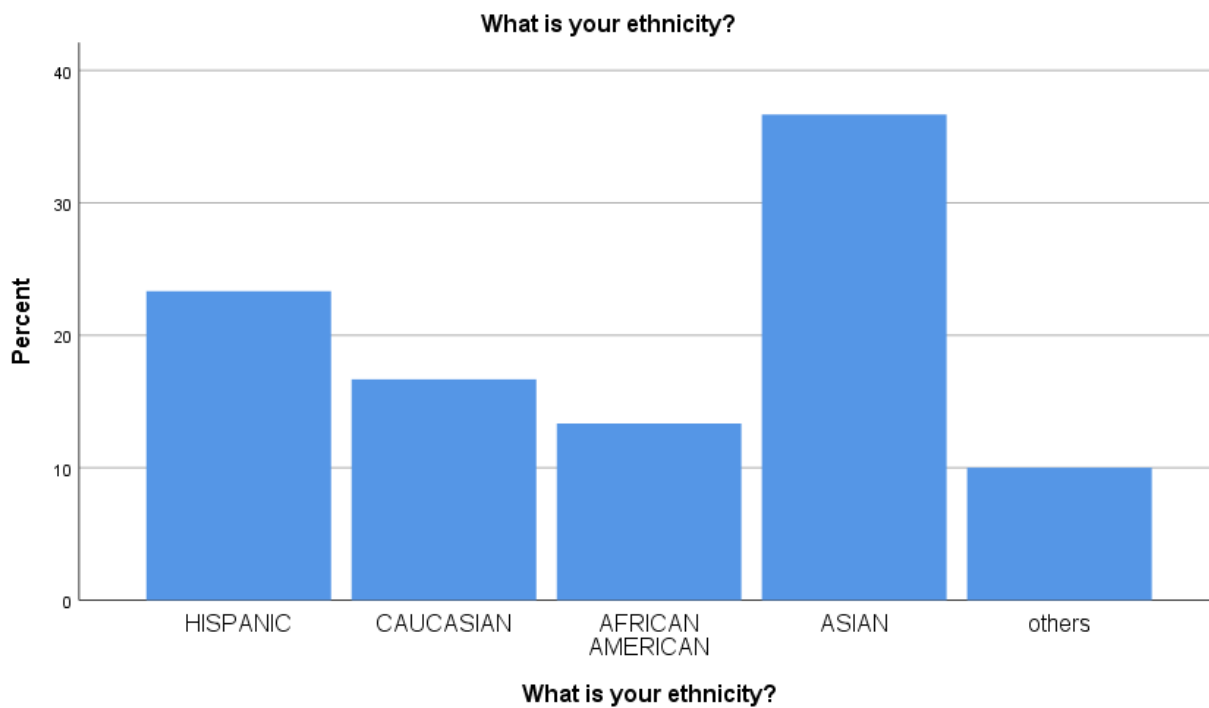
Figure 1. Percentages for participants' ethnicity.
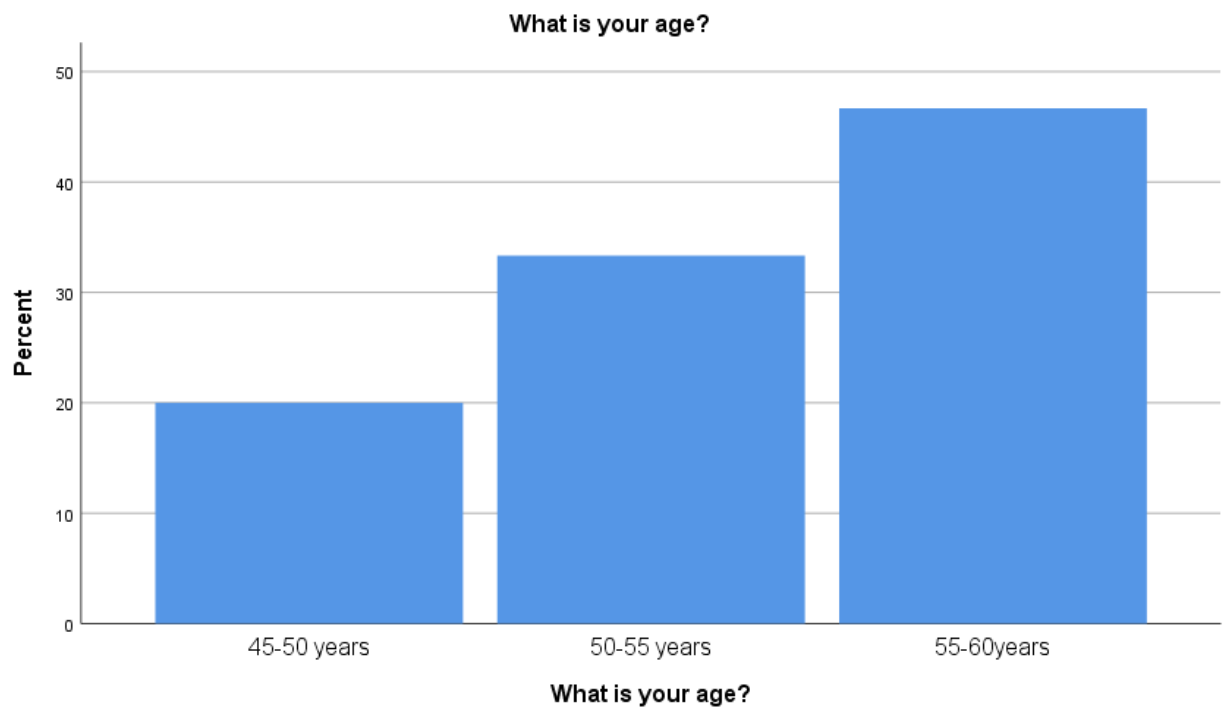
Figure 2. Percentages for participants' age.
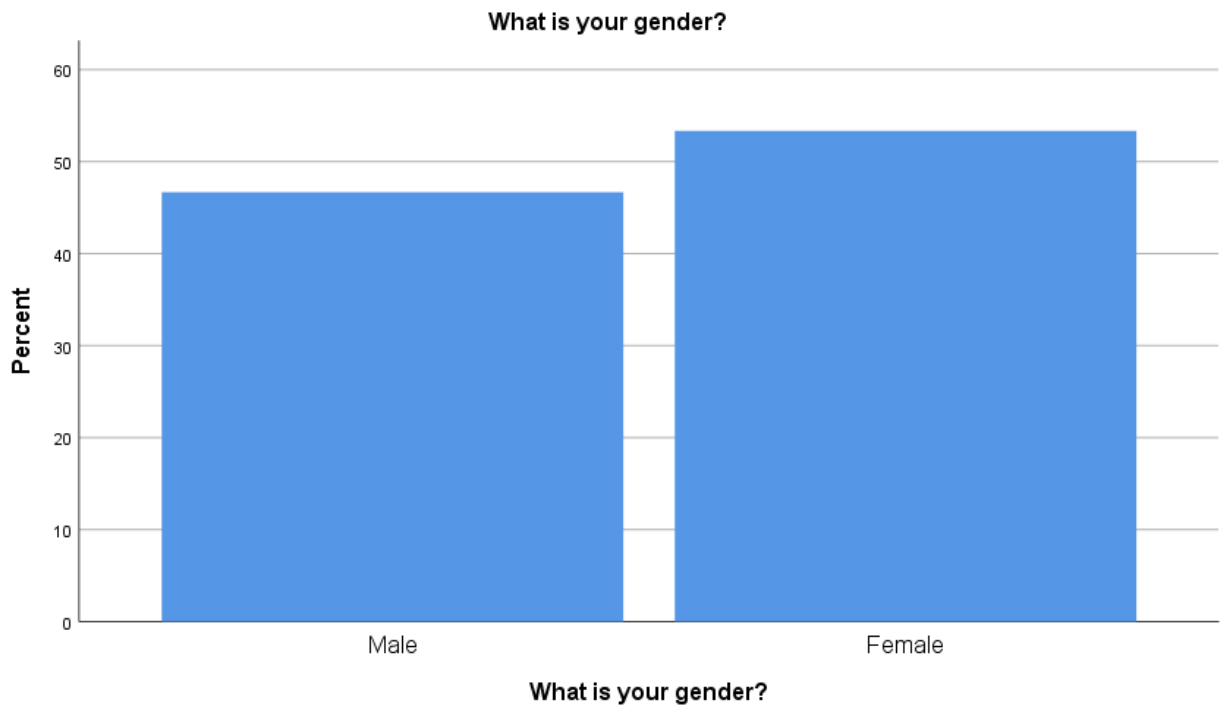
Figure 3. Percentages for participants' gender.
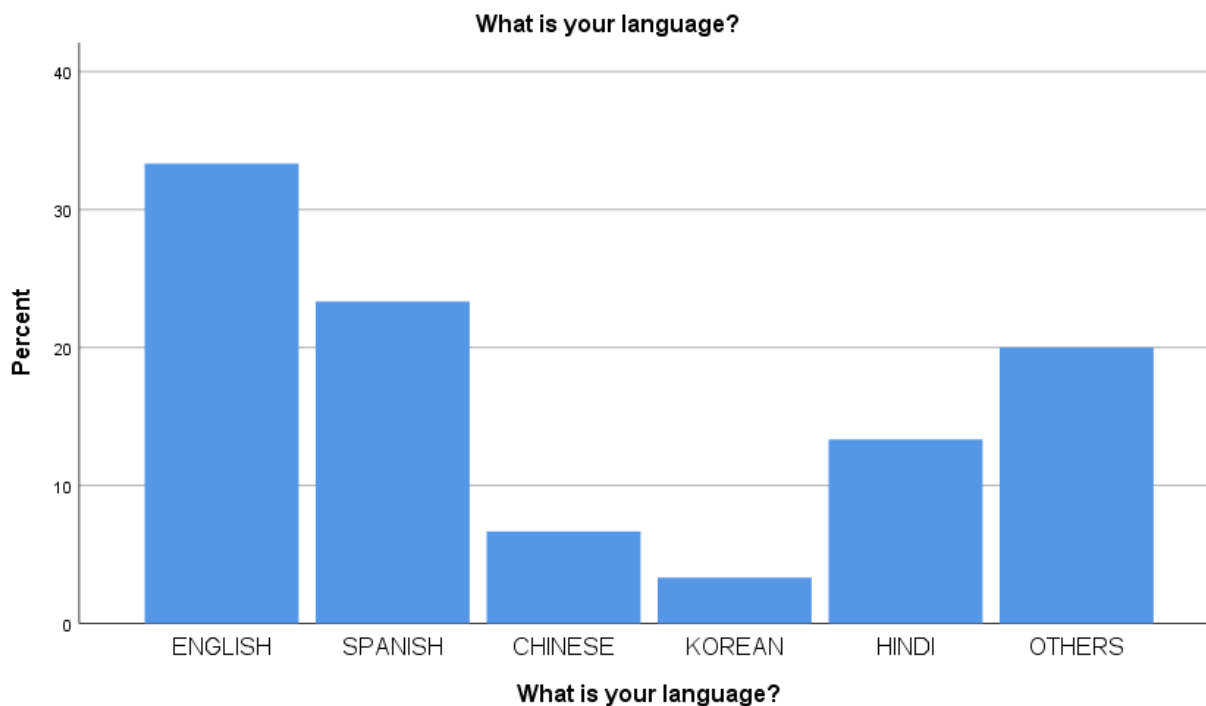
Figure 4. Percentages for participants' language.

Frequencies and Percentages for Medication Adherence (Morisky's Scale Scores) and Number of Barriers (Questions 9 and 10)

As seen in Table 2, the largest percentage of participants had medium medication adherence (50%, $n = 15$). The greatest percentage of participants had 11-12 barriers (46.7%, $n = 14$) and the lowest percentage of participants had 3-4 barriers (10%, $n = 3$) and 5-6 barriers (10%, $n = 3$). The bar charts for medication adherence and barriers appear in Figures 5 and 6.

Table 2

Frequencies and Percentages of Medication Adherence (Morisky's Scale Scores) and Number of

Barriers

Variable	*N*	%
Morisky's scale score		
Less than 2 (low adherence)	9	30.0
2 or 3 (medium adherence)	15	50.0
greater than 3 (high adherence)	6	20.0
Total	30	100.0
Number of barriers		
3-4	3	10.0
5-6	3	10.0
7-8	4	13.3
9-10	6	20.0
11-12	14	46.7
Total	30	100.0
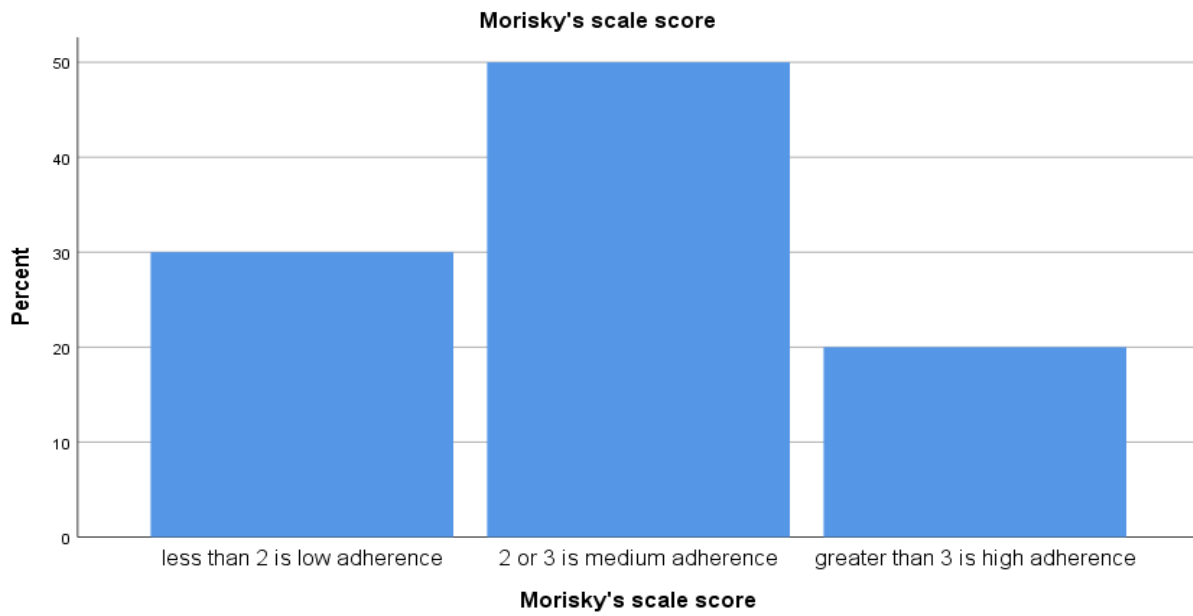
Figure 5. Percentages for medication adherence.
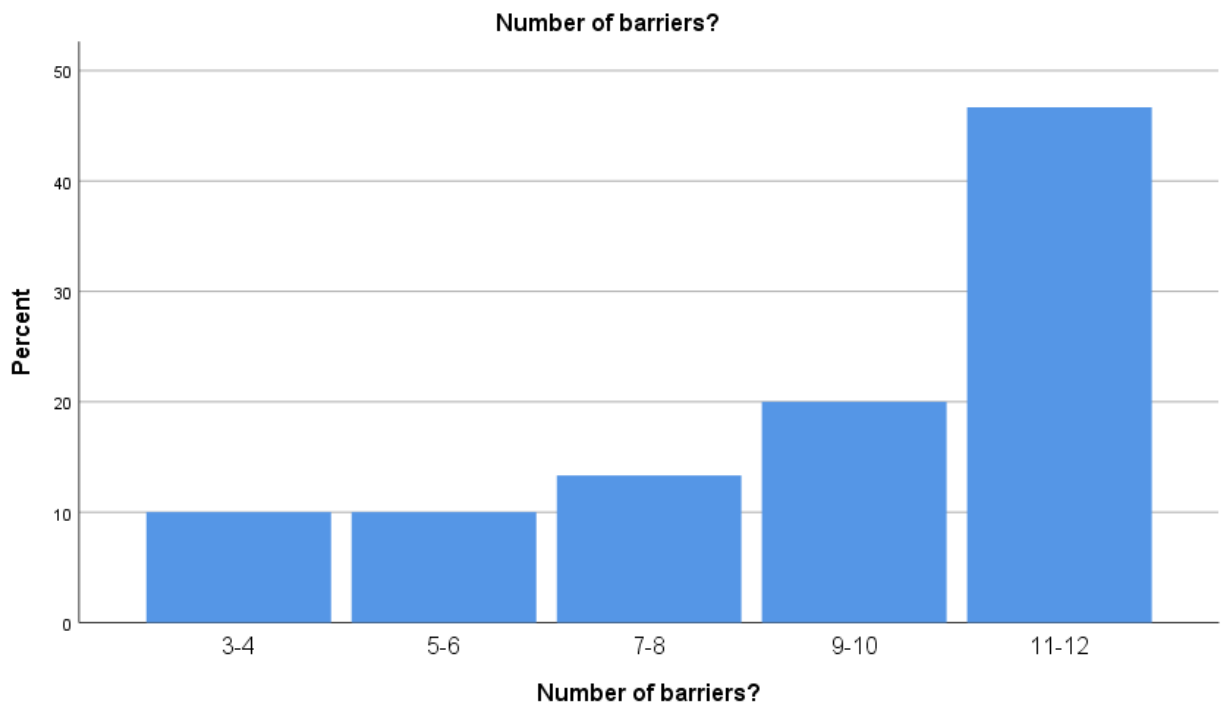
Figure 6. Percentages for barriers.

Results of the chi-square test of association

The relationship between number of barriers and medication adherence. A chi-square test of association was used to evaluate the relationship between number of barriers and medication adherence. The assumption that cells have expected counts greater than five was met.

The crosstabs of observed counts for number of barriers and medication adherence appear in Table 3. There was a significant relationship between number of barriers and medication adherence, X^2 (8) = 42.86, $p = < .05$, Cramer's V = .85. The effect size for the relationship between number of barriers on medication adherence was assessed via the Cramer's V value of .85, which corresponds to a large effect size.

Those with 11-12 barriers ($n = 9$) had low adherence. Those with 9-10 barriers ($n = 6$) and 7-8 barriers ($n = 4$) had medium adherence. Those with 5-6 barriers ($n = 3$) and 3-4 barriers ($n = 3$) had high adherence. This data indicates that a greater number of barriers was associated with lower adherence in hypertensive patients. Given these findings, the null hypotheses that there is no relationship between the number of barriers and medication adherence was rejected.

Table 3

Crosstabs of Observed Counts for Number of Barriers and Medication Adherence (Morisky's Scale Score)

Number of barriers	Less than 2 (low adherence)	2 or 3 (medium adherence)	greater than 3 (high adherence)	Total
3-4	0	0	3	3

5-6	0	0	3	3
7-8	0	4	0	4
9-10	0	6	0	6
11-12	9	5	0	14
Total	9	15	6	30
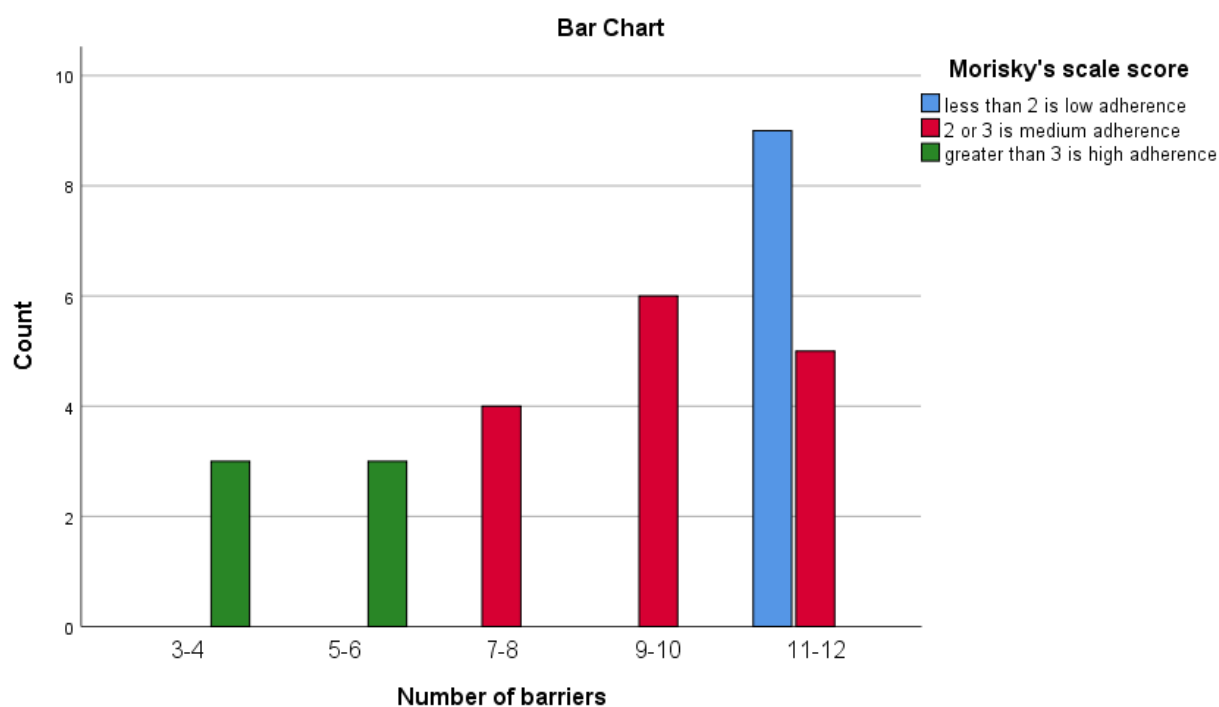
Figure 7. Frequencies of number of barriers by and medication adherence.

The relationship between ethnicity and medication adherence. A chi-square test was also used to evaluate the relationship between ethnicity and medication adherence. The assumption that cells have expected counts greater than five was met.

The crosstabs of observed counts for ethnicity by medication adherence appear in Table 4. The relationship between ethnicity and medication adherence was not statistically significant, X^2 (8) = 4.56, p = > .05, Cramer's V= .27. The effect size for the relationship between ethnicity and medication adherence was indicated by the Cramer's V value of .27, which corresponds to a moderate effect size.

The chi-square test of association was not statistically significant. Given these findings, the null hypotheses that there is no relationship between ethnicity and medication adherence was accepted.

Table 4

Crosstabs of Observed Counts for Ethnicity by Medication Adherence (Morisky's Scale Score)

Ethnicity	Less than 2 (low adherence)	2 or 3 (medium adherence)	greater than 3 (high adherence)	Total
Hispanic	2	3	2	7
Caucasian	1	3	1	5
African American	1	1	2	4
Asian	4	6	1	11
Others	1	2	0	3
Total	9	15	6	30
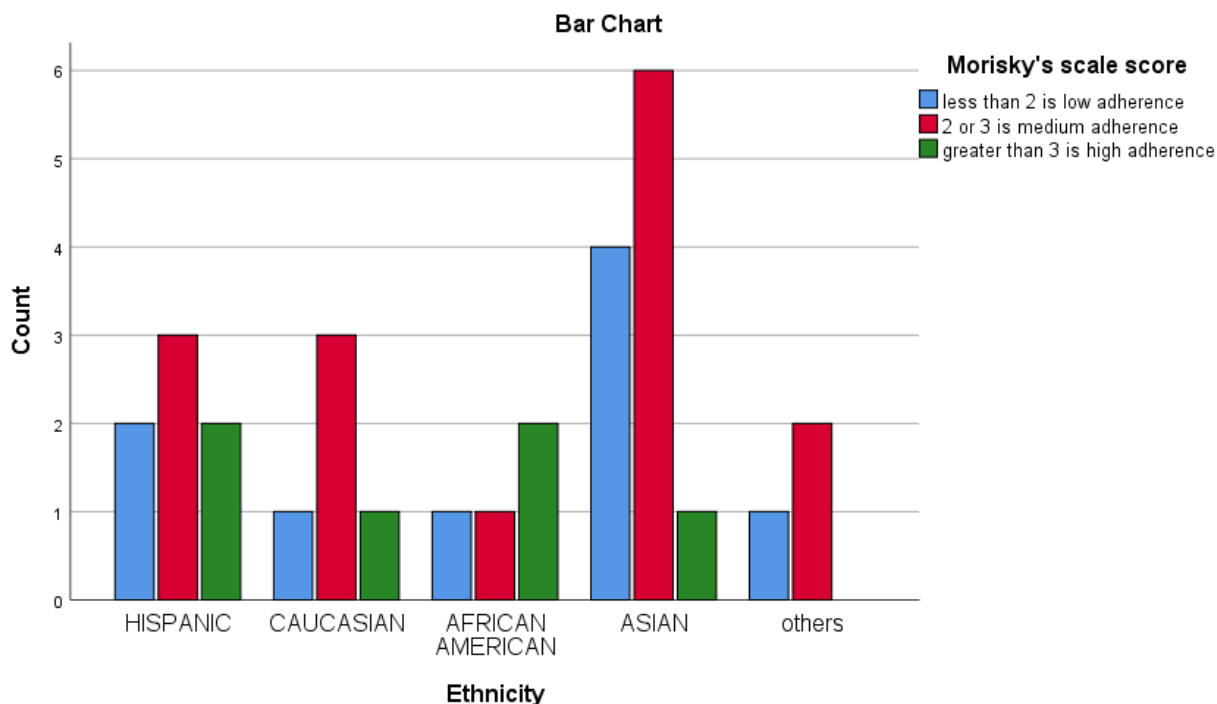
Figure 8. Frequencies of ethnicity by and medication adherence.

Qualitative Results

Qualitative Data Analysis and Coding

The researcher's objective was to identify factors relevant to four research questions as reflected in open-ended survey responses from 30 research participants. The qualitative data analysis was completed in NVIVO 12. Common themes were identified across the data with regard to reasons for not taking medications, reasons for not filling medication prescriptions, reasons for not visiting the Primary Care Physician (PCP), and what helps individuals take their medications.

The process of data analysis involves "making sense out of text and data…and preparing the data for analysis, conducting different analyses, moving deeper and deeper into understanding the data, representing the data, and making an interpretation of the larger meaning of the data" (Creswell, 2009, p. 183). The researcher looked for themes and patterns in the data through analysis of the responses to the open-ended questions, coding of the data, and further analysis as themes and patterns emerged. The researcher's goal was to describe the participants' views as reflected in the data.

The first level of identification occurred during the initial review of the qualitative data. Upon receiving the qualitative data, the researcher read the responses, analyzed the open-ended question responses, and then conducted open coding utilizing NVIVO software, which is an analytic tool to facilitate the coding process. During open coding, the researcher utilized a brainstorming technique described by Corbin and Strauss (2008) to "open up the data to all potentials and possibilities contained within them" (p. 160). In open coding, the researcher thoroughly reviews the data contained within the data set before beginning to group and label data. The process of coding is taking the raw data and pulling out concepts and then further developing them in terms of their properties and dimensions, and grouping them into themes. The data analysis process included the following steps:

1. Review all open-ended qualitative data.

2. Import the data into NVIVO.

3. Code the data in NVIVO using open coding.

4. Define the properties of the themes.

The resulting themes are described in the summary of the research findings.

The coding process identified a total of 23 themes. The themes were delineated into the following four areas: (a) reasons for not taking medications, (b) reasons for not filling medication prescriptions, (c) reasons for not visiting the Primary Care Physician (PCP), and (d) what helps individuals take their prescribed medications. The findings for each area are summarized and examples from the participant responses are used to illustrate the themes.

Participants' Reasons for not Taking Medications

The themes related to participants' reasons for not taking medications are summarized in this section. This section includes a table summarizing the identified themes and the frequency of occurrence for the themes. As reflected in Table 5, the primary themes were (a) lack of time is a barrier to taking medications, (b) some individuals do not want to take the prescribed medications, (c) side effects are a barrier to taking medications, (d) forgetfulness is a barrier to taking medication, and (e) cost of medication is a barrier to obtaining and taking medications.

Table 5

Themes and Frequencies of Themes for Participants' Reasons for not Taking Medications

Theme	# of times the theme appeared
Lack of time is a barrier to taking medications	26
Some individuals do not want to take the prescribed medications	23
Side effects are a barrier to taking medications	21

Forgetfulness is a barrier to taking medication	18
Cost of medication is a barrier to obtaining and taking medications	3

Lack of time is a barrier to taking medications. The most frequently occurring theme for this area was lack of time was a barrier to taking medications. This theme was mentioned 26 times. For example, a participant wrote, "I am busy." Another wrote "No time because I am busy with work." In a final example, a participant wrote, "busy."

Some individuals do not want to take the prescribed medications. The next theme was some individuals do not want to take the prescribed medication; it was mentioned 23 times. A participant wrote, "I do not want to take it." Others indicated, "I do not want to take medication" and "I do not want to take for lifetime." In a final example of this theme, a participant shared, "I do not want to stick with the medication. I think I am ok without medication."

Side effects are a barrier to taking medications. The next theme for this area was side effects are a barrier to taking medications. It was mentioned 21 times. Approximately 20 participants simply wrote "Side-effects." One participant indicated, "Too many medications. Side effects."

Forgetfulness is a barrier to taking medication. The next theme for this area was forgetfulness is a barrier to taking medication. It was mentioned 18 times. A participant wrote, "I

usually forget to take my medications." Another shared, "Forgetting due to work hours." Other wrote things like "Forget" or "Sometime I forget to take medication."

Cost of medication is a barrier to obtaining and taking medications. The final theme for this area was cost of medication is a barrier to obtaining and taking medications. This theme was mentioned three times. Participants indicated, "Expensive medication, "Expensive," and "Cost issues."

Participants' Reasons for not Filling Medication Prescriptions

The themes related to participants' reasons for not filling medication prescriptions are summarized in this section. This section includes a table summarizing the identified themes and the frequency of occurrence for the themes. As reflected in Table 6, the primary themes were (a) the cost of medication is too high for those with copays or lack of insurance, (b) not having transportation to get to a pharmacy is a barrier to filling medication prescriptions, (c) some individuals avoid and do not want to see the doctor to obtain a medication refill, (d) individuals indicate that refills are unavailable, and (e) individuals forget to fill the prescription.

Table 6

Themes and Frequencies of Themes for Participants' Reasons for not Filling Medication Prescriptions

Theme	# of times the theme appeared
The cost of medication is too high for those with copays or lack of insurance	19

Not having transportation to get to a pharmacy is a barrier to filling medication prescriptions	12
Some individuals avoid and do not want to see the doctor to obtain a medication refill	8
Individuals indicate that refills are unavailable	7
Individuals forget to fill the prescription	3

The cost of medication is too high for those with copays or lack of insurance. The most frequently occurring theme for this area was that the cost of medication is too high for those with copays or lack of insurance. It was mentioned 19 times. Participants wrote responses such as, "No insurance" or "Lack of insurance." Several others wrote, "High co-pay." Other participants' responses were "Cost," "No money," "Expensive medications," and "Expensive."

Not having transportation to get to a pharmacy is a barrier to filling medication prescriptions. The next theme was that not having transportation to get to a pharmacy is a barrier to filling medication prescriptions. This barrier to filling medication prescriptions was mentioned 12 times. Participants indicated, "I do not drive" and "No transportation," which is a barrier to filling medications.

Some individuals avoid and do not want to see the doctor to obtain a medication refill. The next theme was that some individuals avoid and do not want to see the doctor to obtain a medication refill. This barrier of medication refill was mentioned eight times.

Participants wrote the following: "I do not want see my doctor," "I do not want to visit my doctor," and "I do not want to make an appointment to see my doctor."

Individuals indicate that refills are unavailable. The next theme for this area was that individuals indicate that refills are unavailable. This was mentioned seven times. Seven participants indicated this barrier by writing, "No available refills."

Individuals forget to fill the prescriptions. The final theme for this area was that individuals forget to fill the prescriptions. This theme was mentioned three times. Participants wrote the following, which are indicative of this theme: "Forget to refill," "No refill available," and "Forget."

Participants' Reasons for not Visiting the Primary Care Physician (PCP)

The themes related to participants' reasons for not visiting the PCP are summarized in this section. This section includes a table summarizing the identified themes and the frequency of occurrence for the themes. As reflected in Table 7, the primary themes were (a) lack of available appointments is a barrier to visiting the PCP, (b) individuals' schedules are a barrier to scheduling an appointment with the PCP, (c) individuals lack transportation to get to the PCP, (d) individuals feel they do not need to see the PCP, (e) lack of health insurance prevents PCP visits, and (f) long wait times are a barrier to visiting the PCP.

Table 7

Themes, Definitions, and Frequencies of Themes for Participants' Reasons for Not Visiting the PCP

Theme	# of times the theme appeared
Lack of available appointments is a barrier to visiting the PCP	22
Individuals' schedule is a barrier to scheduling an appointment with the PCP	15
Individuals lack transportation to get to the PCP	10
Individuals feel they do not need to see the PCP	10
Lack of health insurance prevents PCP visits	8
Long wait times are a barrier to visiting the PCP	4

Lack of available appointments is a barrier to visiting the PCP. The most frequently occurring theme for this area was lack of available appointments is a barrier to visiting the PCP. This barrier to visiting the PCP was mentioned 22 times. Seven people wrote, "Unavailable appointments." Fifteen individuals indicated, "No appointment available according to my work schedule" or "Doctor's appointment is unavailable."

Individuals' schedules are a barrier to scheduling an appointment with the PCP. The next theme was individuals' schedules are a barrier to scheduling an appointment with the PCP. This barrier was mentioned 15 times. For example, individuals indicated the following: "Busy schedule," "Busy schedule unable to make appointment," and "Very busy with work."

Individuals lack transportation to get to the PCP. The next theme for this area was individuals lack transportation to get to the PCP. It was mentioned 10 times. Participants indicated they had "No transportation." Some said the PCP was "Very far."

Individuals feel they do not need to see the PCP. The next theme for this area was individuals feel they do not need to see the PCP. It was mentioned 10 times. Some said, "I do not need to see the PCP" or "I think I do not need to see my doctor." One indicated, "Feeling better." A few said they did not need to see the PCP because of "Normal blood pressure" or "Blood pressure is good."

Lack of health insurance prevents PCP visits. The next theme for this area was lack of health insurance prevents PCP visits. It was mentioned eight times. Participants indicated they lacked or had no insurance and that they could not afford "Expensive visits."

Long wait times are a barrier to visiting the PCP. The final theme for this area was long wait times are a barrier to visiting the PCP. This theme was mentioned four times. The participants indicated "Long wait time" and "Wait time is long."

What Helps Individuals Take Their Prescribed Medications

The themes related to what helps individuals take their prescribed medications are summarized in this section. This section includes a table summarizing the identified themes and the frequency of occurrence for the themes. As reflected in Table 8, the primary themes were (a) reminders facilitate remembering to take medications, (b) home delivery of medications facilitates taking medications, (c) the ability to obtain refills helps individuals take medications (d) medications improve health and this helps individuals take the medications, (e) appointments

with the PCP facilitates taking medications, (f) access to affordable medications helps

individuals take medications, and (g) having transportation to the pharmacy to fill prescriptions

helps individuals take their medications.

Table 8

Themes and Frequencies of Themes for What Helps Individuals Take Their Prescribed

Medications

Theme	# of times the theme appeared
Reminders facilitate remembering to take medications	27
Home delivery of medications facilitates taking medications	18
The ability to obtain refills helps individuals take medications	15
Medications improve health and this helps individuals take the medications	5
Appointments with the PCP facilitates taking medications	2
Access to affordable medications helps individuals take medications	2
Having transportation to the pharmacy to fill prescriptions helps individuals take their medications	1

Reminders facilitate remembering to take medications. The most frequently occurring theme for this area was reminders facilitate remembering to take medications. This was mentioned 27 times. For example, many mentioned "Pill reminders," "Medicine on the table," or "Pill box with me."

Home delivery of medications facilitates taking medications. The next theme was home delivery of medications facilitates taking medications. This theme was mentioned 18 times by 18 participants who wrote "Home delivery."

The ability to obtain refills helps individuals take medications. The next theme was the ability to obtain refills helps individuals take medications. This theme was mentioned 15 times. For this theme, participants wrote that the availability of refills helped them take their medications. They simply wrote "Available refills."

Medications improve health and this helps individuals take the medications. The next theme was medications improve health and this helps individuals take the medications. This theme was mentioned five times. Participants wrote that "Knowing my health is improved" and "Knowing it is important so I can feel better" helped them take their medications.

Appointments with the PCP facilitates taking medications. The next theme was appointments with the PCP facilitates taking medications. This theme was mentioned two times. Participants wrote that an "Available appointment" with the PCP facilitated taking medications.

Access to affordable medications helps individuals take medications. The next theme for this area was access to affordable medications helps individuals take medications. It was

mentioned twice. The two participants wrote that "Cheap medication" helped them take the medication.

Having transportation to the pharmacy to fill prescriptions helps individuals take their medications. The final theme for this area was having transportation to the pharmacy to fill prescriptions helps individuals take their medications. This theme was mentioned once by a participant who indicated she/he would take the medication "If I have ride to pharmacy."

Chapter 5: Discussion

The goal of this project was to identify the barriers causing non-adherence to hypertension treatment plans among individuals 45 to 60 years of age. The findings of this research study corresponded to the findings of the research studies summarized in the literature review. Tong et al. (2016) identified common barriers resulting in non-adherence to hypertensive medications. One of the main barriers for the patients was affordability of the medications due to socioeconomic status. The findings of this project were similar to Tong et al.'s findings that lack of insurance and patients' affordability due to socioeconomic status were also barriers. Hall et al. (2014) concluded the lower the number of the Morisky 8-Item Medication Adherence Questionnaire, the higher the non-adherence rate in hypertensive patients. In this pilot study, the researcher also found medication non-adherence rates similar to those of Hall et al.; however, the researcher used the Morisky Green Levine Scale. Researchers used the validated scale to evaluate patients' medication adherence.

Barzagan et al. (2017) found that medication non-adherence was caused by high co-payments. The researcher also found similar barriers with the help of open-ended questions. These barriers included affordability of medications and visits due to socioeconomic status. A study by Polanski and colleagues (2014) identified the barriers as medication side effects and transportation issues. In this research study, patients also listed similar barriers of non-adherence such as side effects of medications and lack of transportation.

This research study also included questions that help individuals to take their prescribed medications, which were not found in the literature review. There were multiple responses

collected from the patients which include: (a) reminders facilitate remembering to take medications, (b) home delivery of medications facilitates taking medications, (c) the ability to obtain refills helps individuals take medications, (d) medications improve health and this helps individuals take their medications, (e) appointments with the PCP facilitates taking medications, (f) access to affordable medications helps individuals take medications, and (g) having transportation to the pharmacy to fill prescriptions helps individuals take their medications.

Limitations

This research project had several limitations. The first limitation was the nominal sample size. This study was performed at Urban Urgent Care clinic which excluded individuals who did not come to this urgent care clinic for treatment. Due to the nominal sample size, the results cannot be generalized to a larger population. The second limitation of this study was the use of the Morisky Green Levine scale to measure adherence rates. This scale has fewer questions as compared to the Morisky 8-Item Medication Adherence Questionnaire.

The third limitation of this study was the use of open-ended questions, in which patients were asked to list three barriers that caused non-adherence to hypertensive medications. Some patients may have had more than three barriers to list. They were unable to list more barriers because the researcher only asked for three to be listed. Requesting that participants list more barriers may have revealed additional reasons for medication non-adherence.

Recommendations for Future Research

This research study was a pilot study with a nominal sample size. The study included a patient population from only one Urban Urgent Care Clinic; individuals who did not come to

this clinic for treatment were excluded. Future studies can be done with a larger sample size by using a more detailed questionnaire to identify various barriers that cause non-adherence to hypertensive treatment plans. The results of a study that includes a larger sample size could be generalized to the patient population to implement further interventions. Future research can also instruct the patients to list more than three barriers which would be helpful in exploring what else is causing non-adherence to their hypertension medication management.

Implications for Nursing Practice

The common reason for uncontrolled hypertension is treatment non-adherence (CDC, 2017). Treatment non-adherence refers to patients not following their treatment plans as given by their providers (CDC, 2017). The goal of this pilot study was to identify barriers that contribute to hypertensive medication non-adherence. The researcher found multiple barriers including side effects, forgetfulness, lack of time, lack of insurance, unavailable appointments, and lack of transportation. The results of the pilot study can be used to educate clinicians, nurse practitioners, and nurses regarding the barriers that cause non-adherence to hypertensive medications. In the future, clinicians and nursing staff can implement interventions to decrease these barriers. For instance, patients indicated they were unable to pick up medication due to a lack of available transportation. These patients can be advised to use home delivery methods. Medication adherence will help nurses to achieve the goal of Healthy People 2020, which is to increase prevention of heart disease and stroke, as well as improve patients' cardiovascular health.

The study done by Iuga and McGuire determined that the cost of medication adherence related to disease management is less than the cost of hospitalization due to non-adherence. Medication adherence helps to decrease the impact of emergent cases in hospitals and urgent care clinics. It further helps to lower the cost of diagnostic evaluation during emergency visits. It also decreases the impact of complications related to hypertension, which are stroke and heart diseases. This pilot study will decrease the patient load in the emergency room and increase the quality of patient care by reducing the number of patients.

Conclusion

This project was a mixed methods pilot study to identify various barriers that cause non-adherence to hypertensive medication management. The quantitative data was analyzed with the help of the Morisky Green Levine scale, which showed the medication non-adherence rate was greater when the scale score numbers were lower. The quantitative data was evaluated in SPSS version 24 using descriptive statistics. A chi-square test of association was utilized to evaluate the association between the non-adherence rate and the number of barriers. The test results revealed there was a relationship between medication non-adherence rate and number of barriers. The greater the barrier, the higher the non-adherence rate. A chi-square test was also used to evaluate the relationship between ethnicity and medication non-adherence rate and results revealed that there was no relationship between medication non-adherence rate and ethnicity. The non-adherence rate was the same in all patient ethnic groups.

The qualitative analysis included the analysis of data from open-ended questions. The data was analyzed in NVIVO to identify barriers related to hypertensive medication non-

adherence. The researcher identified multiple barriers, which were consistent with literature review findings. The common barriers were lack of time, side effects, forgetfulness, cost of medications, lack of insurance, lack of transportation, unavailable refills, and a long wait time. Further research is required to understand how to reduce these barriers to increase hypertensive patient adherence to their medication regimen.

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APPENDICES

APPENDIX A: PARTCIPANT CONSENT FORM

Informed Consent

You are invited to participate in a study. We hope to identify what prevents people from taking their blood pressure pills. The approved study will be conducted by Navpreet Kaur. This study will be run through Action Urgent Care (AUC). The director of AUC has approved this project. In this research study, we will be taking patients with high blood pressure. The study will help us find things that are getting in the way of you taking your medications. There are no direct benefits to the participants of this study. You may see indirect benefits in the future to be aware of what is preventing you from not taking your pills.

You were chosen as a possible participant in this study based off three criteria. 1) You have high blood pressure, 2) You are taking one or more pills for high blood pressure, and 3) You fall under age group 45-60 years. If you agree to participate in this research study, the researcher will provide you with a list of questions. There are no physical risks related to this research study. There is a possibility that some of the questions can hurt your feelings. It can increase the participants' mental stress. The involvement in this study is your decision. It will not affect your rights or care at AUC. You are free to remove your consent any time. There is no penalty for removing consent.

The study will help the researcher to know the struggles in high blood pressure treatment. The information will be kept strictly private. Only research personnel will have access to patient's information. All files will be safe and locked away. After completing the study, all of the information will be destroyed. The Committee for the Protection of Human Subjects at

California State University Fresno has reviewed and approved the present research.

If you have any questions at any time, please ask us. Navpreet Kaur FNP-C (408-645-7096) will be happy to answer them. Questions about the rights of the subjects may be directed to Dr. Kris Clarke, Chair, CSU Fresno Committee on the Protection of Human Subjects, (559) 278-2985.

YOUR SIGNATURE INDICATES THAT YOU HAVE DECIDED TO PARTICIPATE, HAVING READ THE INFORMATION PROVIDED ABOVE. YOUR PARTICIPATION IS PURELY VOLUNTARY. YOU CAN ALSO REMOVE YOURSELF AT ANY TIME FROM THIS STUDY.

Date   Signature

_____

Relationship to Subject

_____

Signature of Witness   Signature of Investigator

APPENDIX B: PARTICIPANT QUESTIONS

Questions for Participants

What is your ethnicity?

What is your primary language?

What is your Age?

Gender?

Answer yes or No

1) Do you ever forget to take your medication?

2) Are your careless at times about taking your medication?

3) When you feel better do you sometimes stop taking your medications?

4) Sometimes you fell worse, when you take the medication, do you stop taking medications?

Please Elaborate your answers

1) What are reasons of not taking medication? List any three.

2) What are reasons of not filling prescriptions on time? List any three.

3) What are the reasons you are not visiting your primary care physician? List any three.

4) What is helping you to take your medications? List any three reasons.