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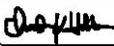
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Hypertension And Malnutrition Among Latinos Living In Rural Communities: After

Immigrating to the United States

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Abstract

The purpose of this study was to assess hypertension and malnutrition among Latinos living in rural areas in Half Moon Bay, CA. This study examined the relationship between hypertension, cultural beliefs, and stress factors. Additionally, this study examined the relationship between malnutrition, access to food, and socioeconomic status. During this study, it was found out that immigrant Latinos living in rural areas, often face many difficulties due to factors such as cultural beliefs, stress factors, access to healthy foods, and socioeconomic status. This study aimed to gather sufficient data through a survey containing contextual information. The findings of this study were used to create more awareness and a better understanding of our local communities. Data were obtained from a health assessment survey distributed to N=80 participants. All participants were patients of the Coastside RotaCare Clinic, females, and males between the ages of 18-65 years old. There was no significant difference observed in the relationship between hypertension and access to healthy foods, stress, and socioeconomic status. However, there was a significant difference was observed between hypertension and cultural beliefs of using home remedies. In this study, there was no significant difference between malnutrition and access to healthy foods, and socioeconomic status. Also, there was no significant between hypertension and stress. Thus there was a significant difference between hypertension and cultural beliefs. The findings indicate that there may be other deterrents factors that contribute to hypertension and malnutrition among Latinos living in rural communities. This study recommends further research utilizing other factors that investigate different measurements other than demographics and basic historical data.

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This thesis is dedicated to:

All hardworking Latinos living in rural areas in Half Moon Bay, CA. To God and my family for their love and support throughout this process. Especially to Dr. Christina Holub my committee chair, for her mentorship and for genuinely caring for my success as a person as well as a professional. Also, I would like to thank the Coastside RotaCare Clinic staff for their guidance and their support throughout this study. To Wilfredo Cerrato, the Clinic Operation Manager at the RotaCare Clinic, for his support and for trusting my knowledge and expertise during this study.

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Introduction

According to the Centers for Disease Control and Prevention (2015), one in six individuals living in the United States is Latino. By 2035, these numbers are expected to increase to nearly one in 4 individuals. Latinos have different health risks than whites. At least, 68% of Latinos living in the United States have poorly controlled high blood pressure (CDC, 2015). Income and access to healthy food are some social-economic factors that play a major role in the health of many Latino communities. Heart Disease is the second leading cause of death among many Hispanic/ Latino communities. Apart from this, the lack of access to healthy food can also cause health disparities for those communities living in underserved or rural communities.

Previous studies also support the idea of rural communities lack proper access to basic healthcare and provision needed for survival. Rural minorities struggle more to access resources compared to urban minorities (Duran, 2012). This could be caused by many different reasons; cultural beliefs, stress factors, access to healthy foods, and social-economic status could be some reasons. For example, previous literature states that some Latino men take pride in setting a model as providers and protectors of their loved ones, oftentimes this behavior leads to the living and working in constant pain and illness by placing their families' needs first (Lee, Sobralske, & Frackenthal, 2015). For this reason, is that it is important to identify the source/s of what exactly is causing hypertension and malnutrition among rural Latino communities.

Focusing on the prevention and early detection of hypertension and malnutrition among Latinos in rural communities, we could make a tremendous difference that could impact not just our present generation but future ones as well. Over time, early detection can also reduce the cost of health treatments and interventions, which can also save the community not only money but

also time and health. Individuals can use this time and good health to spend quality time with their loved ones.

Latinos in the U.S.

The population in the United States is constantly changing and it is becoming diverse very rapidly. According to the U.S. Census Bureau (2010), approximately 14% of the general population in the U.S. falls below the poverty level, which in Latinos ranged from 16.2% for Cubans to 26.3% for Dominicans. Economically, other Latino Communities such as Mexican Americans have an unemployment rate of 9% with a median household income of about \$22,688, which is less than the general U.S. population median income of about \$30,126 (US Census Bureau, 2011). As a minority, many Latinos experience many hardships, including low socioeconomic status and in many cases even lower educational levels. According to the U.S. Census Bureau (2010), many Latinos tend to underutilize health services, which as a consequence others only receive limited care. Concerning cardiovascular diseases such as hypertension, Latinos' health is also affected by acculturation (Cabassa, Lewis-Fernandez, Wang & Blanco, 2017).

In the United States, malnutrition is present in more than half of all undernourished households. Many of these households live in rural areas with low socioeconomic statuses and more vulnerable to health disparities; which includes hypertension and malnutrition (Shifler-Bowers, Francis, & Kraschnewski, 2018). Studies have discovered that every year nearly 50 million Americans experience food insecurity or limited access to nourishing healthy foods (Coleman-Jensen, Nord & Sing, 2013). Access to healthy food is not only a necessary but also a human right that everyone should be able to have for healthy living (McCormick and Porter,

2015). Food insecurity jeopardizes the quality of food as well as the quantity of food that one can have access to, very often, this leads to malnutrition.

Health and Health Disparities of Latinos

Research has found out that there are racial and ethnic disparities that influence food insecurity and suggests that racial and ethnic minorities living in rural disadvantaged neighborhoods are more susceptible to experience inadequate access to healthy foods, which creates disparities (McCormick and Porter, 2015). Those individuals living in low social-economic rural communities are also more likely to develop a cardiovascular disease such as hypertension; this is due to the lack of affordable nutritious foods available to them (McCormick and Porter, 2015). This forces individuals to opt for more cost-efficient options that often are not the healthiest choices. The literature also suggests that a lack of food access can cause health disparities for those individuals living in low socioeconomic statuses, which attributes to a burden of malnutrition in our communities (Shifler Bowers, Francis, & Kraschnewski, 2018). Furthermore, other studies also argue that underserved populations have barriers that limit their health, these barriers may include: uninformed health beliefs, knowledge, diverse values and insufficient access to culturally appropriate screenings (Allen, Brownstein, Satsangi & Escoffery, 2014).

To have a better understanding of the health disparities that affect Latinos in the United States it is important to understand their health and their culture. Latinos are individuals living in the United States from many different countries from Latin America, they are the largest minority group in the United States that are exposed to the burden of poverty and poor health including hypertension (Perez-Escamilla, 2011). Studies have found that individuals living in rural communities have the highest risks of having chronic illnesses, higher poverty levels,

malnutrition, and even different work conditions, compared to the general U.S population (Rhodes, Mann, Siman, Song, Alonzo, Downs & Hall, 2015). First-generation Latino immigrants experience many barriers that block them from accessing proper healthcare services when needed. Some of the barriers include negative acculturation, discrimination, language, and lack of health insurance coverage. These barriers not only create health disparities but inequality among the U.S. population. Other studies have found a strong relationship between acculturation and malnutrition. There has been a consistent change in lifestyles associated with eating habits that negatively affect Latinos when they attempt to adapt to a new culture. Often this is related to an increase in the consumption of fast food, and a decrease in the consumption of healthy homemade meals (Perez-Escamilla, 2011).

Factors Impacting Latino Health

As mentioned before, many barriers negatively impact Latino health. For many first immigrant generations, these barriers are often associated with socioeconomic factors. Literature confirms that foreign and U.S born Latinos' health declines with continuous exposure to unhealthy conditions caused by the negative effects of acculturation. For example, unhealthy weight gain and malnutrition caused by difficulties to adapt to a new culture; which may cause chronic health conditions in the future. (Riosmena, Everett, Rogers, & Dennis, 2015). Also, immigration status is a very common factor that not only causes stress but also impacts Latino health in general. Undocumented immigrants have fewer opportunities to access proper health care in comparison to documented immigrants. To reduce the negative impact that these factors can cause, it is important to invest in the evaluation and implementation of cultural adequate interventions (Cabassa, Lewis-Fernandez, Wang, & Blanco, 2017).

Previous studies support the idea that cultural influence has a big impact on individuals' perceptions of health, and life in general. It is essential to understand the culture of our Latino communities to improve it and provide the services focused on the need of the Latino communities (Villatoro, Morales, & Mays, 2014). Other studies also reveal that familismo (*loyalty to family values*) impacts the way Latino individuals think about their health and wellbeing (De Herrera, Fu, Bloch, & Mendoza, 2018). On many occasions, individuals tend to seek help from extended family, traditional healers, and homemade remedies; rather than visit a health professional to address their health conditions appropriately (American Psychiatric Association, 2013).

Demographics of Half Moon Bay

The total population in Half Moon Bay is about 11,324 individuals. According to the U.S. Census Bureau (2010), there are at least 23.2% of Latinos currently living in Half Moon Bay, CA. As of July 2019, this percentage increased to 29.2%. Out of the total population, 24.1% of the population is foreign-born, and 75.9% are U.S citizens. Also, it is important to note that 6.1% of these individuals are currently living in poverty, 3.8% of the total population work on farming, fishing & forestry, and 14.9% work as construction or laborer workers (US Census Bureau, 2011).

Purpose Statement

The purpose of this study was to examine the relationship between hypertension, cultural beliefs, and stress factors. Additionally, this thesis examined the relationship between malnutrition, access to food, and socioeconomic status.

Study Goal

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

The goal of this study is to investigate hypertension and malnutrition among Latinos living in rural areas in Half Moon Bay, CA after immigrating to the United States. Therefore, this study will answer the following research questions:

1. Do cultural beliefs and stress factors influence the development and/or progression of hypertension in Latinos living in rural communities?
2. How the lack of proper access to foods contributes to an increase in malnutrition in Latinos living in rural areas?
3. How do socioeconomic conditions influence the development of malnutrition in Latinos after immigrating to the US?

To answer the research questions mentioned above, the following specific aims were analyzed:

1. To identify specific cultural beliefs and stress factors that contribute to higher risks of hypertension in Latinos living in rural areas.
2. To assess the access to food and the relationship to malnutrition in Latinos living in rural areas.
3. To identify specific socio-economic conditions that contribute to malnutrition among Latinos living in rural areas.

The following hypotheses were developed:

Null Hypothesis

H₀1: There was no significant relationship between hypertension and cultural beliefs.

H₀2: There was no significant relationship between hypertension and stress factors.

H₀3: There was no significant relationship between malnutrition and access to food.

H₀4: There was no significant relationship between malnutrition and socioeconomic status.

Methods

Participants

Participants (n=80) were recruited from a rural Latino community in the town of Half Moon Bay CA. Targeting approximately eighty Latinos participants. These participants were current patients at the Coastside RotaCare Primary Care Clinic. The Coastside RotaCare Clinic serves a total of approximately 2000 individuals; from which 700 are active patients, and 92% of those are Latinos. Participants were asked for their voluntary participation in the study. After a verbal consent to participate has been obtained, a written survey was handed to them.

Recruitment occurred every Wednesday at the clinic's lobby area, while patients wait for their appointments. The survey contained five sections. Each of these sections focused on assessing the following areas:

- a. Health History
- b. Blood Pressure and Lifestyle
- c. Health State “Today”
- d. Food Security
- e. Demographic Information

Every question in this survey included categorical and dichotomous questions. The inclusion criteria for participants included being Latino male or female, between the ages of 18 and 65 years old, and residents for rural communities in Half Moon Bay, CA. A total of 80 individuals were recruited for this study. Also, it is important to mention that all procedures were approved by the Coastside RotaCare Primary Care Clinic operations manager. See attachment for a copy of the English version of the survey in the Appendix.

Study Design

In this study, a sectional study design was used, in which data were analyzed to determine if factors such as cultural beliefs, stress factors, access to healthy food, and socio-economic status have a relationship with hypertension and malnutrition in the targeted population. This study measured the outcomes and the exposure of both of my independent and dependent variables. For this study, it was essential to determine the participants' general knowledge about hypertension and malnutrition.

Measures

The independent variables for this study were: cultural beliefs, stress factors, access to food, and social-economic status. Subsequently, the dependent variables were: hypertension and malnutrition. To gather this information, participants were asked dichotomous questions, which measured and analyzed based on the impact on hypertension and malnutrition. These questions allowed participants to check to mark they are answered with dichotomous responses, such as yes or no responses, if applicable.

Cultural beliefs were measured on a dichotomous scale. Participants were asked, "Have you taken any "home remedies" to lower your high blood pressure?" The question allowed participants to answer yes or no. The words "home remedies" used to identify individuals who culturally believed that home remedies can be used as an alternate medication to treat hypertension.

A series of questions were asked to measure stress factors on the survey. Even though other questions related to stress, this study focused on the following: "Please check which statement best describes your health state today; (a)mobility, (b)self-care and/or

(c)anxiety/depression” For this question, participants were allowed to mark whether or not they had problems with mobility, self-care, and anxiety-depression that caused them stress.

Access to food was measured on a dichotomous scale. Questions that were asked in the survey included: "Do you worry whether the food would run out before I got money to buy more?" and "In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?" The answers to both questions were utilized separately to measure access to food.

A series of questions were asked to determine how socio-economic factors contribute to malnutrition. Some of the questions were: “Could you afford to eat balanced meals?” and “Are you employed or unemployed?” These questions were measured on a dichotomous scale.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) version 25.0 was used to analyze the data (SPSS; IBM corp., Armonk, NY). The data were reviewed for completion before be entered into SPSS. General descriptive statistics that included percentages, frequencies, and p-values were conducted to examine the results. A Chi-squared test was used to determine any relationships between the independent variables and dependent variables. Additionally, *P*-values were obtained by conducting a Chi-square test. For this study, the Alpha level of significance was $p < 0.05$ to determine the statistical significance. Test results with a $p < 0.05$ reject the null hypothesis, and a $p > 0.05$ fails to reject the null hypothesis and favors an alternative hypothesis. The independent variables for this study are cultural beliefs, stress levels, access to food social-economic status. Furthermore, my dependent variables are hypertension and malnutrition. The following formula will be used to support the analyses:

$$\text{Malnutrition} = a + b_1(\text{access to food}) + b_2(\text{socio-economic conditions})$$

$$\text{Hypertension} = a + b_1(\text{cultural beliefs}) + b_2(\text{stress factors})$$

Budget and Resource Management

In terms of budget, there was a small amount of money that was set on the side of administrative expenses. The total budget is \$30.00. This amount will be allocated for copy paper and printing supplies for the surveys used during the data collection process. There are no other unexpected expenses at the time of this study.

Regarding resource management, there is a plan to utilize all the resources that the RotaCare clinic has to offer in order to obtain the approximate 80 participants in this study. I planned to allocate some time (approximately one month) to obtain as many surveys as possible.

Results

The purpose of this study was to examine factors that contribute to hypertension and malnutrition among Latinos living in rural communities in Half Moon Bay, California. Consequently, the goal was to answer the following research questions: (1) Do cultural beliefs and stress factors influence the development and/or progression of hypertension in Latinos living in rural communities? (2) How the lack of proper access to foods contributes to an increase in malnutrition in Latinos living in rural areas? (3) How do socioeconomic conditions influence the development of malnutrition in Latinos after immigrating to the US?

It was hypothesized that: (1) There was no significant relationship between hypertension and cultural beliefs. (2) There was no significant relationship between hypertension and stress factors. (3) There was no significant relationship between malnutrition and access to food. (4) There was no significant relationship between malnutrition and socioeconomic status.

To test these hypotheses and these research questions the following aims were analyzed: (1) To identify if cultural beliefs and stress factors contribute to higher risks of hypertension in

Latinos living in rural areas. (2) To assess the accessibility to healthy foods, available to Latinos living in rural areas. (3) To assess if socio-economic status contributes to malnutrition among Latinos living in rural areas.

Participants

A total of 80 participants were recruited. Out of these 80 participants, 43 (54%) participants were women, and 37 (46%) were men, between the ages of 18 and 65 years old (Table 1). A total of 41 (51.3) % of the participants reported having been diagnosed with hypertension (Table 2). The results also indicated that 34 (42.5%) of the participants have lost weight due to not being able to afford food to eat (Table 3)

Hypertension: Cultural beliefs

Hypothesis 01 stated that there was no significant relationship between hypertension and cultural beliefs. This study found that there is a significant relationship was found, as result, the test rejects the null hypothesis and favors the alternative hypothesis that states that there is a significant difference between hypertension and cultural beliefs ($p=.001$; Table 4). These results relate to previous literature that argues that on many occasions individuals tend to seek help from extended family, traditional healers, and homemade remedies; rather than visit a health professional to address their health conditions appropriately (American Psychiatric Association, 2019.)

Hypertension: Stress factors

Hypothesis 02 stated that there was no significant relationship between hypertension and stress factors: mobility, self-care, and anxiety. This study found that there was not a significant difference between hypertension and stress factors: mobility, self-care, and anxiety/depression.

As a result, the test fails to reject the null hypothesis (mobility: $p=.288$, self-care $p=.848$, and anxiety/depression $p=.773$; table 4).

Malnutrition: Access to food

Hypothesis 03 stated that there was no significant relationship between malnutrition and access to food. This study found that there was no significant difference between malnutrition and access to food. As result, the test fails to reject the null hypothesis ($p=.130$ & $p=.081$; Table 4).

Malnutrition: Socioeconomic Status

Hypothesis 04 stated that there was no significant relationship between malnutrition and socioeconomic status. This study found that there was no significant difference between malnutrition and socio-economic status ($p=.133$; Table 4).

This study explored the relationship between hypertension and malnutrition and factors such as cultural beliefs, stress factors, access to food, and socio-economic factors. A Chi-square test was used to test four hypotheses. As a result, this study's null hypothesis 01 was rejected and favored an alternate hypothesis, which stated that there is a significant difference between hypertension and cultural beliefs in Latinos living in rural communities. On the other hand, this study's null hypotheses 2-4 failed to be rejected; as they stated that there was no statistically significant relationship between hypertension and stress factors; as well as no statistically significant relationship between malnutrition and access to food and socioeconomic status.

Discussion

The results in this study revealed that there was no statistical difference between some of the independent variables and the dependent variables, except for one variable. There was a significant difference between hypertension and cultural beliefs. Cultural beliefs were measured based on the individuals' cultural opinion that home remedies can help improve wellbeing. The data indicate that at least 36 (45%) participants responded "Yes" and 44 (55%) participants responded "No" to the question: "Have you taken any "home remedies" to lower your high blood pressure?" ($p = .001$; Table 4). This question addressed "home remedies" to any medication prepared at home that is known to the individual to cure illnesses based on cultural beliefs. This study contributes to previous literature that states that underserved populations have barriers that limit their health, these barriers may include: uninformed health beliefs, knowledge, diverse values and insufficient access to culturally appropriate screenings (Allen, Brownstein, Satsangi & Escoffery, 2014).

On the other hand, the results indicated that there was no significant difference between hypertension and stress factors: mobility, self-care, and anxiety/depression. A feasible explanation to this result may be the lack of in-depth questions in the data, for example, questions could have been asked stating more specific questions related to stress. Observed results indicated that: 11 (13.8%) of the participants faced problems with mobility, 34 (42.5%) of the participants faced problems with self-care, and 50 (62.5%) of the participants faced anxiety problems (Table 2). Differently, the literature suggests that individuals with hypertension and other cardiovascular illnesses have a higher incidence of chronic stress due to the burden they carry for not being able to live a healthier life (Snider, Linthicum, Wu, LaVallee, Lakdawalla, Hegazi & Matarese, 2014). As well as the pressure that they experience to acculturate and adapt

to the new American culture while experiencing the stress of daily routines or other health issues (De Herrera, Bloch, & Mendoza, 2018).

The results of this study did not indicate a statistical difference between malnutrition and access to food, which contradicts findings from previous studies that have discovered that every year nearly 50 million Americans experience food insecurity or limited access to nourishing healthy foods (Coleman-Jensen, Nord & Sing, 2013). A possible explanation to the results presented in this study may be related to the fact that individuals do have access to food, however, they may not have enough time to prepare a balanced meal at home. Also, it is possible that the questions in the survey did not address factors such as time management and willingness to prepared balanced healthy foods.

Another unexpected result indicated that malnutrition is not significantly related to socio-economic status. A total of 43 (53.8%) participants indicated that they were employed and 37 (46.3%) indicated that they were unemployed. This finding is interesting as previous literature suggests that individuals living in low social-economic rural communities are also more likely to develop a cardiovascular disease such as hypertension; this is due to the lack of affordable nutritious foods available to them (McCormick and Porter, 2015). A possible explanation of this could be that those 37 participants were not the only ones receiving an income in their home, and they may have someone else providing financial support to them.

Potential Limitations and Implications

Some limitations apply to this study. It will be necessary to conduct a wider study that will include more participants, as it was difficult to find a significant relationship in this study. There was a lack of variety in the questions asked specifically related to stress factors. There were more questions asked related to hypertension, which create an imbalance. It will necessary

to include questions that are concrete and culturally sensitive, as the questions included in the survey may have created confusion among the participants. A strength in this study is that information was collected directly on hypertension and malnutrition using standardized questions.

In general, cardiovascular disease is the leading cause of death in the United States. Latinos being the largest ethnic minority in the United States are most vulnerable to contract hypertension and experience other health disparities (CDC, 2015). Research has also found out that rural residents have higher rates of chronic diseases compared to their urban neighbors (Befort, Nazir, Perri, 2012). Hypertension and malnutrition could contribute to this health disparity. Hypertension among Latinos can be reduced by promoting not only awareness but also and proper health education. For this reason, further focus regarding cardiovascular health in Latinos will lead to important improvements in the overall public health system in the United States. This study will help health promotion to proactively improve the health of our communities and raise more awareness. This is a high disparity and my part in this study is to help to promote awareness and education. Everyone deserves equal access to health services and education.

Conclusion

In this study, there was no significant difference between malnutrition and access to healthy foods, and socioeconomic status. Also, there was no significant between hypertension and stress. Thus, there was a significant difference between hypertension and cultural beliefs. The findings indicate that there might be other determinants factors that contribute to hypertension and malnutrition among Latinos living in rural communities. This study recommends further

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research utilizing other factors that investigate different measurements other than demographics and basic historical data.

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TABLES

Table 1. Demographic Data Latino living in rural communities study, Half Moon Bay, California 2019

| | Total | | Women | | Men | |
|------------------------|--------------|-------------|--------------|------------|-------------|------------|
| | N=80 | 100% | N=43 | 54% | N=37 | 46% |
| Age in years | | | | | | |
| 18-30 | 10 | 12.5% | 5 | 12.0% | 5 | 14.0% |
| 31-40 | 20 | 25.0% | 16 | 37.0% | 4 | 11.0% |
| 41-50 | 29 | 36.0% | 14 | 32.0% | 15 | 41.0% |
| 51-60 | 15 | 18.8% | 5 | 12.0% | 10 | 27.0% |
| 61 + | 6 | 07.5% | 3 | 07.0% | 3 | 08.0% |
| Average Income | | | | | | |
| < \$10,000 | 18 | 22.5% | 10 | 23.0% | 8 | 22.0% |
| \$10,000-\$19,000 | 9 | 11.3% | 4 | 09.0% | 5 | 14.0% |
| \$20,000-\$29,000 | 13 | 16.3% | 9 | 21.0% | 4 | 11.0% |
| \$30,000-\$39,000 | 19 | 23.8% | 10 | 23.0% | 9 | 24.0% |
| \$40,000-\$49,000 | 16 | 20.0% | 6 | 14.0% | 10 | 27.0% |
| \$50,000-\$59,000 | 4 | 05.0% | 3 | 07.0% | 1 | 02.0% |
| \$60,000-\$69,000 | 1 | 01.0% | 1 | 02.0% | 0 | 00.0% |
| \$70,000 + | 0 | 00.0% | 0 | 00.0% | 0 | 00.0% |
| Employment | | | | | | |
| Employed | 43 | 53.7% | 14 | 33.0% | 12 | 32.0% |
| Not currently employed | 37 | 46.3% | 20 | 47.0% | 17 | 46.0% |

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

Table 2. Hypertension; Latinos living in rural communities study, Half Moon Bay, California 2019

| Hypertension history | Total | | Women | | Men | | |
|--|-----------------------------|----------|--------------|----------|-------------|----------|-------|
| | N=80 | % | N=43 | % | N=37 | % | |
| Diagnosed with Hypertension? | | | | | | | |
| | <i>Yes</i> | 41 | 51.3% | 22 | 27.5% | 19 | 23.8% |
| | <i>No</i> | 39 | 48.8% | 21 | 26.3% | 18 | 22.5% |
| Did your mother or father died or suffered a heart attack or stroke before they were 65 years old? | | | | | | | |
| | <i>Yes</i> | 29 | 38.8% | 18 | 22.5% | 13 | 16.3% |
| | <i>No</i> | 49 | 63.5% | 22 | 29.7% | 27 | 33.8% |
| Have you taken any “home remedies” to lower your high blood pressure? | | | | | | | |
| | <i>Yes</i> | 36 | 45% | 19 | 23.8% | 17 | 21.3% |
| | <i>No</i> | 44 | 55% | 24 | 30.0% | 19 | 23.8% |
| Health status: Any problems with the following: | | | | | | | |
| Mobility | | | | | | | |
| | <i>Yes</i> | 11 | 13.8% | 5 | 06.3% | 6 | 07.5% |
| | <i>No</i> | 69 | 86.3% | 38 | 47.5% | 31 | 38.8% |
| Self-care | | | | | | | |
| | <i>Yes</i> | 34 | 42.5% | 16 | 20.0% | 18 | 22.5% |
| | <i>No</i> | 46 | 57.5% | 27 | 33.8% | 19 | 23.8% |
| Anxiety/Depression | | | | | | | |
| | <i>Yes</i> | 50 | 62.5% | 26 | 32.5% | 24 | 30.0% |
| | <i>No</i> | 30 | 37.5% | 17 | 21.3% | 13 | 16.3% |
| Are you NOW taking any medication prescribed by a doctor due to your high blood pressure? | | | | | | | |
| | <i>Yes</i> | 17 | 21.2% | 10 | 12.5% | 7 | 08.7% |
| | <i>No</i> | 63 | 78.7% | 34 | 42.5% | 29 | 36.2% |
| How long have you been taking medication for high blood pressure? | | | | | | | |
| | <i>< 1yr</i> | 12 | 15.0% | 7 | 17.9% | 5 | 12.8% |
| | <i>1-2 years</i> | 22 | 27.5% | 7 | 17.9% | 15 | 38.5% |
| | <i>> 2 years</i> | 5 | 06.3% | 3 | 7.7% | 2 | 02.6% |
| | <i>No medication</i> | 41 | 51.3% | 15 | 18.8% | 26 | 32.5% |
| How concerned are you about your blood pressure level at this time? | | | | | | | |
| | <i>Not at all concerned</i> | 3 | 03.8% | 3 | 03.8% | 0 | 00.0% |
| | <i>A little concerned</i> | 11 | 13.8% | 6 | 07.5% | 5 | 06.3% |
| | <i>Somewhat concerned</i> | 37 | 46.3% | 21 | 26.3% | 16 | 20.0% |
| | <i>Very concerned</i> | 29 | 36.3% | 13 | 16.3% | 16 | 20.0% |
| During the past 12 months, have you had hypertension or high blood pressure? | | | | | | | |
| | <i>Yes</i> | 25 | 31.3% | 13 | 16.3% | 12 | 15.0% |
| | <i>No</i> | 55 | 68.8% | 29 | 36.3% | 26 | 32.5% |
| Has your doctor or health care provider ever told you what your blood pressure GOAL should be? | | | | | | | |
| | <i>Yes</i> | 40 | 50.0% | 22 | 27.5% | 18 | 22.5% |
| | <i>No</i> | 7 | 08.8% | 2 | 02.5% | 5 | 06.3% |
| | <i>I don't know</i> | 33 | 41.3% | 18 | 22.5% | 15 | 18.8% |

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

How often can you tell by the way you feel that your blood pressure is too high?

| | | | | | | |
|------------------|----|-------|----|-------|----|-------|
| <i>Never</i> | 4 | 05.0% | 2 | 02.5% | 2 | 02.5% |
| <i>Rarely</i> | 23 | 28.8% | 14 | 17.5% | 9 | 11.3% |
| <i>Sometimes</i> | 37 | 46.3% | 19 | 23.8% | 18 | 22.5% |
| <i>Usually</i> | 12 | 15.0% | 5 | 06.3% | 7 | 08.8% |
| <i>Always</i> | 4 | 05.0% | 3 | 03.8% | 1 | 01.3% |

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

Table 3. Malnutrition; Latinos living in rural communities study, Half Moon Bay, California 2019.

| Malnutrition history | Total | | Women | | Men | |
|---|--------------|----------|--------------|----------|-------------|----------|
| | N=80 | % | N=43 | % | N=37 | % |
| In the last 30 days, did you lose weight because there wasn't enough money for food? | | | | | | |
| <i>Yes</i> | 34 | 42.5% | 15 | 18.8% | 19 | 23.8% |
| <i>No</i> | 41 | 51.3% | 26 | 32.5% | 15 | 18.8% |
| <i>I don't Know</i> | 5 | 06.3% | 2 | 02.5% | 3 | 03.8% |
| In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food? | | | | | | |
| <i>Yes</i> | 49 | 61.3% | 25 | 31.3% | 24 | 30.0% |
| <i>No</i> | 23 | 28.8% | 13 | 16.3% | 10 | 12.5% |
| <i>I don't Know</i> | 8 | 10.0% | 3 | 03.8% | 5 | 06.3% |
| In the last 30 days, did you ever cut the size of your meals or skip meals because there wasn't enough money for food? | | | | | | |
| <i>Yes</i> | 52 | 65% | 29 | 36.3% | 23 | 28.7% |
| <i>No</i> | 28 | 35% | 14 | 17.5% | 14 | 17.5% |
| I couldn't afford to eat balanced meals. | | | | | | |
| <i>Often</i> | 3 | 03.8% | 2 | 02.5% | 1 | 01.3% |
| <i>Sometimes True</i> | 40 | 50.0% | 19 | 23.8% | 21 | 26.3% |
| <i>Always True</i> | 37 | 46.3% | 21 | 26.3% | 16 | 20.0% |
| Do you worry whether the food would run out before I got money to get more? | | | | | | |
| <i>Often</i> | 3 | 03.8% | 2 | 2.5% | 1 | 1.3% |
| <i>Sometimes True</i> | 28 | 35.0% | 13 | 16.3% | 15 | 18.8% |
| <i>Always True</i> | 49 | 61.3% | 28 | 35.0% | 21 | 26.3% |
| Eat 5 or more servings of vegetables and fruit a day. How hard do you think it would be for you to follow this guideline? | | | | | | |
| <i>Not hard at all</i> | 13 | 16.3% | 8 | 10.0% | 5 | 06.3% |
| <i>Moderately hard</i> | 38 | 47.5% | 18 | 22.5% | 20 | 25.0% |
| <i>Very hard</i> | 29 | 36.3% | 17 | 21.3% | 12 | 15.0% |

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

Table 4. Pearson Chi-Square Test on hypertension and malnutrition; Latino rural community study, Half Moon Bay, California 2019.

| Variables | Total n= 80 | | | | p-value | Chi-square |
|--|----------------|-------|----|-------|---------|------------|
| | Yes | % | No | % | | |
| <u>Hypertension</u> | | | | | | |
| <i>Cultural Beliefs</i> | | | | | | |
| Have you taken any “home remedies” to lower your high blood pressure? | 36 | 45% | 44 | 55% | .001 | 11.523 |
| <i>Stress Factors</i> | | | | | | |
| Health state | | | | | | |
| <i>Mobility</i> | 11 | 13.8% | 69 | 86.3% | .288 | 1.131 |
| <i>Self-care</i> | 34 | 37.5% | 46 | 62.5% | .848 | .037 |
| <i>Anxiety/Depression</i> | 50 | 61.3% | 30 | 38.8% | .773 | .083 |
| <u>Malnutrition</u> | | | | | | |
| <i>Access to food</i> | | | | | | |
| I worried whether the food would run out before I got money to buy more. | 59 | 73.8% | 21 | 26.3% | .130 | 2.292 |
| In the last 30 days, were you ever hungry but didn’t eat because there wasn’t enough money for food? | 54 | 67.5% | 26 | 32.5% | .081 | 3.044 |
| <i>Social-economic conditions</i> | | | | | | |
| Could you afford to eat balanced meals | 50 | 62.5% | 30 | 37.5% | .133 | 2.259 |
| What is your current employment status? | | | | | | |
| <i>Employed</i> | 43 | 53.8% | 37 | 43.6% | .189 | 3.333 |

* $p < 0.05$ for statistical significance.

Appendix

Hypertension and Malnutrition Survey

A. HEALTH HISTORY

1. Have you ever been told by a doctor or other health provider that you had any of the following?

| YES | NO | | YES | NO | |
|-----|----|----------------------------------|-----|----|----------------------|
| | | A heart attack | | | Enlarged heart |
| | | Congestive heart failure | | | Angina (chest pain) |
| | | A coronary bypass | | | A stroke |
| | | High Cholesterol | | | Hypertension |
| | | Hypotension | | | Weakness on one side |
| | | Fainting or losing consciousness | | | Loss of balance |

2. Did your mother or father die from or suffer a heart attack or stroke before she was 65 years old?
- Yes
 - No
 - Don't know/Not applicable

3. Within the past 30 days, have you had the following problems?

| YES | NO | | YES | NO | |
|-----|----|------------------------------|-----|----|-----------------------------|
| | | Dizziness | | | Frequent depressed |
| | | Headaches | | | Frequent thirst |
| | | Shortness of breath | | | Blurry vision |
| | | Feeling tired | | | Dry mouth |
| | | Racing heart | | | Numbness, tingling of hands |
| | | Feeling weak when I stand up | | | Leg pain or swelling |
| | | Cold hands or feet | | | Leg cramps |
| | | Difficulty breathing | | | Difficulty sleeping |
| | | Constipation or diarrhea | | | |

B. BLOOD PRESSURE AND LIFESTYLE

1. During the past 12 months, have you had hypertension or high blood pressure?
- Yes
 - No
2. Are you NOW taking any medication prescribed by a doctor doe your high blood pressure?
- Yes
 - No
3. Have you taken any "home remedies" to lower your high blood pressure?

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- Yes
 - No
4. How long have you been taking medication for high blood pressure?
- Less than 1 year
 - 1-2 years
 - More than 2 years
 - Don't know
5. Has your doctor or health care provider ever told you what your blood pressure GOAL should be?
- Yes, he/she told me my blood pressure numbers should be: ____/____ or lower
 - No, he/she has never told me what my blood pressure numbers should be.
 - I don't know.
6. What do you think your blood pressure numbers should be?
- I think my blood pressure numbers should be: ____/____ or lower
 - I don't know what my blood pressure numbers should be
7. How often can you tell by the way you feel that your blood pressure is too high?
- Never
 - Rarely
 - Sometimes
 - Usually
 - Always
8. How concerned are you about your blood pressure level at this time?
- Very Concerned
 - Somewhat concerned
 - A little concerned
 - Not at all concerned

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

9. The following are some medical guidelines for lowering blood pressure. In columns I and II, please check how hard and how helpful you think it would be for you to follow each guideline, even if you have not tried to follow this guideline.

| | I How hard do you think it would be for you to follow this guideline? | II How helpful do you think it would be for you to follow this guideline? |
|--|--|---|
| 1. Reduce the salt or sodium in your diet if needed | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |
| 2. Walk or exercise 30 minutes per day 5 days a week | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |
| 3. Eat 5 or more servings of vegetables and fruit a day | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |
| 4. Maintain normal weight or lose weight if needed | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |
| 5. Use alcohol in moderation (no more than 1-2 drinks per day) | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |
| 6. Take blood pressure medication every day | <input type="checkbox"/> Very hard <input type="checkbox"/> Moderately hard <input type="checkbox"/> Not at all hard | <input type="checkbox"/> Very helpful <input type="checkbox"/> Moderately helpful <input type="checkbox"/> Not at all helpful |

10. Do you currently use the following methods for monitoring your health and lifestyle?

| | Yes | No |
|--|-----|----|
| a. I use a blood pressure monitor to check my blood pressure at home | | |
| b. I check food labels to help control or reduce the salt or sodium in my diet | | |

11. Think about the time you spent walking in the last 7 days. This includes at work and home, walking to work and other places, and any other walking you do for recreation, sport, exercise, or leisure.

In the last 7 days, about how many days did you walk at least 30 minutes per day? (IF NONE, WRITE '0' ON THE LINE.)

_____ days

12. Next, think about the time you spent doing other aerobic physical activities in the last 7 days. This includes any activity that takes physical effort and makes you breathe harder than normal (e.g., bicycling, water aerobics, basketball, dancing fast, washing floors, heavy lifting).

In the last 7 days, about how many days did you do other aerobic physical activities at least 30 minutes per day? (IF NONE, WRITE '0' ON THE LINE.)

_____ days

13. How many servings of fruit do you eat in a typical day? A serving includes 1 medium fruit, ½ cup fresh, frozen, or canned fruit, ¼ cup dried fruit, or 6 ounces fruit juice. (IF NONE, WRITE '0' ON THE LINE.)
- _____ Fruit servings per day

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14. How many servings of vegetables do you eat in a typical day? A serving includes 1 cup raw leafy vegetables, ½ cup cooked or cut-up vegetable, or 6 ounces vegetable juice. (IF NONE, WRITE '0' ON THE LINE.)
____ Vegetable servings per day
15. During the last 30 days, about how many days did you drink any type of alcoholic beverage?/week (IF NONE, PLEASE WRITE '0' ON THE LINE.)
____ Days/week
16. If you drank any alcoholic beverage during the last 30 days, how many drinks did you usually have per day? (One drink equals one 5 oz. the glass of wine, one 12 oz. can/bottle of beer or one shot of whiskey/hard liquor.)
 None (never drank alcohol during last 30 days)
 1 drink/shot
 2 drinks/shots
 3 drinks/shots
 4 drinks/shots
 5 drinks/shots
 More than 6 drinks/shots
17. Do you currently smoke?
 Yes
 No

HYPERTENSION AND MALNUTRITION AMONG LATINOS LIVING IN RURAL COMMUNITIES

18. Please check the number of times you have eaten the following foods in the past 2 days, not counting today.

| | |
|-------------------------------------|--|
| a. Salty Snack | <input type="checkbox"/> Never <input type="checkbox"/> 1-2 times <input type="checkbox"/> 3-4 times <input type="checkbox"/> 5-6 times <input type="checkbox"/> 7 times or more |
| b. Fast food, pizza, or frozen meal | <input type="checkbox"/> Never <input type="checkbox"/> 1-2 times <input type="checkbox"/> 3-4 times <input type="checkbox"/> 5-6 times <input type="checkbox"/> 7 times or more |
| c. Canned vegetables or soup | <input type="checkbox"/> Never <input type="checkbox"/> 1-2 times <input type="checkbox"/> 3-4 times <input type="checkbox"/> 5-6 times <input type="checkbox"/> 7 times or more |

C. HEALTH STATE TODAY

1. Please check which statement best describes your health state today.

- a. Mobility
 - Yes, I have problems walking
 - No, I don't problems walking

- b. Self-Care
 - Yes, I have problems with self-care
 - No, I don't problems with self-care

- c. Anxiety/Depression
 - Yes, I am anxious or depressed
 - No, I anxious or depressed

2. Below is a scale for helping people rate their health state. The worst state you can imagine is marked by 0. The best state you can imagine is marked by 100. CIRCLE one number that indicates how good or bad your health state is today.

| | | | | | | | | | | |
|-------------------------------|----|----|----|----|----|----|----|----|----|------------------------------|
| 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| Worst imaginable health state | | | | | | | | | | Best imaginable health state |

D. FOOD SECURITY

1. At any time in the last 12 months have you received food stamp/WIC program benefits?
 - Yes
 - No
 - Refused
 - Don't know

2. I'm going to read you several statements that people have made about their food situation. For these statements, please tell me whether the statement was often true, sometimes true, or never true.

| | |
|---|---|
| a. I worried whether the food would run out before I got money to buy more. | <input type="checkbox"/> Often <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> Refused <input type="checkbox"/> Don't know |
| b. The food I bought just didn't last and I didn't have money to get more. | <input type="checkbox"/> Often <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> Refused <input type="checkbox"/> Don't know |
| c. I couldn't afford to eat balanced meals | <input type="checkbox"/> Often <input type="checkbox"/> Sometimes true <input type="checkbox"/> Never true <input type="checkbox"/> Refused <input type="checkbox"/> Don't know |
| d. In the last 30 days, did you ever cut the size of your meals or skip meals because there wasn't enough money for food? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know |
| e. In the last 30 days, how many days did this happen? | <input type="checkbox"/> 1-10 times <input type="checkbox"/> Refused <input type="checkbox"/> Don't know |
| f. In the last 30 days, did you eat less than you felt you should because there wasn't enough money for food? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know |
| g. In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know |
| h. In the last 30 days, did you lose weight because there wasn't enough money for food? | <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know |

E. DEMOGRAPHIC INFORMATION

1. Are you male or female?
 - Male
 - Female

2. What is your age?
 - 18-30
 - 31-40
 - 41-50
 - 51-60
 - 61+

3. What is your current employment status?
 - Employed
 - Not currently employed

4. What was your total household income in the past 12 months, from all sources? Please include income earned by you and other members of your household.
 - Less than \$10,000
 - \$10,000-\$19,000
 - \$20,000-\$29,000
 - \$30,000-\$39,000
 - \$40,000-\$49,000
 - \$50,000-\$59,000
 - \$60,000-\$69,000
 - \$70,000 or more