

Researching Hispanic Health Risks

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Through the honors college, I have the privilege of doing my thesis research and applying it to my senior capstone. This summer I began doing my research on the topic of how Hispanics have a higher rate of having a stroke rather than any other ethnicity. Dr. Tim Passmore, president of the American Therapeutic Recreation Association, gave me a few broad ideas of what I could write about, and I chose this topic over the summer. I chose this topic because it genuinely fascinates me about the statistics and analysis studies behind it. A researcher from Michigan was performing some research at Christus Spohn Shoreline Hospital in Corpus Christi, Texas to determine why and the risk factors Hispanics have.

For the Hispanic population, they have a significantly higher rate of health risks due to various factors. This topic has been researched over the years, especially in Corpus Christi, since there is a large population of Hispanics in the southernmost part of Texas (Morgenstern, 778). This researcher used some of our data from our treatments for her findings to determine why Hispanics do have more negative health factors compared to non-Hispanic ethnicities. She performed this study by being “blinded to [their] ethnicity and age,” so there was no biasness (Morgenstern, 777). The Michigan researcher also used the information collected to determine what diagnoses each ethnicity of patient had within the Christus Spohn Shoreline hospital. The statistics that were gathered proved that “there were 2,604 ischemic strokes” in Hispanics while there were only “2,042 non-Hispanic” patients with a first time ischemic stroke to be admitted into the hospital (Morgenstern, 778). However, her study did provide information regarding that Hispanics and non-Hispanics were similar in the fact that all of the patients were greater than or equal to “60 years old” (Morgenstern, 779). This research will help the Hispanic

society with their overall health. This would provide this ethnicity in the United States have more awareness regarding their health to help prevent strokes, heart attacks or obesity from occurring.

With that being said, it is important that this topic is researched and promoted because more Hispanics have severe negative health issues than any other ethnicity today. These findings from this particular analysis study have shown that Hispanics are not up-to-date with their health and what to do to maintain a healthy lifestyle. Our society should help all ethnicities, especially Hispanics, to have a healthier lifestyle and to understand what that is by having a health protection promotion. This could include having an event specifically for those needing information regarding their health that could include “health risk assessments, wellness initiatives or immunizations” (Hymel, 695). Our society today would greatly benefit from more healthcare informational events as a whole. If our community is more aware of their specific ethnicity’s genetic risk factors, then there might be an impact on those individuals to start preventing those diseases from occurring now rather than later in life. This would result in all ethnicities of our world today to have more knowledge about their culture, and what they can do as an individual to impact the United States in a positive way by becoming a “healthier workforce” (Hymel, 696).

As for Christus Spohn Shoreline Hospital’s vision statement and this topic, it states that this hospital “will be a leader, a partner and an advocate” for creating revolutionary solutions to those needing help to improve their overall wellness (Our Mission, 1). The Christus Spohn Shoreline committee believes that their hospital and staff will be leaders within the community to help others in need. Therefore, the staff and administrators will be leaders inside and out of the hospital to encourage others’ with their health care needs. The Christus Spohn Shoreline staff coordinates a healthcare protection promotion event for the public three times per year. This

event helps the community within the area to receive information regarding their specific ethnicity type and what diseases their ethnicity is prone to. The public who attend this event are not only informed about their genetic health risks, but they are also informed about health insurance that would be best to utilize with their financial situation. Additionally, Christus Spohn provides each attendee with healthy snacks and drinks to help intrigue the community to come to the event. By having these events to promote overall health, it will result in a healthier community as a whole, which will help keep the community live a longer, happier life. With that being said, Christus Spohn is also a great advocate for being innovative to figure out new ways to improve their patients' health. The research currently being performed at Christus Spohn regarding Hispanics and their health issues is something that will not only benefit those at Spohn, but those around the globe.

Although there have been many studies performed regarding Hispanic stroke rates in Corpus Christi, there have been several other areas in Texas that have been evaluated as well. All of the studies performed were based off of either ischemic and hemorrhagic stroke and TIA's (Transient Ischemic Attack). According to the American Heart Association, an ischemic stroke occurs from "an obstruction" of a blood vessel that supplies "blood to the brain," which contributes to approximately 87% of strokes (Types of Stroke, 1). Then, there's another type of stroke that is referred to as hemorrhagic stroke. Hemorrhagic strokes take place when a blood vessel becomes weak and ruptures. There are "two types of weakened blood vessels" that involve a hemorrhagic stroke including "aneurysms and arteriovenous malformations (AVMs). However, the primary cause for a hemorrhagic stroke for a patient is hypertension, which most people know as high blood pressure (1). Lastly, there is another type of stroke referred to as a TIA. A TIA is due to a patient having a "temporary blood clot" that most people refer to as a

patient having a “mini-stroke” (1). Therefore, an ischemic stroke is when there is a clot, a hemorrhagic stroke is when there is a bleed, and then a TIA is when there is a minor clot.

As for the severities of each stroke, there are several similarities and differences between each of the three types. As for an ischemic stroke, a blood clot prevents “blood from flowing to [an individual’s] brain,” which can clot due to a variety of factors (Types of Strokes, 1). An ischemic stroke rehabilitation and treatments will completely determine on how long it take the patient to get to the closest hospital for medical care. If a patient receives medical treatment in a three hour time span, a medical professional can possibly give that patient medicine called “tissue plasminogen activator,” which is shortened to tPA (1). This medication can dissolve the clot in a matter of minutes if given to the patient. Then, hemorrhagic strokes occur whenever there is a rupture within the brain that releases blood into the “surrounding tissues” (1). Types of hemorrhagic strokes can include an aneurysm or an arteriovenous malformation. An aneurysm results in a part of a “weakened blood vessel” to enlarge and possibly rupture (1). Then, an arteriovenous malformation occurs from abnormal vessels in the brain (1). For hemorrhagic strokes, a significant amount of cases result in having a surgery performed to clip the bulging abnormality to stop the bleeding from continuing. As for a TIA, there is a short time period where there is a blood clot going to the brain. A TIA is short-lived, and it is usually treated by providing the patient with anticoagulants (blood thinners) to prevent clots from building up (1).

According to the National Stroke Association, this organization recommends a method they refer to as the “FAST method” (1). This method includes face, arms, speech and time to determine if a patient has face droop, inability to lift one arm, slurred speech and to call 911 immediately (1). Strokes can have a variety of severities including behavior changes, speech difficulties, numbness or significant amounts of pain. The most critical condition would be if a

patient would be to come paralyzed, which can happen on certain conditions regarding how a brain block or bleed affects the brain. Drinking alcohol, smoking, tobacco abuse, obesity or an individual's specific genetics can increase the odds of any type of stroke to take place.

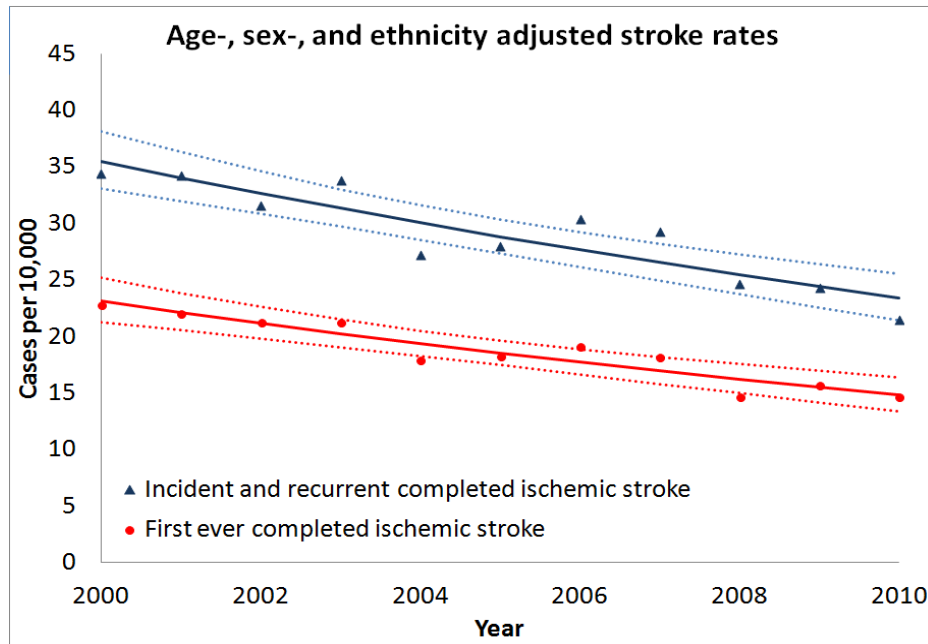
Regarding the information provided previously, the Hispanic population of our society today has the highest level of all strokes within the United States. In this context, the word "high" means that Mexican-Americans versus other ethnicities have the most stroke occurrences compared to other ethnic populations. Then, the Mexican-American ethnicity had to have several factors to be in this category including they must be 50% genetically Hispanic, brown eyes and hair, being from a particular area given as well as having someone in their household cooking Hispanic foods (Lisabeth, 1). These factors were put into consideration to determine Mexican-Americans genetics, eating habits and environmental factors involved that might influence a stroke occurrence in this specific population. According to the U.S. Census Bureau, this organization states that determines ethnicities by evaluating if an individual is Hispanic or not by breaking ethnicity into "two categories" (Census, 1). These two categories fall into either "Hispanic or Latino and Non-Hispanic or Latino," but they can claim that they belong to any race (1). The U.S. Census Bureau determined this by collecting data through surveys from the Decennial Census and American Community Survey (1). This data was collected because it is crucial for healthcare providers as well as the U.S. making funding decisions regarding employment opportunities, healthcare insurance and several other factors as well (Census, 2).

A study was performed in Corpus Christi, Texas that was performed in order to determine the "neurologic, functional, and cognitive" outcomes regarding stroke victims in Mexican Americans and other ethnicities (Lisabeth, 1). The Brain Attack Surveillance in Corpus Christi (BASIS) project was created from 2008-2012 (1). Data was collected by interviewing the

rehab patients in the hospital as well as going through medical records. Patients were required to be “baseline and 90 days” after their stroke (1). The patients interviewed were tested on their activities of daily living (ADLs) on a scale of 1-4 with the highest score being the worst. They were also tested by reviewing the results from their Mini-Mental State Examination (MSE) where the lower score is the worst on a scale from 0-100 (1).

After gathering the data from these tests, the experimentalists determined that “513, 510, and 415” participants had data that confirmed they had “neurologic, functional and cognitive outcomes” from their stroke (1). Out of that information, it was concluded that 64% were Mexican-Americans who had an average of 66 years old with ADL scores being about 3 while their MSE scored approximately at 88. Mexican-Americans helped those performing the experiment that this specific population also were 48% worse on every test they ran compared to other ethnicities. It was also concluded that out of this population tested for this experiment that 52% of women were obese. Then, 54% of the male population were diagnosed as an alcoholic or abused alcohol. This also provides an individual feedback regarding the validity in this study by including the statistics and information utilized to determine this theory. The graph below gives the reader a visual of the stroke rates of Mexican-Americans in Corpus Christi as well. Therefore, Mexican-Americans in this study proved that there is a trend in Hispanic populations having a higher rate of stroke than any other ethnicity in the United States (2). Below shows a visual of the statistics and results from this study in Figure 1.1.

“**Supplementary Figure 1.1:** Age and ethnicity completed stroke rates per 10,000 population with 95% Confidence Interval lines, Nueces County, Texas, 2000-2010” (Morgenstern).



Morgenstern, L., Smith, M., Sánchez, B., Brown, D., Zahuranec, D., & Garcia, N. et al. (2013). *Persistent ischemic stroke disparities despite declining incidence in Mexican Americans*. *Annals Of Neurology*, 74(6), 778-785. doi:10.1002/ana.23972.

Then, there was another study performed in San Antonio, Texas that was referred to as “the Genetics of Brain Structure and Function Study” (Spieker, 32). This study was similar to the BASIC study in Corpus Christi, Texas in several ways. These similarities include determining their location in Texas, having or have had any type of stroke and what they were eating at home (33). However, the Genetics of Brain Structure and Function Study also utilized other factors including Body Mass Index (BMI) and tested their genes (33). BMI is a type of obesity measurement that is entirely based on an individual’s height and weight that provides results for the amount of fat that an individual has (World, 2000). It has been proven that the Mexican-American population in the United States has the “second leading cause of preventable death,”

which is obesity by 29% while non-Hispanics have approximately 21% (Spieker, 36). This study also helped provide knowledge that Mexican-Americans have genes that specifically cause obesity to be heritable (36). In fact, about 65% of obesity in Mexican-Americans is strictly “familial or genetic” (39). Obesity is a serious health issue that causes many negative outcomes including decreased physical mobility, cognitive impairments, decreasing production of “cerebral white matter” within the brain of a Mexican-American and a list of other factors (37). White matter is a crucial part of our brain function that is primarily responsible for maintaining normal homeostasis within the body (37). This was a significant factor within this study because it made this study stand out to the others that have been performed. Researchers utilized the BMI to determine if the participants’ genetics and obesity contributed to an individual having a stroke (36).

With that being said, researchers performed this study by having a random selection of participants from San Antonio, Texas that have previously or currently have a stroke (40). These participants were also selected by Hispanic-Americans and non-Hispanics that were obese (40). Men and women selected for this study by the “University of Texas Health Science Center of San Antonio (UTSCSA)” were given consent forms to sign to be able to participate in this study (40). Each participant was brought into the facility in order to get accurate BMI scores as well as testing cerebral white matter (41). There were 761 women participants ranging from 18 to 81 years old, which was approximately 58% of the population for this study (41). Then, there were 42% of participants who were male from 19 to 80 years old (41). These participants had multiple tests ran, and the results were concluded. After gathering the results, the study had a surprising result. The results showed that out of the women alone in this study, there were 386 Mexican-

American women who were obese, and they also developed a stroke within the next decade of their life (43). There were 366 Mexican-American men who were classified as overweight (43).

Both men and women who tested positive for obesity as well as a stroke occurrence were then examined by using Sequential Oligonucleotide Linkage Analysis Routine, SOLAR (43). SOLAR is a new and innovative test that analyzes “family-based quantitative data” to determine if genetic or environmental factors contribute to a specific disease (Almasy, 14). Heritability is a term meaning that genetic factors play a role of how you look physically (Spieker, 45). The genetic testing performed was completed by determining the age and gender as the bivariate (44). This population was extremely obese with an average age of only 28.3 years old, and a BMI of 17.4 kg/m^2 (47). Of these conclusions from this study, there was a larger amount of females than males who were obese (47). Those who were overweight were concluded to have a decrease in white brain matter in certain regions (47). The genetic factors that were tested in the SOLAR exam were directly correlated with obesity, and Mexican-Americans tested positive for having a stroke in their lifetime if they hadn't already (48).

Additionally, the experimentalists performing this study were shocked to see the percentages of the population who were obese. Therefore, they wanted to determine why there was such a high level of obesity. Many of the questions asked and provided on surveys asked about alcohol use. Of those who were obese, 51% of Mexican-American participants drank alcohol, abused alcohol or were an alcoholic (51). Abusing alcohol and being an alcoholic are two different things. If a participant abused alcohol, it means that he and/or she is “not physically dependent” on alcohol, but there is definitely an issue regarding not drinking (Alcoholism, 1). If anyone abuses alcohol, it is likely for that person to cause problems in your home life or at work (1). Then, there is a disease regarding binge drinking alcohol referred to as alcoholism (1).

Alcoholism causes significant problems in one's life that causes cravings to drink alcohol, losing control of when to stop drinking, withdrawal symptoms and obtaining a high alcohol tolerance (1). Although alcohol abuse and alcoholism are two separate things, they both can cause weight gain to where it becomes such an issue that an individual cannot lose the weight without help (1). The researchers in this study were surprised to know how many Hispanic-Americans drank or were truly alcoholics, which is why they were obese and had other negative health issues including stroke.

The purpose of these two studies was to determine specific factors as to why the Mexican-American population might have an overall greater risk of stroke. Therefore, statistics were compared to the BASIC and Genetics of Brain Structure and Function Study. The two studies concluded that women had higher obesity rates. Additionally, the obesity rates were slightly higher in women specifically within the BASIC study. There are many questions as to why women in the southernmost part of Texas have a higher obesity rate and stroke incidents than other parts of Texas. After determining questions and objectives that were evaluated in each study, it became more obvious as to what those determining factors were. This included that the Mexican-American population who had a stroke were also obese, abusing alcohol or diagnosed as an alcoholic. This proves that there seems to be a correlation between those three factors to the Mexican-American ethnicity resulting in any type of CVA.

As for men within the two studies, the obesity rates were very similar. However, there was a higher rate of CVA in the BASIC study in Corpus Christi, Texas compared to the Genetics of Brain Structure and Function study in San Antonio, Texas. Scientists in both studies concluded their studies by figuring out questions to perform another study to determine why the southernmost part of Texas has a significantly higher rate of obesity, alcoholism and stroke.

Scientists wanted to perform another study to compare south Texas to central Texas where there is a high population of Mexican-Americans in both areas to determine the primary differences in each location. With that being said, these two studies came together to coincide their discoveries found to find a pinpoint as to why this was happening in the Mexican-American population.

Experimentalists came together to combine their knowledge and studies to determine why two specific areas of Texas have different rates of stroke, obesity and alcoholism within those areas. The information and brains from each study were brought together in order to find an exact reason for these occurrences. Statistics were combined to be calculated as well as the same participants in both location being asked a survey of questions regarding their home environment. These questions asked each participant what they ate, what significant events (including natural disasters) occurred over the period they had lived in a specific area, and why each participant chose to drink alcohol (Morgenstern, 44). After the results were gathered from this new data, it became quite obvious as to why the southernmost part of Texas has a significantly higher rate of obesity and alcoholism that leads to a stroke: natural disasters. Approximately 76% of the participants who decided to include their input on the new study being performed said that they considered alcohol to be “convenient” (Alcoholism, 37). Alcohol is a convenient way for many people of all ethnicities to escape from their stressors in life. However, Mexican-Americans have specific genetics within their ethnicity that cause obesity strictly from drinking alcohol beverages. Mexican-Americans that were becoming dependent on alcohol would be considered an alcoholic, which would have to officially be diagnosed by a professional (32). Natural disasters in Corpus Christi are reoccurring every year that affect hundreds or even thousands of people. This results in each family having added stress in their life, which causes an individual to want to drink in order to cope with their current

environmental and financial situation. This study proved that the southernmost parts of Texas who have natural disasters affect families, specifically Mexican-Americans, tremendously.

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