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Discerning the True Dilemma of Diabetes Among Hispanics

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Abstract

There is a common misconception that the primary role of nurses is to follow doctors' orders and treat patients who are currently suffering and experiencing pain. Chronic illnesses such as diabetes can be prevented and better managed if the population who is greatest at risk is better informed and educated on the disease. Different cultures and ethnicities have different foods that unfortunately puts them at risk to get diabetes. Hispanics typically follow a diet that is high in carbohydrates, saturated fats, and sugars that greatly contribute to the development of diabetes. Often, Hispanics are not educated enough to comprehend the toxicity and health consequences.

This thesis includes a review of the literature to investigate the extent of the problem and potential solutions. The research revealed that the problem is extensive and offered interventions to prevent diabetes amongst Hispanic youth, interventions to manage diabetes amongst Hispanic adults, and showed a potential connection between Hispanic adults with diabetes and health literacy. The literature showed a lack of research of interventions that can potentially be helpful to Hispanic youth. This paper proposes a study that focuses on targeting Hispanic young adults between the age of 18 and 29 to analyze how education level plays a role in following a strict exercise and diet regimen to decrease the probabilities of getting diabetes and better managing it. Participants in this study were recruited by researchers attending local community health clinics with a high Hispanic population, local Hispanic supermarkets, and adults schools.

Acknowledgement

I would first like to thank God for putting me in this path that has been everything but easy. Many times I doubted myself but it is my lord who gave me the strength and wisdom to come this far. I would also like to thank my family, friends, and sister for providing me with unconditional support. Finally, I would like to thank my college professors and clinical instructors for providing me with a great experience and guiding me throughout this rigorous nursing journey.

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Introduction

I remember as a kid every morning seeing my grandfather stick himself with a needle in the abdomen. As a curious little boy I would ask why he would do that and he would just reply “sugar and me don’t get along very well”. I truly never understood why he would never get a slice of cake at family parties until now. Type II diabetes mellitus is a chronic condition that is very common among the Hispanic population and perhaps it could be due to the cultural foods that are saturated with fats, sugars, and carbohydrates. It is unfortunate how many Hispanics are aware that they have diabetes however, are not educated enough to make healthy modifications in their lifestyles to better control their blood sugar levels and prolong their lives. It can be many different factors that contribute to the high rates of diabetes among Hispanics, but it was determined that 17% of the Hispanic population are more likely to be diagnosed with diabetes than non-Hispanic whites which are only at 8% (CDC, 2021). This depicts how Hispanics are twice as much more prone from suffering from a chronic disease that can later lead to greater complications if a health plan is not adhered. The main purpose of this literature review is to discern the high rates of diabetes among Hispanics and ways to help the Hispanic youth from getting diabetes.

Problem Statement

It is unfortunate that having diabetes is becoming a norm within Hispanic families. Although there is a handful of uncontrollable risk factors that may lead to diabetes among the Hispanic population, exercise and diet are two factors that can be modified. Within the Hispanic culture, it is often disrespectful to deny a bite to eat or stand up from the dinner table without

completely finishing your plate. These are some values that can become difficult to handle and can lead to obesity which can ultimately result in chronic health diseases such as diabetes.

“Obesity is considered an epidemic in the United States, and it is one of the most important modifiable risk factors for the prevention of T2D” (Aguayo-Mazzucato., et al, 2019). This shows how a sedentary lifestyle along with obesity can lead Hispanic youth to premature death and other life threatening conditions. As a result of diabetes becoming a normal disease within the Hispanic population, it does not cause the same fear as other chronic conditions. It is a disease that must be treated seriously due to being the fifth leading cause of deaths among Hispanics in 2017 (Elflein, 2019). Furthermore, diabetes is a costly disease that requires life time medical supplies that may not be affordable for Hispanics. According to the American Diabetes Association, during the year of 2017, there was a total cost of \$327 billion in the United States of diagnosed diabetes (ADA, 2018). This data is from four years ago, the amount of money that is invested towards the care and medical procedures related to diabetes will continue to rise. It is necessary that Hispanics are provided with more health resources in order for them to understand how to prevent or manage such a noxious disease.

Research Question

For Latino youth with obesity, will the implementation of a diabetes prevention program consisting of exercise, diet, and health classes increase insulin sensitivity and reduce the probability of getting diabetes?

Literature Review

The literature review portion of this thesis was composed by a senior nursing student at Dominican University of California who utilized the library’s databases such as UpToDate,

CINAHL Plus, and Iceberg. Six articles were gathered according to the topic that was presented. The articles were carefully selected to assure that it reflected crucial information regarding Diabetes amongst the Hispanic population and its age groups as well as thoroughly analyzed data. In order to enhance the literature review, the student points out relevant information to the topic, strong points, and limitations that the articles presented. The articles are critiqued in a well professional and respectful way that acknowledges the diligent authors. To better organize the literature review, it was divided into three subcategories: interventions to prevent diabetes amongst Hispanic youth, interventions to manage diabetes amongst Hispanic adults, and Hispanic adults with diabetes and health literacy.

Interventions to Prevent Diabetes Amongst Hispanic Youth

Soltero, Olson, Williams, Konopken, Castro, Arcoleo, Keller, Patrick, Ayers, Barraza, and Shaibi (2018) intended to discern the correlation between quality of life (QoL) and diabetes amongst Hispanic youth in order to develop a successful diabetes prevention program. This study was approached utilizing an expanded ecodevelopmental model, in which socioeconomic, environmental, and familial factors are all integrated into the study. The study took place in Phoenix, Arizona with collaboration of academic schools, Latino-serving health clinics, and a local YMCA (Soltero, Olson, Williams, Konopken, Castro, Arcoleo, Keller, Patrick, Ayers, Barraza, and Shaibi 2018). A total of 160 Latino boys and girls between the ages of 14-16 were recruited and accurate readings of BMI percentile, waist circumference, two hour 75 gram glucose tolerance test, height, and weight were obtained prior to starting the study. Furthermore, adolescents were divided into an intervention and control group. Adolescents who met the prediabetic standards were automatically assigned to the intervention group. The intervention group was placed in a three month program that consisted of exercise activity three times a week

for an hour each session, nutrition and health education, and classes that helped with promoting positive behavioral changes. In opposition, the control group was only presented with their lab results and an informational document regarding healthy lifestyle education. Researchers decided to expand its study and find how effective its program was after 12 months. Not all participants finished the study as only 128 adolescents remained at the end of the study (Soltero, Olson, Williams, Konopken, Castro, Arcoleo, Keller, Patrick, Ayers, Barraza, and Shaibi, 2018)

Researchers found an increase in insulin sensitivity, decrease in waist circumference, percent body fat, body mass index (BMI), and improvement in quality of life (QoL) as the study progressed, whereas the control group did not show any major physiological changes (Soltero, Olson, Williams, Konopken, Castro, Arcoleo, Keller, Patrick, Ayers, Barraza, and Shaibi, 2018). These findings demonstrate a great community work that could not have been achieved without a great support system. The data obtained from this study is crucial to Hispanic families because it depicts the positive outcomes that healthy lifestyle changes can provide by prolonging their lives and preventing noxious health conditions. It proves how effective an exercise regimen can be for the youth and the community.

Although the study showed great results within the first 3 months, researchers believe that findings could have been more accurate if developmental age did not play a factor in adipose production (Soltero, Olson, Williams, Konopken, Castro, Arcoleo, Keller, Patrick, Ayers, Barraza, and Shaibi, 2018). A strong point presented by the authors was the integration of QoL, this implicated the awareness of the cultural beliefs and values of the Hispanic population. However, one limitation that this study presented was that the researchers did not include what type of exercises and diet were provided to the interventional group. This could have allowed a better analysis of the effectiveness of the diet or type of exercise program that was used

throughout the study. To better enhance the study, switching the diet or exercises during the plateau between the 3-12 months of trial could have shown statistical improvement in weight, BMI, waist circumference, and percent body fat.

Weigensberg, Lane, Avila, Konersman, Ventura, Adam, Shoar, Goran, and Spruijt-Metz (2014) proposed to explore a unique approach towards decreasing stress that commonly leads the youth to overeating, obesity, and eventually diabetes. The study was performed utilizing a randomized control trial in which a total of 35 adolescents between the ages of 14-17 were randomly selected to an interactive guided imagery (IGI) group plus lifestyle education or a digital storytelling computer program plus lifestyle education. Both groups had to participate in the trial for a period of 12 weeks and had to meet the criteria of being obese by ranking above 95th percentile of BMI. The main goal of the study was to formulate and discover the effectiveness of a unique approach towards decreasing weight and reducing prevalence of diabetes amongst Hispanic youth. The integration of interactive guided imagery and digital storytelling was a very thoughtful approach by the researchers (Weigensberg, Lane, Avila, Konersman, Ventura, Adam, Shoar, Goran, and Spruijt-Metz, 2014).

Through the data obtained at the end of the study, researchers found that adolescents in the guided imagery plus lifestyle education group had a dramatic decrease in sedentary behaviors and caloric intake opposed to the digital storytelling group. On a more important note, salivary cortisol levels also decreased as an effective outcome of reduced stress levels (Weigensberg, Lane, Avila, Konersman, Ventura, Adam, Shoar, Goran, and Spruijt-Metz, 2014). Such findings indicate how effective a stress relieving approach is towards decreasing cortisol, a hormone that plays a crucial role in sugar control and insulin sensitivity. The fact that it even improved the

amount of time that adolescents spend doing active exercises, demonstrates how the body begins to work better whenever a healthy mindset is achieved.

Researchers believe that this study can be enhanced by extending the length of the trial. A longer trial can provide researchers a better understanding of the long term effects that guided imagery can provide to the decrease of metabolic diseases in Latino youth such as diabetes. (Weigensberg, Lane, Avila, Konersman, Ventura, Adam, Shoar, Goran, and Spruijt-Metz, 2014). With utmost respect, the study did have the limitation of having a small amount of participants in the trial. A strong point of this study was the considerate and thoughtful approach proposed by the authors. Mental health is often neglected in health conditions and is not commonly used to address other pathphysiologic diseases. Authors could have obtained better results if at least 100 adolescents were recruited at the beginning of the trial. Although it had a limitation, the study implemented an unorthodox approach to decreasing diabetes amongst Latino youth that ended up showing great results in such a short amount of time.

Interventions to Manage Diabetes Amongst Hispanic Adults

Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno (2020) aimed to analyze Hispanics of Mexican origin and factors related to diabetes. The study was performed utilizing a one-sample pre—post design by recruiting participants from Piedras Negras, Coahuila and Lubbock, Texas. Participants were gathered by being informed at community churches and distributing informational flyers throughout the community. As a prerequisite, participants had to be at least 19 years old while being diabetic was not a requirement. A total of 102 participants were recruited with the majority of them being from Piedras Negras (Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno, 2020). Furthermore, The study included a four week intervention program in which participants from both groups had to attend weekly educational sessions for

two hours. To facilitate understanding to participants, educational sessions were offered in Spanish. According to Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno (2020), the primary goal of this intervention was to “improve diabetes-related factors and decrease the excessive intake of carbohydrates and fats” (p. 504).

At the end of the 4 weeks, researchers found that participants from Piedras Negras, Coahuila were less literate in diabetes and the health components than participants from Lubbock, Texas. Also, Piedras Negras participants showed more food insecurity than those from Lubbock who had a high protein diet (Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno, 2020). This demonstrates how even though both populations were Mexican-origin Hispanics, the geographic region does play a role in their access to education and information on diabetes and following a well-balanced diet that can decrease probabilities of diabetes or be able to well manage it. Results also depict that those who have education on diabetes are more likely to be diagnosed earlier than those who are not. After the diabetes education intervention, participants from Piedras Negras showed improvement in attitude towards prevention of diabetes (Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno, 2020).

The study integrated strong key components that allow the audience to better understand the reason why Hispanics have a higher prevalence rate of diabetes. Researchers performed a well-rounded study that included crucial factors such as education, geographic region, food insecurity, and complications that are commonly not integrated in other diabetic studies. Although researchers proposed an effective intervention, it had the limitation of not having an equal number of participants from Piedras Negras and Lubbock. Furthermore, the majority of participants were women (Moyeda-Carabaza, Murimi, Dawson, and Carrales-Bruno, 2020).

Results could have been more reliable if the amount of participants and genders were similar for both locations.

Garcia, Brown, Horner, Zuñiga, and Arheart (2015) intended to investigate a study that primarily focused on diabetes health literacy amongst the Mexican-American population. It is not a novelty that Hispanics are highly prone to suffer from diabetes due to their cultural foods that are high in sugars and fats as well as a sedentary lifestyle outside of work. The study was realized by using a two group (experimental and control group) in which a total of 72 participants between the age of 25-75 were recruited from public stores, libraries, email, and waiting rooms of a handful of clinics who care for a large population of Mexican-Americans (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015). The majority of participants were women and specifically women who were not currently pregnant. Also, people who had been recently or currently treated for cancer as well as people receiving renal dialysis could not participate in the study (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015). The main objective of the study was to analyze how effective an educational program that focuses on teaching symptom management for Mexican-American's with type 2 diabetes would be. The study took place in a handful of communities in Central Texas where there is a large population of Hispanic residents (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015).

After a total of 72 participants were gathered, they were then randomly divided into two groups (experimental and control group), the experimental group focused on symptom based diabetes self-management education, participants received a total 8 sessions with a bi-lingual cultural competent registered nurse who educated participants on symptom management, behavioral, self-blood glucose testing, and nutritional factors that will allow participants to better understand and manage their health condition. Furthermore, the initial eight weeks were

followed by an additional eight weeks in which the nurse would call participants bi-weekly to provide better support. Conversely, the wait-listed control group just received the regular basic care that was usually provided by their regular healthcare provider. Their main role was to serve as a comparison group. Data collected from the wait-listed control group was obtained at baseline, 2 months, and 6 months to compare with the experimental group (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015).

As expected, through the data obtained, results showed that the intervention was effective and the experimental group that received the one-on-one sessions with the bi-lingual registered nurse showed improvement in glycemic controls, identifying symptoms associated with diabetic events, decrease in HbA1c, enhanced diabetes knowledge, and improvement in quality of life. In contrast, the wait-listed control group only received the normal care provided by their provider who did not provide sufficient information to show such dramatic changes (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015). This demonstrates how helpful it can be for the underprivileged to have access to healthcare that provides adequate health information on common diseases such as diabetes in Hispanic patients. A cultural competent nurse and health care team will gain the patients trust and allow them to welcome healthcare professionals to enhance their health.

Researchers did a phenomenal job in this study by being extremely considerate of cultural competence. It is a reason why many patients do not seek care; there is often a language barrier or unfamiliarity with cultures between patients and the care team. Although it provided outstanding data, the study did have the limitation of having women be 67% of participants (Garcia, Brown, Horner, Zuñiga, and Arheart, 2015). The study could have provided better

results if gender equality would have been integrated because often, Hispanic males are more hesitant to seek and accept medical care.

Hispanic Adults With Diabetes and Health Literacy

Russell, Mi Oh, and Zhao, (2019) implied to explore a study that focused on comparing the rates and statistics of undiagnosed diabetes between Hispanic and White American adults. The study was conducted using data obtained from the National Health and Nutrition Survey (NHANES) conducted from 2007-2012 (Russell, Mi Oh, and Zhao, 2019). In order to participate in the study, participants had to meet the following requirements: self-identify as white or Hispanic, be at least 20 years old, have a HgA1c of greater than or equal to 6.5%, and reside in one of the 15 counties that data was gathered from by the National Health and Nutrition Survey during 2007-2012 (Russell, Mi Oh, and Zhao, 2019). Researchers utilized data obtained from the NHANES to formulate questions on a survey that participants were able to answer accordingly. The questions in the survey assessed sociodemographic factors, health promotion behaviors, as well as health insurance literacy. The questions were answered independently by participants and to have non-English speakers participants better understand, the survey was available in Spanish. A total of 1,792 adults were included in the study with only 367 of them being Hispanic and the remainder 1,425 being white (Russell, Mi Oh, and Zhao, 2019).

After all surveys were completed, results showed that more Hispanics were undiagnosed with diabetes than white participants with Hispanics having 28% and whites having only 18% of undiagnosed diabetes (Russell, Mi Oh, and Zhao, 2019). Furthermore, the study also proved that socioeconomic factors play a major role in the quality of care that is provided. Hispanics had less education than whites hence, were less literate in health insurance, diabetic management, and

health promotion behaviors. Also, Hispanics had higher HgA1c percentages than whites (Russell, Mi Oh, and Zhao, 2019). It depicts how access to health care becomes more difficult to obtain when underprivileged communities are not well educated on healthcare.

Researchers provided reliable data that demonstrates the importance of educating Hispanics on obtaining access to health care and improving health promoting behaviors. The idea of researchers recognizing that age is a strong factor in the percentage of undiagnosed Hispanics with diabetes is greatly appreciated. Data showed that younger Hispanics were more likely to be undiagnosed than older adults (Russell, Mi Oh, and Zhao, 2019). This could be due younger adults being more resilient to seek health care than older Hispanic adults. A limitation that the study presented was the low number of Hispanic participants in the study compared to whites. Results could have been more credible if there was a smaller gap between the amount of Hispanic and white participants.

White, Osborn, Gebretsadik, Kripalani, and Rothman (2013) implied to perform a study that analyzes factors that contribute Hispanics in the U.S. to lack health literacy and impairs them to understand diabetes self-care. The U.S. has immigrants from many countries, often, access to health care is difficult for them to obtain due to the fact that there is not enough resources in low-income communities. The study was performed utilizing a cross-sectional method in which 149 Hispanic participants were gathered. The recruitment process was aided by visiting an adult health clinic and two federally qualified health centers. All three health centers were located in Nashville, Tennessee and primarily served Hispanic patients (White, Osborn, Gebretsadik, Kripalani, and Rothman, 2013). To better obtain data on the psychosocial factor of the study, participants had to not have a health history of psychosis or dementia. Also, all participants had to self-identify as Hispanic, speak Spanish fluently, age 18-85, and a corrected

visual acuity of less than or equal to 20/50. These requirements had to be met by all 149 participants to present accurate data (White, Osborn, Gebretsadik, Kripalani, and Rothman, 2013).

Keeping in mind the fact that many Hispanics are not proficient in English, the S-TOFHLA questionnaire was provided in Spanish to give participants the opportunity to fully understand what each question aimed to ask. The S-TOFHLA, is a questionnaire that includes 36 questions whose main objective is to assess health literacy. Scores between 0-16 indicate distinguish inadequate, 17-22 indicate marginal, and >23 indicate adequate health literacy (White, Osborn, Gebretsadik, Kripalani, and Rothman, 2013). Having low health literacy and a language barrier may lead to mistrust and not follow recommendations of healthcare professionals. It is why trust in physicians was also integrated into the study and scores ranged from 11-55, with higher scores indicating more trust. Also, self-confidence in diabetes self-care was assessed by including an eight item measurement, with scores ranging from 8-40 and higher scores signifying greater self-confidence in diabetes management (White, Osborn, Gebretsadik, Kripalani, and Rothman, 2013).

Results showed that 60 participants placed in the limited health literacy when this factor was analyzed and the remainder 89 scored enough to place in the adequate health literacy category. Studies also showed that older participants were less literate in diabetes and health insurance, had longer time living with diabetes, and were less likely to know which type of diabetes they had (White, Osborn, Gebretsadik, Kripalani, and Rothman, 2013). Participants with less health literacy had more trust in their providers and were more likely to follow physician orders and medication adherence as opposed to participants with inadequate health literacy who did not follow a strict diet and did not practice appropriate diabetic foot care (White, Osborn,

Gebretsadik, Kripalani, and Rothman, 2013). The data shows having adequate health literacy can also be a setback by the fact that people tend to be more resilient and not follow their health plan. As shown by the data, younger people tend to want and control their own health situations without the assistance of healthcare professionals. Providing Hispanics with adequate health literacy is essential however, a different psychosocial approach may be necessary to increase trust in physicians and other health care workers.

Researchers presented a well-rounded study in which crucial factors were integrated to make the data obtained be supported by the knowledge of the Hispanic culture. However, a limitation that the study presented was not stating the language that physicians used to communicate with their patients. Results could have been improved if the physicians selected for the study also spoke Spanish like the patients. Perhaps more Hispanic patients could have more trust in their physicians if there was not a language barrier.

Literature Review Conclusion

Having access to healthy food markets and local gyms is not the problem in addressing the high rates of diabetes among Hispanics. It is the lack of education and information that is offered explaining the benefits that greatly contribute to prolonging their lives by adhering to a healthier lifestyle consisting of regular exercise and nutrient dense foods. Culture plays a major role in this health crisis, Hispanics are resilient when it comes to seeking healthcare. It all starts by educating the youth at a young age to be able to decrease the prevalence of diabetes among Hispanics. The youth follows the diet that their parents follows but tend to be more open minded to adhering to a new healthy diet and exercise regimen. The youth studies mentioned above demonstrated that physical exercise intervention can be promising in reducing the Hispanic diabetic cases. The youth has the motivation and hunger to strive for a healthier lifestyle. On the

other hand, it is evident that older Hispanic adults are more closed minded and unwilling to make a drastic change in their lives. A different approach must be taken to address the high rates of diabetes. The studies depict that it is more of a lack health competency and literacy dilemma that often leads Hispanic adults to make poor eating choices and not integrate a physical activity program into their lives. Studies showed significant improvement in insulin sensitivity when Hispanic adults were educated and encouraged to follow a healthy diet and exercise regimen.

Theoretical Framework

Nola J Pender is the nursing theorist that best suits the topic of diabetes prevention and health promotion. Nurses are not just supposed to treat diseases and help patients who are already sick, conversely nurses must also educate and promote health amongst the community. There is much more to health than just being disease free. It is why Pender's health promotion theory is defined to be "complementary counterpart to models of health protection" (Peptiprin, 2020). Pender was inspired to develop a health promotion theory due to observing that health care workers only focused on patients who suffered from acute and chronic illnesses. Developing a theory that focused on advocating preventive measures would decrease the amount of people who suffered from chronic illness and health care would become more effective. Providing citizens with preventative measures enabled them to take action themselves and not receive care after developing a health deuterating disease. The theory targets individual characteristics and experiences, behavior-specific cognitions and affect, and behavioral outcomes (Peptiprin, 2020).

The nursing student main goal is to advocate patient health and promote diabetes education and management amongst Hispanics. It is why the health promotion theory best correlates with this study. Pender's theory makes it well aware that health is more than just being

disease free, and the student nurse wants to advocate the idea of providing health literacy to Hispanics to prevent chronic diseases such as diabetes. Pender's idea of not only providing health care education to ill patients greatly supports the idea of educating more people even if they are not yet ill. The quality of life will be enhanced when people are provided with health resources that can help them achieve optimum health. The main goal is to always have nurses advocate for patients and the community that must be educated on various health topics.

Proposal for Further Research

Most Hispanics are reluctant to seek medical care even during their sickest days. There are two major reasons why Hispanics do not seek medical care; either medical cost can be an issue due to not having health care insurance, or a combination of lack of health insurance and not trusting physicians due to a language barrier and being uneducated in healthcare in general. It is not a novelty that diabetes greatly targets Hispanic families, though, not properly managing can be the outcome of not being provided with adequate resources to prevent or have well controlled sugar levels. The literature review portion of this paper was analyzed by a nursing student who proposed himself to find the best way to have Hispanics prevent diabetes and well manage it once diagnosed. Further developed research can provide data that depicts the real reasons why so many Hispanics do not put the effort to manage diabetes and explore other ideas to prevent it. Before research is conducted, it is important to consider and respect the background of participants and obtain written consent to have access to personal information such as economic class, age, gender, and level of education. Furthermore, approval from the Institutional Review Board (IRB) will also be necessary.

Research Question

Does level of education affect how well Hispanic young adults adhere to a physical exercise and diet regimen?

Target Population

The recruitment process of this study aims to recruit participants who self-identify as Hispanic, between age 18-29, people who did not complete high school, people who completed high school, people who are in the process of obtaining a GED (equivalency of high school diploma), and residents of California.

Method

This will be a longitudinal, comparative, and quantitative study. Researchers will attend local adult schools, community health clinics, and local Hispanic supermarkets. The goal is to obtain a total of 150 participants between ages 18-29 and will include a mixture of people who completed high school, did not complete high school, and in process of obtaining a GED. Local Hispanic supermarkets are crucial locations to recruit participants because it facilitates the recruitment process in terms of recruiting people from different levels of education. Once the goal of 150 participants is reached, researchers will provide participants with a short questionnaire to gather crucial demographics that will play a strong role in the study. The study will take place for 6 months in which participants will be provided with a membership to a local gym and assigned exercises must be completed. All participants are allowed to work-out together and will receive the same exercises and diet plan, the main goal of this study is to discern if the level of education plays a role on how well Hispanics follow a diabetes prevention program. The study will have seven data collection points in which it will make up the longitudinal part of the study.

Researchers will check and obtain data every month from a cellular fitness app to analyze the

progress of each participant. The fitness app will record the time and date in the gym as well as type of exercises and number of repetitions performed. In addition, participants will meet in support groups of 15 participants once a month during the study period to check in with researchers and a short presentation with exercise and diet guidance will be provided.

Prior to starting the study, participants will be asked to state their income in which income ranges will be listed. Distance can also play a role in how well young adults adhere to the exercise part of the study so they will be asked to answer how far their nearest gym is from their house. Furthermore, the questionnaire will also include a question to state their level of education. Finally, having young children can also intervene and affect their determination to the program so the questionnaire will also ask them to state how many young children they have if any. At the end of the study, participants will be reevaluated with the same questionnaire to identify any changes that could have had an impact on the results such as a change in education or income status.

Demographics

Key demographics that will play a major role in this study are age, gender, level of education, annual income, distance from the gym, and parental status.

Questionnaire

1. Gender M:____ F:____
2. Age: ____
3. Highest level of education:
 - a. High school Diploma: ____

- b. Process of completing high school (GED): _____
 - c. Did not complete high school and do not plan of completing: _____
4. Annual Income:
- a. 10,000-25,000 _____
 - b. 26,000-50,000 _____
 - c. 51,000-75,000 _____
 - d. 76,000-100,000 _____
 - e. Other: _____
5. How far is your nearest gym from your house (miles)?
- a. 0-5 miles _____
 - b. 6-10 miles _____
 - c. 11-15 miles _____
 - d. 15+ miles _____
6. Do you have any kids?
- a. Yes _____
 - b. No _____
 - i. * if yes how many: _____
 - ii. *children's ages: _____

Analysis

The research study will have seven data collection points in which the first one will be obtained prior to starting the study and the rest at the end of the subsequent six months. As a result of gathering data from three different groups, data will be analyzed by analysis of variance commonly known as ANOVA. This will include getting data from participants who completed high school, did not complete high school, and in process of obtaining a GED. Each group will present descriptive statistics on demographic data in which a mean, median, and mode will be developed from the data obtained. The main purpose of this study is to discern if the level of education plays a role in how well Hispanic young adults adhere to a health promotion program that decreases the prevalence of diabetes.

Conclusion

Although healthcare may be accessible to the Hispanic population, Hispanics refrain from seeking healthcare due to not being health educated, language barriers, and cultural reasons. Diabetes and other chronic conditions will continue to rise among Hispanics if an effective health education system is not implemented in communities with Hispanic residents. The literature review depicts a handful of effective interventions that can greatly benefit the health of Hispanics from different age groups. Programs that aim at educating Hispanics on diabetes and obesity showed improvement in health factors that can decrease the prevalence of diabetes among Hispanics. The research study proposed by the nursing student can facilitate the process of developing a productive and effective health education program that enhances the health and prolongs the lives of Hispanics. Ultimately, Hispanics adhering to a healthy lifestyle that consists of a balanced diet and regular exercise program will decrease the prevalence of Diabetes.

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Appendix

Authors/Citation	Purpose/Objective of Study	Sample - Population of interest, sample size	Study Design	Study Methods	Major Finding(s)	Strengths	Limitations
Garcia, A. A., Brown, S. A., Horner, S. D., Zuniga, J., & Arheart, K. L. (2015)	To analyze the effectiveness of a diabetes education program among Hispanic adults.	<p>The study aimed to recruit Mexican-American adults with type 2 diabetes between ages of 25-75 years old.</p> <p>Total of 72 participants were recruited to ensure a final of 60 participants for those who would drop.</p>	<p>The study consisted of two groups. An experimental and a control group.</p> <p>Participants were recruited from both rural and urban communities in Texas.</p>	<p>Participants were randomly assigned to either the control or experimental</p> <p>Participants in the experimental group received eight sessions of one-on-one educations lessons at home.</p> <p>Control group only received usual health care and education from their primary provider.</p>	<p>- Participants in the control group had significant higher fasting Hb1Ac levels than those in the experimental group.</p> <p>- The experimental group depicted better one-on-one interaction effects on improvement of symptoms, quality of life, and diabetes knowledge.</p>	The study included Hispanic from both urban and rural parts of Texas which provided a better analysis.	<p>The majority of participants were predominantly women.</p> <p>The study only had 3 data collecting landmark points.</p>

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Moyeda-Carabaza, A. F., Murimi, M. W., Dawson, J. A., & Carrales-Bruno, F. (2019)	The purpose of this study was to explore and assess diabetes knowledge and, self-efficacy for diabetes, and diabetes complications among Mexican-origin Hispanics	<p>The study aimed to recruit Mexican-origin Hispanics from Piedras Negras Coahuila and Lubbock Texas.</p> <p>A total of 102 participants were recruited of at least 19 years of age and the majority being from Piedras Negras</p>	This was a one sample pre-post design study.	<p>Participants were part of a Diabetes Education Intervention</p> <p>The DEI was a four week intervention in which participants were educated on various diabetes topics and information was obtained from them such as the typical diet that they followed.</p>	<p>Participants from Piedras Negras showed a higher level of food insecurity</p> <p>Participants from Lubbock Texas had much more diabetes education and knew more diabetic facts.</p> <p>Participants from Lubbock also higher consumption of protein</p>	<p>Compared the same culture but with different residential locations.</p> <p>Included participants from all ages above 19</p>	<p>Did not include their annual income.</p> <p>Social class was not mentioned and this could have an effect on the types of foods that they can afford.</p>

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Russell, E., Oh, K. M., & Zhao, X. (2019)	The purpose of this study was to compare the trend of diabetes diagnosis between white and Hispanics.	The study included participants of 20 years old and above. A total of 1,792 participants were included	Data collected from National Health and Nutrition Survey from 2007-2012.	Data analysis and comparative	Hispanics in this study were much younger than non-Hispanic whites and had higher rates of undiagnosed diabetes Undiagnosed Hispanics had much higher HbA1c Non-Hispanic whites also had more access to health care.	Compared two different racial groups that allows the reader to understand the different factors that contribute to diabetes rates.	Study included much less Hispanic participants than whites
Soltero, E. G., Olson, M. L., Williams, A. N., Konopken, Y. P., Castro, F. G., Arcoleo, K. J., Shaibi, G. Q. (2018).	To examine the efficacy of a community based lifestyle intervention from short term (3 months) to long term (12 months) among	Latino adolescents between the ages of 14-16 years old	Selected Vulnerable population Latino youth ages 14-16 years old from a community where there was no health education or	Latino adolescents were randomly selected into two different groups, the short term (3 months) and long term (12 months). The	At just 3 months, a significant increase in insulin sensitivity, reduction in BMI's, waist circumference and percent	Selecting Latino youth from one specific community and age range being small, allowed researchers to better	It would have been good to include prediabetic chances or how many participants were at borderline of becoming

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	Latino youth with obesity		exercise programs being offered.	interventions consisted of general health information, exercise classes 3 times a week, and weekly nutrition.	body fat decreased	understand the trend.	diabetic. Also, maybe include level of education of parents because they may not have been educated on diabetes as well.
Weigensberg, M., Lane, C., Ávila, Q., Konersman, K., Ventura, E., Adam, T., Spruijt-Metz, D. (2014, January 17)	To determine the effectiveness of a lifestyle intervention in obese Latino adolescents using Guided Imagery and Digital Storytelling	Obese Latino adolescents ages 14-17 year old with a BMI >95 th percentile	35 Obese Latino adolescents who are prone to Diabetic Mellitus	Selected adolescents were placed through a 12 week lifestyle intervention in which didactic lifestyle education and guided imagery were implemented to enhance their diets and lifestyles	Demonstration of less sedentary behavior and increase in physical activity. Decrease in caloric intake and integrating the healthy imagery lifestyle helped reduce serum cortisol and improved insulin sensitivity	The idea of implementing a more holistic and mindful approach to prevent Diabetes Mellitus is a very unique approach that motivated adolescents to participate because it also helps with their mental health, which is a major part of	Determine how much they know of Diabetes. Because Diabetes is often very common in Latino/Hispanic families, it is ideal to determine their knowledge of the disease.

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						adolescents life's.	
White, R., Osborn, C., Gebretsadik, T., Kripalani, S., & Rothman, R. (2013, November)	The purpose of the study was to discern if health literacy played in role in how much Hispanic adults with diabetes trusted their primary care physicians	A total of 149 Hispanic participants were recruited. Participants were age 18-85	Participants were assessed by using a S-TOFHLA survey which ranks their health literacy levels	This study was approached using a cross sectional method	Older participants were more likely to follow a care plan designed by their primary care providers Younger participants were more health literate but had less trust in their providers	The study included participants from different age groups The study was able to recruit a good number of participants	The study did not mention if the primary care providers also spoke Spanish The study did not state gender differences in terms of participants