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Obesity, Physical Activity, and the Place of Residence Among Latinos

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Walden University

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Chanda McNeal

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Walden University

2020

Abstract

Obesity, Physical Activity,
and the Place of Residence Among Latinos

by

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MS, Central Michigan University, 1998

BS, Southern Illinois University, 1997

Doctoral Study Submitted in Partial Fulfillment
of the Requirements for the Degree of
Doctor of Public Health

Walden University

May 2020

Abstract

Obesity is one of the most costly chronic, but preventable, diseases that has increased in prevalence in the United States. Obesity is known to be related to a lack of physical activity and the conditions in which people are born and live. Although adult Latino men and women have the second highest obesity rate in the United States, researchers have not explored place of residence as a factor in understanding Latinos' health status. Therefore, the purpose of this correlational quantitative study was to determine if there is a relationship between obesity and Latinos' place of residence and physical activity, and whether differences exist when controlling for age, sex, and socioeconomic status (income level, education level, and employment status). The study was grounded in the social-ecological model. Using data from the 2018 Behavioral Risk Factor Surveillance System, logistic regression, and chi-square analyses were conducted. Concerning the variables of age, education level, and employment status, findings indicated statistically significant differences between obesity, physical activity, and place of residence among Latinos. The variables of sex and income were not significantly different when examining obesity and place of residence among Latinos. The results of this study can have a potentially positive social change impact by informing health policy makers in reducing obesity rates and increasing the quality of life among Latinos by investing and allocating resources tailored to provide them with better opportunities in relation to factors that are associated with obesity.

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Dedication

I dedicate this study to my parents. Thank you for your support and encouragement during this journey. Most importantly, I thank you for your love and belief in my abilities to achieve my dream of becoming a doctor. I also thank my amazing friends for providing support and encouragement as I navigated through the process.

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Section 1: Foundation of the Study and Literature Review

Introduction

A recent study conducted by Foreman et al. (2018) found that the U.S. life expectancy is 79.8 years and predicted the U.S. national ranking would decrease from 46 to 64 by 2040 when compared to other countries. The Centers for Disease Control and Prevention [CDC], 2015 cited obesity as one of the critical public health drivers for the decline in life expectancy rates. Researchers such as Anselma, Mai, and Altenburg (2018) and Velasco-Mondragon, Jimenez, Palladino-Davis, Davis, and Escamilla-Cejudo (2017) discovered obesity rates among Latinos are disproportionately higher (21.9%) when compared to non-Latino blacks (19.5%) and non-Latino whites (14.7%) and cited linkages between obesity and physical activity as factors that are related to obesity within this group. However, in these studies, the researchers did not explore or consider a place of residence as a factor in understanding Latinos' health status, and that makes them narrow in scope and a possible reason for the inconsistencies.

This gap in the literature presented an opportunity to assess and understand differences in health outcomes when comparing Latinos and non-Latinos. Consequently, conducting a comprehensive quantitative study that included Latino's place of residence as a variable potentially associated with obesity could provide more salient information about factors that may influence this population. Taking this approach strengthens existing studies related to this topic while bridging gaps in the literature. Moreover, conducting a thorough, in-depth analysis of a wide range of factors has the potential to yield (a) a reduction of obesity rates among Latinos as a consequence of having evidence

to foster a healthier lifestyle and (b) equip public health leaders, practitioners, legislators, and policymakers to make better-informed decisions when creating or modifying interventions or formulating and adopting policies explicitly designed to address the needs of this growing and underserved population in the United States (Arcaya, Graif, Waters, & Subramanian, 2016; Burris, 2018).

Problem Statement

According to the CDC (2015), obesity is one of the costliest chronic but preventable diseases affecting people in the United States. The costs associated with obesity are on the rise, and it is considered a national public health epidemic that has increased its prevalence by three times across race, gender, and age since the 1980s (Burris, 2018). William (2016) provided information that classified more than half adult men and women as obese; a rate that was calculated using weight in kilograms (kg) divided by height in meters squared and defined as a body mass index (BMI) of ≥ 30 for either gender. Burris (2018) and Arredondo, Sotres-Alvarez, Stoutenberg, Davis, Crespo, Carnethon, and Evenson, (2015) found that, in addition to poor diet, the lack of physical activity is a risk factor for obesity. Putrik, Amelsvoort, De Vries, Mujakovic, Kunst, Oers, Jansen, and Kant (2015) suggested that the built conditions in which people are born and live, and where their children learn and play, may also be an essential factor to consider when exploring the impacts on one's health.

Kravitz-Wirtz (2016) and Spring (2018) conducted longitudinal studies on the issue, and both researchers concluded that exposure to disadvantaged neighborhoods was associated with poor health, including obesity among African American groups when

compared to white Americans. However, information on Latino population groups was limited to non-existent. For example, the Kravitz-Wirtz study did not include Latinos while Spring (2018) included older adults, ages 45 and above from various races, but less than a fourth of the study participants ($n = 3,240$) were Latinos. This percentage of participation is significantly low because the Latino population is rapidly increasing in the United States (Holub, Elder, Arredondo, Barquera, Eisenberg, Romero, & Simoes, 2013). For example, Jacquez, Vaughn, Zhen-Duan, and Graham (2016) provided data from the Census Bureau, which cited that the Latino population make-up approximately 15% of the total U.S. population and reportedly is expected to double by 2060, with one in every three people identifying as Latino. Benitez, Dodgson, Coe, and Keller, (2016) discussed how adult Latino men and women have the second highest obesity prevalence compared to non-Latino whites (National Center for Health Statistics, 2018; Holub et al., 2013).

It is also worth noting that some scholars have found Latinos participated the least in physical activity when compared to other population groups such as white Americans (Benitez et al., 2016; Do, Wang & Elliott, 2013; Larsen, Pekmezi, Marquez, Benitez, & Marcus, 2013). For example, Larsen et al. (2013) concluded, after performing an exploration of several published articles about Latinos, physical activity, and environmental influences, that Latino women (47%) reported they never engaged in physical activity, compared to 29% of non-Latino white women. This information is important because, while the growth of the Latino population is steadily increasing in the United States, so are the rates of chronic diseases; in particular, obesity among Latinos

(Anselma et al., 2018; Putrik et al., 2015) and the economic strain this disease places on society is exorbitant. In summary, studies that provide comprehensive information about the health-related issues of Latinos who live in the United States are limited. Therefore, to bridge the gap in the literature and better understand determinants of obesity and physical inactivity among Latinos, I conducted an in-depth analysis that considered the coupling of a wide range of factors, including the place of residence.

Purpose of the Study

The purpose of this quantitative study was to examine whether there was a relationship between the place of residence, obesity (defined as body mass index (BMI) ≥ 30 for either gender), and physical activity among Latinos and whether there were significant differences when controlling for age, gender, and socioeconomic status— income level, education level, and employment status. This approach was unique because it involved conducting a correlational quantitative research design with three variables. Most researchers, including those whose studies are related to this population group, have looked at obesity or physical activity separately. In fact, a review of the literature revealed the lack of comprehensive quantitative studies with an aim specifically focused on Latinos (Arredondo et al., 2018; Kravitz-Wirtz, 2016; Spring, 2018), and of studies that relate to obesity and physical activity with neighborhoods—or places where Latinos live—to gain a deeper understanding of the effects these factors may have on this population group (Arredondo et al., 2018; Benitez, Dodgson, Coe & Keller, 2016; Kravitz-Wirtz, 2016; Spring, 2018.). Notwithstanding, some similar studies have focused on non-Latinos because of the limited complete datasets collected on this group. Given

the trajectory of the population growth among Latinos, coupled with the increased risk of obesity and physical inactivity, scholars must pay more attention to the health challenges faced by Latinos.

The population group for this study consisted of Latinos (U.S.-born/non-immigrants and immigrants Latinos/Hispanics and Spanish origins). The place of residence was the independent or predictor variable for the first two research questions (RQs), while the dependent variables were obesity (defined as a BMI \geq 30 for either gender), for the first RQ and physical activity for the second RQ. The covariates were age, gender, physical activity, and socioeconomic status (defined by income level, education level, and employment status).

Research Questions and Hypotheses

RQ 1: Is there a relationship between obesity and place of residence (defined by metropolitan and nonmetropolitan counties) among Latinos when controlling for age, gender, and socioeconomic status (income level, education level, and employment status)?

H₀: There is no relationship between obesity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between obesity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status.

RQ 2: Is there a relationship between physical activity and the place of residence (defined by metropolitan and nonmetropolitan counties) among Latinos when controlling by age, gender, and socioeconomic status (income level, education level, and employment status)?

H₀: There is no relationship between physical activity and place of residence among Latinos (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between physical activity and the place of residence among Latinos (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

Theoretical Foundation of the Study

The social-ecological model (SEM) is a theoretical conceptual framework created by Bronfenbrenner (1979). The SEM was integrated into this study to examine whether there was a relationship between the places where Latinos live, obesity, and physical activity and whether there are confounding factors such as age, gender and socioeconomic status (Glantz, Rimer, & Viswanath, 2008; Hanlon, Carlisle, Hannah, Lyon, & Reilly, 2012). The SEM framework, as illustrated in Table 1, presents other factors to consider that may be at play and intertwined, thereby influencing Latinos' behavior, by viewing this issue through the lens of the individual, interpersonal, organizational, community, and policy level (see Glantz et al. 2008).

This study was focused on examining whether there is a relationship between the place of residence, obesity, and physical activity among Latinos while adjusting for age, gender, and socioeconomic status. Applying the SEM conceptual framework, the objective was to gain a holistic perspective of indicators that may directly or indirectly be related to Latino men's and women's decision-making process regarding adopting a healthier lifestyle. For example, the individual level factor of the model was taken into account when the variables of the study were selected to gain some insight into whether these variables could be related to a person's behavior to participate in physical activity or make healthy food choices and whether it could vary by gender (see Glanz, Rimer, & Viswanath, 2008). Regarding the remaining levels included in the model, there was an opportunity of linking them to the study's variables. For example, at the interpersonal level, it made possible to look at the socioeconomic factors such as educational level and employment status, to help gain a deeper understanding of an individual's literacy levels, and groups or the lack thereof, and whether it varies by gender (Glanz et al. 2008).

Table 1

Social Ecological Model (SEM)

SEM level	Description
Individual	Biological characteristics, age, knowledge, literacy levels, individual values, and goals.
Interpersonal	Direct or indirect formal relationships such as social networks and support systems from family, friends, peers, co-workers, religious, customs, or traditions that may influence behaviors.
Organizational	Official organizations or social institutions such as local, place, and state services provided to an individual or group.
Community	Community organizations, institutions, including grassroots organizations, key community leaders, businesses, places for worship, and the built environment (e.g., parks or lack thereof) and access to health care facilities or transportation.
Policy	Policies at the local, state, and national levels, including policies governing the allocation of resources for health and access to health care services and community development or lack thereof.

Note. Adapted from Glanz et al. (2008) and Hanlon et al. (2012).

Concerning the organizational level, the neighborhood variable helped gain insight as to physical activity among Latinos within the metropolitan or nonmetropolitan counties and whether there were linkages to the level of obesity or physical inactivity among Latino men and women (see Glanz et al. 2008). At the community level, it was possible to consider whether the Latinos' health was influenced because of residing in a nonmetropolitan versus metropolitan counties. Lastly, at the policy level, the study

garnered insight into whether local, state, or federal policies were related to obesity, physical inactivity, socioeconomic status, and if it varied among Latino men and women.

Nature of the Study

The population group consisted of Latinos/Hispanics and Spanish origins (U.S.-born/non-immigrants and immigrants both documented and undocumented). The place of residence (defined by metropolitan code) was the independent or predictor variable for the first two RQs, while the dependent variables were obesity (as defined by $BMI \geq 30$ for either gender) for the first RQ and physical activity for the second RQ. The covariates were age, sex, physical activity, and socioeconomic status. The approach consisted of adopting a correlational quantitative research design, using secondary data from the Behavioral Risk Factor Surveillance System (BRFSS) for this study. The BRFSS is a national representative sample of the entire population of the United States, including individuals from low socioeconomic status to high socioeconomic status (CDC, 2017a).

Data were captured on individuals, including Latinos and families, annually. The data encompassed health status-self reported, well-being, physical activity, and socioeconomic status. The operational definition for the disadvantaged neighborhood mimicked the operational definition adopted by Kravitz-Wirtz (2016), which is similarly defined by the census bureau as residents residing in metropolitan or nonmetropolitan neighborhoods, including individuals identified as living below the poverty line with low socioeconomic status. Binary logistic regression analysis was performed for the first RQ and chi-square analysis for the second RQ to ascertain whether there was a relationship between the places where Latinos live, obesity, and physical activity and also to

determine whether there were significant differences when controlling for age, gender, and socioeconomic status.

Literature Review

Literature Search Strategy

The primary focus of the literature search was to identify sources related to the objective and research of this study. This meant conducting a comprehensive search of several publication databases, including peer-reviewed journal articles and empirical studies and topically relevant sources. Literature searches spanned the years of 2015 to 2019. Some key search terms included but were not limited to *obesity, physical activity, physical inactivity, Latinos, neighborhood and obesity, obesity and physical activity, neighborhood and physical activity, neighborhoods and Latinos, Latinos and obesity, Latinos and physical activity*, to better understand the determinants of obesity, physical inactivity and the neighborhood in which Latinos reside. Search engines like Walden University's library-health science search engines, CINAHL & MEDLINE, ProQuest Nursing & Allied Health Source, organization websites, namely World Health Organization (WHO), Centers for Disease Control and Prevention (CDC) and textbooks for relevant articles were used.

A number of the literature searches yielded both quantitative and qualitative methodology results, with a majority of the studies being cross-sectional design. The goal was to incorporate relevant, pertinent literature as evidence to support the design and methodology of this study.

Place of Residence and Obesity

Kravitz-Wirtz (2016) conducted a longitudinal study to determine whether long-term cumulative exposure residing in disadvantaged communities from birth to adolescence resulted in poor health, including obesity. Researchers found associations between disadvantaged neighborhoods and poor health, including obesity. The finding from this study offers support to the growing literature on this topic, in particular, to the findings of Putrik et al. (2015). However, this study was limited because the researchers only used whites and African Americans. Latinos were excluded from the sample population as a result of the lack of availability of data at the time of the study.

Place of Residence and Physical Activity

Xu and Wang (2015) established associations between the physical and built environment and obesity. Similar to Putrik et al. (2015), Xu and Wang (2015) looked at how living in urban settings impacted health. This study comprised of several population groups, including Latinos living in urban communities versus rural communities. The findings from this study support the association between physical activity and place of residence, and the growing literature related to this topic provides an opportunity for further research on this topic as it relates to Latinos.

Place of Residence, Obesity, and Physical Activity

Xu and Wang (2015) also established associations between the physical and built environment, physical activity, and obesity. Similar to Putrik et al. (2015), Xu and Wang (2015) looked at how living in urban settings impacted health, and their results showed a significant association between the built environment, physical inactivity, and obesity.

Although this study comprised of several population groups, including Hispanics, the researchers only focused on those individuals living in urban communities versus rural communities. However, the findings from this study support the associations of the growing literature about the relationship between obesity, place of residence, and physical activity, and therefore give insights to study this topic in relation to Latinos.

Place of Residence and Latinos

Similar to Putrik et al. (2015), Kravitz-Wirtz (2016), and Xu and Wang (2015), Spring (2018) examined short- and long-term impacts of built neighborhoods and self-rated health outcomes among older adults ages 45 and above, adding to the growing body of literature on health and the environment. The findings indicated that long-term exposure to disadvantaged communities affects health. However, this study is limited because less than one-fourth of the study population were Latinos because of the challenges with data collection at the time of the study.

Obesity and Latinos

The study of Anselma et al. (2018) focused on Latinos and obesity in comparison to non-Latinos. The findings from this study established that obesity not only affects Latino adults but also puts Latino children at risk because some eventually become adults with poor health. The CDC (2015) and Holub et al. (2013) raised concerns that obesity is increasing among Latinos, especially in young people. This study supports the growing literature on this topic and provides evidence for further research.

Physical Activity and Latinos

Huisingh-Scheetz, Bilir, Rush, Burnet, and Dale (2013) examined the relationship between BMI and health-related quality of life, taking into account race/ethnicity (blacks, Latinos, and whites). This study focused on Latinos and physical activity in comparison to non-Latinos. Researchers concluded that participants who reported low participation in physical activity had high BMI levels, similarly across all ethnic groups. Although results varied across groups, Latinos reportedly participated less in physical activity when compared to non-Latinos. However, the researchers cited that due to limited data and scope, further information was necessary to gain a deeper understanding of the barriers of physical inactivity faced by Latinos and recommended researchers undertake further investigation into that population.

Definition of Terms

Body mass index (BMI): It is the ratio calculated using weight in kilograms (kg) divided by height in meters squared that is used to indicate overweight or underweight. Overweight is defined as a BMI ≥ 27.3 for women and $27.8 \geq$ for men, while obesity is a BMI ≥ 30 for either sex (Huisingh-Scheetz et al., 2013).

Physical activity: Refers to the ability to burn calories as a result of body movement. Such exercise has to be “planned, structured, and repetitive, and its activities aimed at improving physical fitness and health” (CDC, 2015, paragraph 3; CDC, 2018).

Place of residence: The place or neighborhood where individuals live (defined by metropolitan county or nonmetropolitan county; CDC, 2017b; CDC, 2018).

Socioeconomic Status: For this study, the socioeconomic status is defined by the following variables: (a) level of education, (b) employment status, and (c) level of income.

Assumptions

One assumption of this study was related to the reliability of using a quantitative cross-sectional design to establish an association between the dependent variables (obesity for the first RQ and physical activity for the second RQ) and independent variable (place of residence). Another related assumption was that most researchers have neither coupled the variables physical activity and obesity with the place of residence nor solely focused on Latinos due to limitations and availability of data (CDC, 2017b; Jones & Huh, 2014; Kravitz-Wirtz, 2016; Spring, 2018). Lastly, the findings from the study could potentially be generalized to similar population groups since BRFSS is an established data collection process that administers surveys at a national and local level. Therefore, the assumption is that the results of this study are reliable enough to be generalized to similar populations.

Scope and Limitations

Several researchers have examined even among Latinos obesity or physical activity separately. However, because of a lack of data, few have conducted a comprehensive quantitative study specifically focused on Latinos and coupling obesity and physical activity with a place of residence (Arredondo et al., 2018; Kravitz-Wirtz, 2016; Spring, 2018). Hence, my study was an opportunity to bridge the gap in the literature by adopting this design and may inform policymakers to help Latinos achieve

better health by reducing obesity and increasing physical activity. Furthermore, this approach may potentially shed some light on the importance of this issue in order to create a model that inspires a social change.

One limitation of the study stemmed from the proposed quantitative research design since this method hinders the ability to probe responses as opposed to a qualitative research method that lends gain a broader perspective or greater understanding not captured in a numeric value. However, the qualitative research design was not possible due to the availability of qualitative databases and practical reasons. Another limitation is related to underreporting or missing data due to undocumented Latinos' fear of being identified. In this instance, statistical weighting scales were applied to correct for over or under-reporting.

Summary, Significance, and Conclusion

This study was intended to add information to existing related studies that have been focused on other population groups such as African Americans. Contributing to the growing body of literature seeks to promote investments that go beyond interventions that are focused solely on the individual by expanding considerations to include the social, economic, and physical structures of disadvantaged neighborhoods. In particular, investments which focus on communities with high concentrations of minorities, particularly Latinos and individuals living below the poverty level, because they have the potential to yield in long-term benefits for population health and health equity that may extend over the life course and across generations (Jones and Huh, 2014). The CDC (2015) and Putrik et al. (2015) explained that efforts that focus solely on the individual to

explain social situations are limiting and may not necessarily explain all the reasons for poor health and that consideration of other factors such as neighborhood characteristics is necessary.

Therefore, examining factors such as where individuals live (while considering their neighborhood characteristics, including community layouts, parks, trails, or the lack thereof) is vital to explain other factors that may directly or indirectly impact obesity prevention rates. Murry and Lopez (2013) discussed how the costs associated with chronic diseases make up more than 30% of the national per capita expenditures and are growing. Therefore, improving Latinos' opportunities to make better health choices and increase physical activity could potentially decrease obesity among this group while ultimately yield in decreasing health care costs associated with chronic diseases like obesity; thus, improving one's overall life expectancy and fostering social change (Kravitz-Wirtz, 2016). Arguably, other contextual factors such as crime or safety concerns, and even lack of adequate street lighting, may influence Latinos' low level of physical activity and, therefore, a better understanding of the broader social and community contexts where Latinos live may be useful to explain their behaviors that result in poor health (Kravitz-Wirtz, 2016; CDC, 2017b; Spring, 2018). Hence, conducting a comprehensive quantitative study that focused explicitly on Latinos offered a more in-depth look into this issue as it related to Latinos and bridged the gap in the literature. This may enable Latinos to achieve better health by reducing obesity and increasing physical activity. Additionally, the information obtained can help to highlight

the importance of this issue to policymakers and hopefully inspire a social change amongst the Latino population group.

Section 2: Research Design and Data Collection

Introduction

The goal of this study was to conduct a quantitative correlational study to explore and describe the relationship between the independent and dependent variables. More specifically, whether there was a relationship between the place of residence, obesity, and physical activity among Latinos and whether there were significant differences when controlling for age, gender, and socioeconomic status. To do that, a secondary data set of archived quantitative data, retrieved from the BRFSS, was the primary source of data to investigate if there was an association between the independent and dependent variables while controlling for confounding variables (see CDC, 2018). The place of residence was the independent or predictor variable for the first two RQs, while the dependent variables were obesity for the first RQ and physical activity for the second RQ.

Research Design and Rationale

Adopting this approach had the potential to bridge a gap in the literature on the selected topic because most researchers, even among the Latino group, have looked at obesity, neighborhood, or physical activity separately. A review of the literature revealed the lack of a comprehensive quantitative aim specifically focused on Latinos, coupled obesity and physical activity with neighborhoods (or places where Latinos live), to gain a deeper understanding of the effects these factors may have on this population group (see Arredondo et al. 2018; Kravitz-Wirtz, 2016; Spring, 2018). Notwithstanding, researchers also suggested that obesity among Latinos is a public health issue that warrants further investigation due to the limited comprehensive studies available and inconsistent results

on this topic (CDC, 2015; Huisinsh-Scheetz et al., 2013; Kravitz-Wirtz, 2016; Spring, 2018). Thus, given the trajectory of the population growth among Latinos and the increased risk of obesity and physical inactivity, it is crucial that scholars pay more attention to the health challenges that Latinos are facing.

Methodology

Population

The targeted population group consisted of Latinos (Latinos/Hispanics and Spanish origins), documented, and undocumented. The BRFSS, which is a national representative sample of the entire population of the United States that includes individuals from low socioeconomic status to high socioeconomic status, was the source of data used in this (see CDC, 2018). The CDC and individual states within the United States collaborate on collecting the survey data from participants annually. However, the CDC is responsible for storing, scrubbing, and preparing data for analysis.

The population of the BRFSS for 2018 consisted of approximately 437,436 participants situated across the country (see CDC, 2018), and 11,217 participants lived in the state of Texas, where the study was focused. Study participants were adults, both men, and women whose ages were at least 18 years.

Sampling and Sampling Procedures

I conducted a probability sample within the Texas subpopulation of 11217 participants that resulted in 2,434 individuals with Latino/Hispanic and Spanish origins that lived in metropolitan and nonmetropolitan counties. The selection criteria were adults who were 18 to older, lived in households, and had had either a landline or cellular

for at least 90 days (see CDC, 2018). These individuals became the targeted population of the study, and 270 participants were determined the minimum required sample size.

Weighting scales were applied to correct for over or under-represented data. Using the 2018 dataset from the BRFSS, the variables of interest included obesity, physical activity, and socioeconomic status—defined as income level, education level, and employment status—in addition to age, gender, and metropolitan or nonmetropolitan status. The operational definition for the place of residence mimicked the operational definition adopted by Kravitz-Wirtz (2016) for disadvantaged neighborhoods, which is similarly defined by the census bureau as residents residing in metropolitan or nonmetropolitan neighborhoods, including those areas categorized below the poverty line and classified as low socioeconomic status.

Justification for the Effect Size, Alpha, and Power Levels

The approach to developing the study consisted of conducting secondary data analysis using the BRFSS dataset administered in 2018. The original data set consisted of approximately 437,436 participants across the country, of which 11,217 were from the state of Texas, and 2,434 indicated they were of Latino/Hispanic and Spanish origins. Based on the analysis conducted and results from using the G*Power framework and software, an alpha level of 0.5 was determined feasible to reduce type 1 error and a minimum power level of 80% to reduce the type 2 error while the moderate effect size of $f=0.25$ and a sample of 270 met the minimum sample size requirement (see Gerstman, (2015); Faul, Erdfelder, Buchner, & Lang, 2009).

Instrumentation and Operationalization of Constructs

BRFSS is a national survey instrument used to collect information on participants, including sociodemographic characteristics such as gender, ethnicity, education, and income (CDC, 2018). For this study, the independent variable was the place of residence (defined by metropolitan or nonmetropolitan counties). The dependent variables were obesity for the first RQ and physical activity for the second RQ (see CDC, 2017b; CDC, 2018). The covariates were age, gender, and socioeconomic status (income level, employment status, and education level).

Research Questions and Hypotheses

The RQs and hypotheses of the study were the following:

RQ 1: Is there a relationship between obesity (as defined by BMI) and place of residence (defined by metropolitan code) among Latinos when controlling for age, gender, and socioeconomic status (income level, education level, and employment status)?

H₀: There is no relationship between obesity (as defined by BMI) and the place of residence where Latinos live (defined by metropolitan or nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between obesity and the place of residence where Latinos live (defined by metropolitan or nonmetropolitan counties) when controlling for age, gender, and socioeconomic status.

RQ 2: Is there a relationship between physical activity and the place of residence (defined by metropolitan or nonmetropolitan counties) among Latinos when controlling by age, gender, and socioeconomic status (income level, education level, and employment status)?

H₀: There is no relationship between physical activity and place of residence among Latinos (defined by metropolitan or nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between physical activity and the place of residence among Latinos (defined by metropolitan or nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

Data Analysis

Once approval (09-25-19-0582848) from Walden Institution Review Board was obtained, the next step in the process was to prepare a data file for analysis. This included solidifying data variables of interests and recoding as necessary to make data appropriate for analysis. Other steps involved performing quick review analysis to reduce the impact on inferential analysis, such as descriptive and frequency statistics, using the Statistical Package for Social Science (SPSS). The initial outputs resulted in frequency statistics as appropriate such as counts, mean, median, range, and standard deviation and descriptive statistics. Pie charts and tables graphically display the distribution of the frequency statistics (Green & Salkind, 2014).

Using the SPSS Version 25 statistical software, a binary logistic regression was conducted to test the RQ 1: “Is there a relationship between the place of residence and obesity among Latinos when controlling for age, gender, and socioeconomic status?” The chi-square test was conducted to examine RQ 2: “Is there a relationship between the place of residence (defined by variable metropolitan code—place of residence) and physical activity among Latinos when controlling by age, gender, and socioeconomic status?”

Threats to Validity

According to Babbie (2016), quantitative research has the potential to result in a broad array of threats to validity. For example, selection bias is one threat to validity, given that the proposed methodology consisted of using secondary data to perform the analysis. Another concern pertained to any changes that could have occurred in the participants during the study that were outside of the study design and could affect the results of the study (Endicott, n.d.). Thus, such instance could have adversely impacted results and weakened the confidence in the fact that a relationship could have existed between the independent and dependent variables (Burkholder, Cox, & Crawford, 2016). Hence, ignoring the many given circumstances that could have arisen during research was inadvisable and could have potentially resulted in errors in the research outcome, and ultimately rendering the research invalid (Babbie, 2016; Endocott, n.d.).

Lastly, there was also the potential threat of nonresponses and underreporting. The risk of not achieving an adequate response rate from Latinos particularly for this study, given the population of interest, was considered problematic and a fundamental

flaw when using a secondary data source (see Burkholder et al., 2016), despite the fact that the BRFSS is a national dataset and survey data are collected in partnership with states via telephone, both landline, and cellular phones. Therefore, weighting to correct for over or under-represented data was applied (see CDC, 2018).

Ethical Procedures

BFRSS data are available for public consumption via the Internet. However, for tracking purposes, it was required to register at the site in order to obtain datasets. When conducting secondary analysis, one crucial ethical procedure to adhere to is making sure consent forms are signed or authorized. Some other additional crucial ethical considerations that may come from conducting secondary analysis relate to the amount of data available or sample size in addition to ensuring the identifying information, data security, and data storage (see Center for Innovation in Research, n.d.; Endocott, n.d.; Johnston, 2014.). The access to the data and their analysis were done ethically.

Summary

In summary, obesity (as defined by BMI of ≥ 30 for either gender) is considered to be a leading health problem in the U.S. affecting Latinos. Consequently, conducting a comprehensive, in-depth review, which focused explicitly on Latinos to examine whether there is a relationship between the places where they live, obesity, and physical activity was expected to provide a deeper understanding of the effects these factors could have on this population group. Besides, it may add to the growing literature, raise awareness, and potentially foster a social change by inspiring a behavioral change to adopt a healthier lifestyle.

Section 3: Presentation of the Results and Findings

Introduction

In Section 3, the results of the analyses performed are presented. The section also includes the results of the binary logistics regression to address research hypothesis one (RH1) as well as the results of the chi-square test to address research hypothesis two (RH2).

The purpose of this study was to examine the association between obesity, physical activity, and the place of residence when controlling for age, gender, and socioeconomic status among Latinos. The socioeconomic status variables were categorized as the level of income, education level, and employment status. Metropolitan or nonmetropolitan counties defined the place of residence. Gaining a more profound understanding of the problem by conducting a thorough, in-depth analysis of the impact of obesity, physical activity, and the place of residence among Latinos has the potential to aid health professionals and policymakers in developing programs or policies that are informed interventions, tailored explicitly for Latinos. In addition, it may be possible to reduce obesity rates by increasing physical activity among Latinos (Arcaya et al., 2016; Burris, 2018).

The research hypotheses for this study were as follows:

Research Hypotheses

Research Hypothesis 1 (RH1)

H₀: There is no relationship between obesity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for

age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between obesity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status.

Research Hypothesis 2 (RH2)

H_o: There is no relationship between physical activity and place of residence among Latinos (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

H_a: There is a relationship between physical activity and the place of residence among Latinos (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status (income level, education level, and employment status).

Description of the Secondary Data

The 2018 BRFSS is a national dataset. Data are captured by administering a survey on individuals and families annually, including Latinos. Data variables of interest for this study included age, gender, obesity, physical activity, income level, education level, and employment status. SPSS, version 25 software was deployed to perform analysis on 11,217 participants from the state of Texas, of which 2,434 indicated they were of Latino/Hispanic and Spanish origin. As previously stated, the dependent variables were obesity for RQ 1 and physical activity for RQ 2.

Place of residence was the independent variable (defined by metropolitan and nonmetropolitan counties), and the covariates were age, gender, and socioeconomic status, which comprised the following variables: (a) level of education, (b) employment status, and (c) level of income.

Minimum Sample Size

The original file contained 437,436 participants across 51 states, of which 11,217 were from the state of Texas and 2,434 of them identified as Latino/Hispanic and Spanish origins. Based on the analysis conducted and results from using the G*Power framework and software, a sample of 270 would meet the minimum sample size requirement (see Faul et al., 2009; Sullivan, 2016). An alpha level of 0.05 was determined feasible to reduce the type 1 error. A minimum power level of 80% was determined feasible to reduce the type 2 error with the moderate effect size of $f=0.25$ (see Faul et al., 2009).

Data Analysis Plan

Data were reviewed and analyzed using descriptive and inferential techniques. Univariate statistics using SPSS was performed to describe the frequency distribution for each categorical variable and means and standard deviation for ordinal and continuous variables (see Laureate Education, 2014; McHugh, 2013). Concerning the first question, a binary logistic regression analysis was conducted to test the RH1 hypothesis: “There is no relationship between the obesity and the place of residence (defined by metropolitan and nonmetropolitan counties) among Latinos when controlling for age, gender, and socioeconomic status.” A chi-square using SPSS was deployed to test RH2: “There is no relationship between physical activity and the place of residence (as defined by

metropolitan or nonmetropolitan counties) among Latinos when controlling by age, gender, and socioeconomic status.”

Preparing data for analysis was an important step and entailed some level of scrubbing for inconsistencies and errors, and recoding of variables to support analysis (see Frankfort-Nachmias, Nachmias, & DeWaard, 2015). For example, the obesity variable (as defined by the BMI) was recoded to a dichotomized variable, and the metropolitan state variable renamed to the place of residence. The original 2018 BRFSS dataset contained 437,436 participants across 51 states. However, for this study, the file was reduced to a subset narrowed down to approximately 11,217 participants from the state of Texas, of which 2,434 identified as Latino/Hispanic and Spanish origins. This resulted in a file that included only those participants from the state of Texas and classified as of Hispanic or Spanish origin. The newly created dataset yielded 2,434 participants and 51 variables, of which only ten variables were of interest.

As shown in Table 2, the study variables included the State ID, metropolitan (place of residence) status, gender, physical activity, education, employment status, income level, race, age, and obesity (defined as BMI).

Table 2

Study Variables

Variable	Type	Variable details	Description
State	Numeric	STATE FIPS CODE	Texas=State of Interest
Gender	Numeric	Male or Female	Respondents Gender
Physical Activity	Numeric	Yes or No Unknown = 0	Exercise in Past 30 days
Education	Numeric	Numbers	Education Level
Employment	Numeric	Numbers	Employment level
Income	Numeric	Numbers	Income level
Recode Metropolitan status (MS CODE) to Place of Residence	Numeric	Metropolitan counties (_URBNRRL = 1,2,3,4)" "Nonmetropolitan counties (_URBNRRL = 5,6)"	Metropolitan Status
Race	Numeric	1 = "White, Non-Hispanic" 2 = "Black, Non-Hispanic" 3 = "Asian, Non-Hispanic" 4 = "American Indian/Alaskan Native, Non-Hispanic" *5 = "Hispanic" 6 = "Other race, Non- Hispanic"	Respondents Race
BMI	Numeric	0 = "unknown or missing" 1 = "Underweight and Normal Weight." 2 = "Overweight and Obese"	BMI

Analyses and Results

Univariate Analysis

The dataset for this study consisted of approximately 11,217 adult men and women participants, age 18 and older, from the state of Texas. However, the dataset was segmented to include only those participants that identified explicitly as of Hispanic or

Spanish origin. As seen in Table 3, the results of this subset file yielded in 2,434 participants, both male and female, age 18 and older.

Table 3

Total Count of Hispanic or Spanish Origin Participants

	<i>f</i>	%	Valid %	Cumulative %
Valid Hispanic	2,434	100.0	100.0	100.0

Descriptive Statistics

The descriptive statistics are provided in Table 4. Table 4 and Figure 1 show the percentage of Hispanic or Spanish origin respondents by gender. It is worth noting that the majority of the participants were Latino women (58%), while 1,025 of the Latino participants (42%) reported as male. Six of the participants reported as “do not know” or “unsure,” while the remaining two Latino participants refused to answer.

Table 4

Frequency and Percentage of Hispanic or Spanish Origin Respondents by Gender

		<i>f</i>	%	Valid %	Cumulative %
Valid	Male	1,025	42.1	42.3	42.3
	Female	1,401	57.6	57.7	100.0
	Total	2,426	99.7	100.0	
Missing	Do not know/ unsure	6	0.2		
	Refused	2	0.1		
	Total	8	0.3		
Total		2,434	100.0		

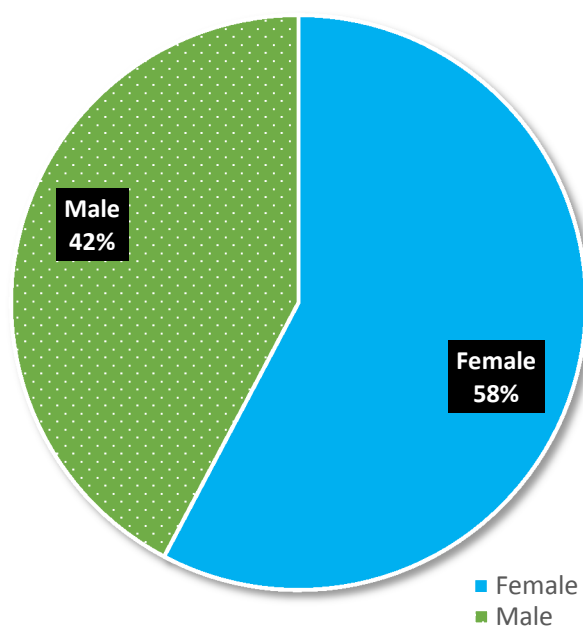


Figure 1. Percentages of Latinos by gender.

Table 5 shows the frequency and percentage of Latinos by age group. The Latino participants' age (in years) in this study spanned from 10% of the population within the 18 to 24 years group to 21% of the participants within the 65 or older group. Moreover, 20% of the participant's ages fell between 25 to 34, while 18% of the Latinos age groups fell between 35 to 44.

Table 5

Frequency and Percentage by Age Group

		<i>f</i>	%	Valid %	Cumulative %
Valid	Age 18 to 24	259	10.6	10.6	10.6
	Age 25 to 34	481	19.8	19.8	30.4
	Age 35 to 44	447	18.4	18.4	48.8
	Age 45 to 54	371	15.2	15.2	64.0
	Age 55 to 64	359	14.7	14.7	78.8
	Age 65 or older	517	21.2	21.2	100.0
	Total	2,434	100.0	100.0	

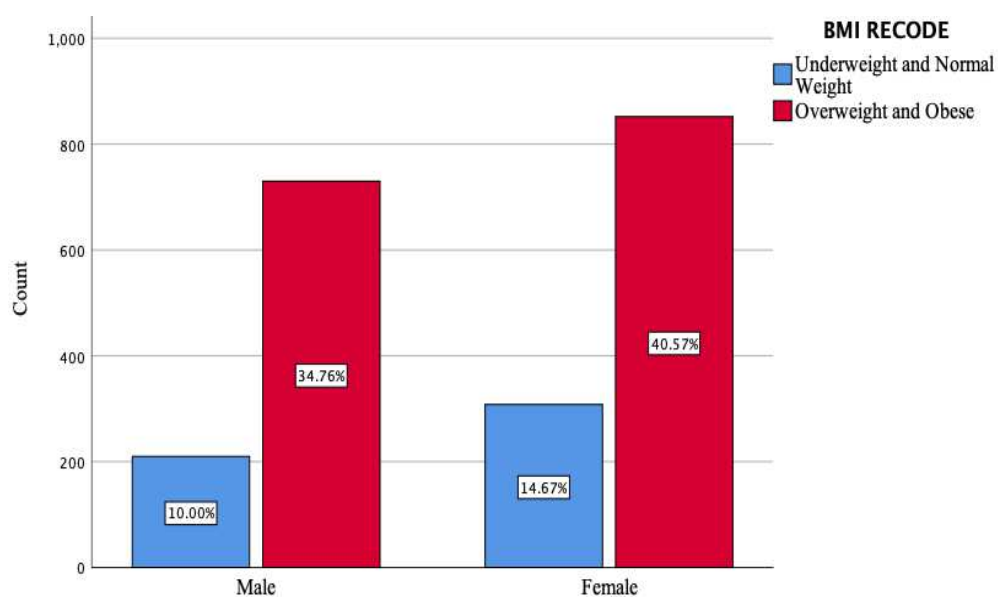


Figure 2. Percentage of Latinos by BMI and gender.

In Figure 2, the percentage of Latinos by BMI and gender is displayed. Based on the results, 40% of the female population self-reported being overweight or obese, and 35% of the male Latino population self-reported being overweight or obese. The next set of figures shows the percentage of Latinos by socioeconomic status —educational level, employment status, and income levels.

Figure 3 shows that 27% of the Latinos reportedly completed a GED or high school diploma, while 14% reportedly only having completed grades one through eight.

According to Figure 4, 50% of the Latinos indicated being employed for wages, while 8% indicated they were unable to work. Furthermore, 9% of the Latino population reportedly were self-employed while 14% of the population indicated being retired.

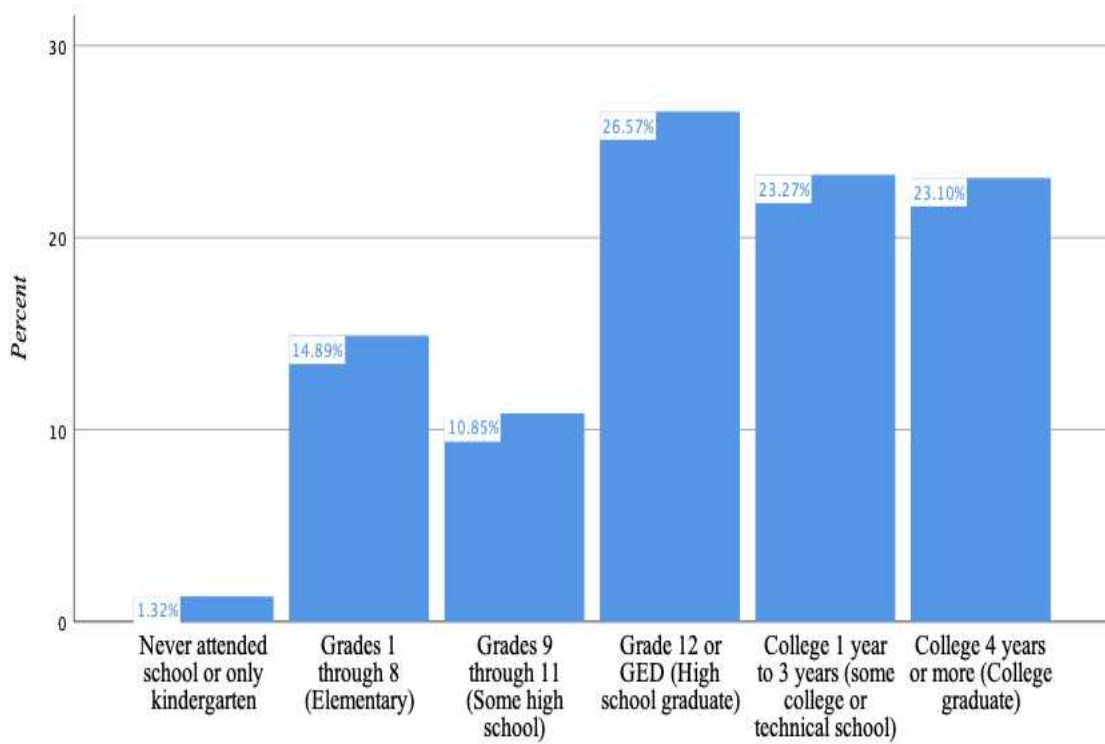


Figure 3. Percentage of Latinos by education level.

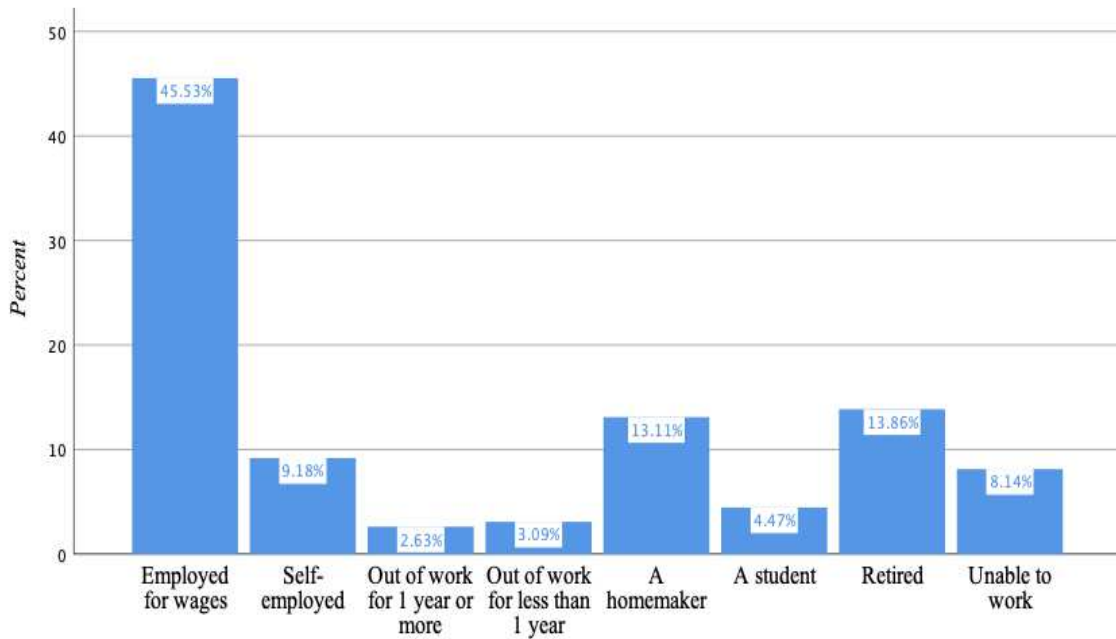


Figure 4. Percentage of Latinos by employment status.

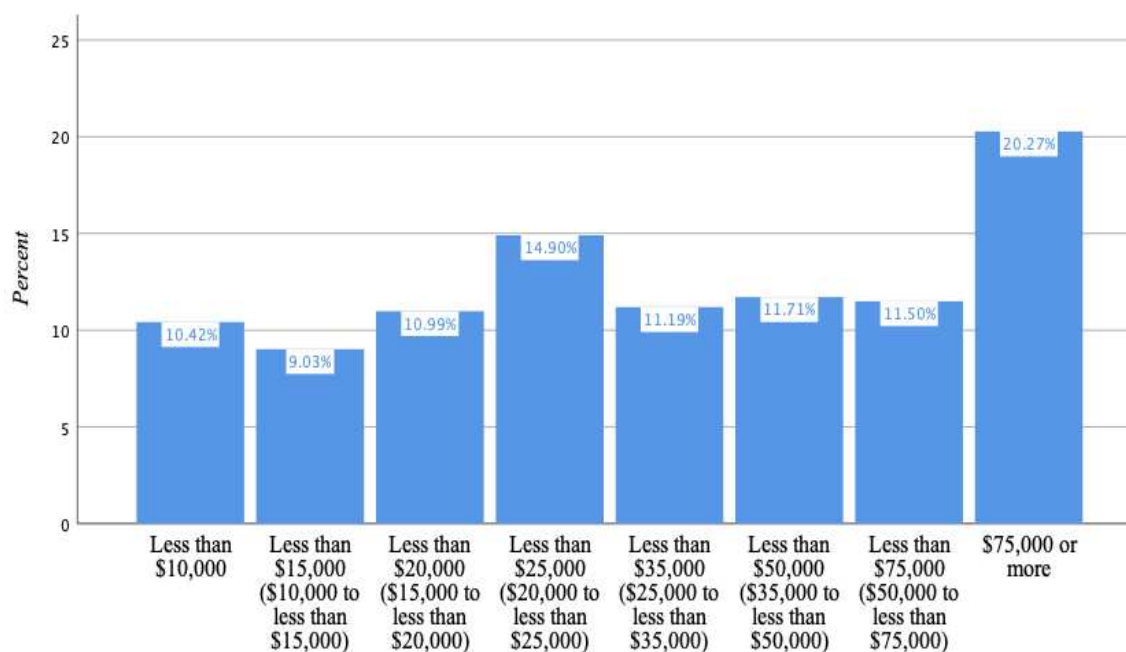


Figure 5. Percentage of Latinos by income level.

As shown in Figure 5, 20% of the Latinos self-reported annual earnings of seventy-five thousand or higher in 2018, while 14% of the Latino population in Texas reportedly earned less than twenty-five thousand yearly and another 10% of the Latino population earned less than ten thousand annually. These results are essential because they provide insight into the socioeconomic status of the Latino participants who participated in BFRSS in 2018 and who reside in Texas.

The percentage of Latinos by place of residence, defined as metropolitan counties versus nonmetropolitan counties, is shown in Figure 6. Reportedly, in 2018, the majority of the Latino population in Texas (91%) resided in metropolitan counties versus 9% that lived in nonmetropolitan counties.

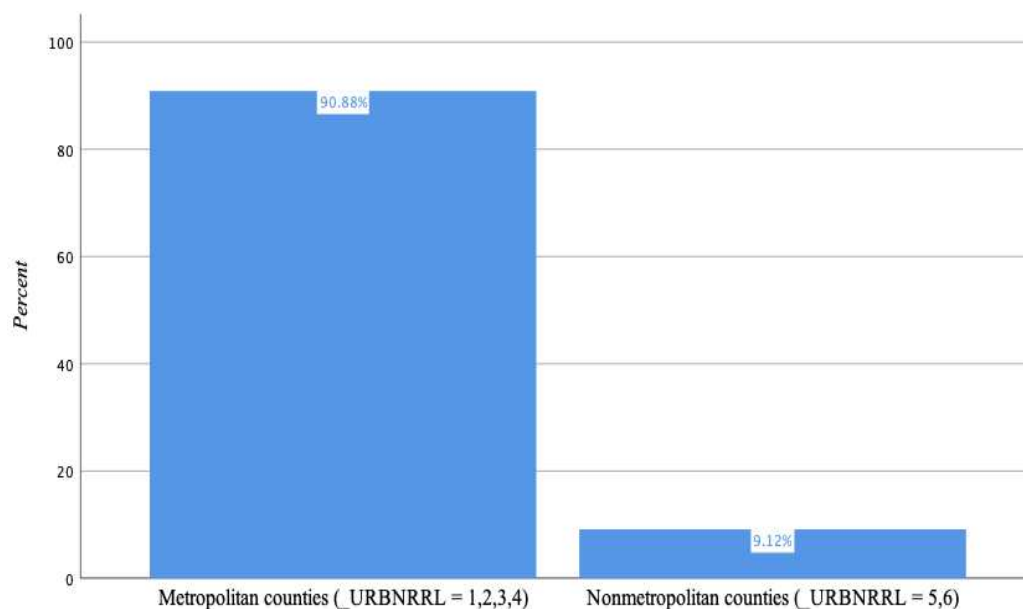


Figure 6. Percentage of Latinos by place of residence.

Binary Logistic Regression

To test RQ 1, a binary logistic regression was performed to test the hypothesis: there is no association between obesity and the place of residence where Latinos live (defined by metropolitan or nonmetropolitan area) while controlling for gender, age, and socioeconomic status-income level, education level, and employment status. Obesity was the dependent variable, and place of residence was the independent variable while age, gender, and socioeconomic status-income level, employment status, and education level were the covariates. The p-value was set at 0.05, and the confidence interval set at 0.95%. In preparation for data analysis, the variables gender and education levels were set as categorical variables with category (a) male, and the category (b) never attended a school or only kindergarten set as first category reference.

As shown in Table 6, the results of the binary logistic regression were statistically significant, $\chi^2(10, N = 1738) = 60.662, p < .05$ (see Table 6). Therefore, the hypothesis for RQ1 was rejected, and the alternative hypothesis is accepted. As shown in Table 7, the Omnibus Tests of Model Coefficients indicates that the model summary explains 34% to 52% of the variance of the dependent variable-obesity (see Table 7). Furthermore, in Table 7, the -2 log-likelihood of 1816.903 and adjusted R square (Nagelkerke R square) of .052 suggest a predictive capacity of this model to produce significant results in 5.2% of the cases after controlling for age, gender, and the socioeconomic status (income level, education level, and employment status).

Table 6

Omnibus Tests of Model Coefficients

		χ	<i>df</i>	Sig.
Step 1	Step	60.662	10	.000
	Block	60.662	10	.000
	Model	60.662	10	.000

Table 7

Nagelkerke R Square Test

Step	-2 Log likelihood	Cox & Snell R square	Nagelkerke R square
1	1816.903 ^a	.034	.052

In Table 8, the result of the Hosmer and Lemeshow test is insignificant (.298), which indicates that the data adequately fits the model and was a good fit.

Table 8

Hosmer and Lemeshow Test

Step	χ	<i>df</i>	Sig.
1	9.552	8	.298

In Table 9, the results of the adjusted model coefficients after adjusting for age, gender, and the socioeconomic status -income level, employment status, and education level is presented and also show that there was a significant change in the regression coefficient for age ($p = .000$, $\text{Exp}(B) = 1.234$), education level ($p = .009$, $\text{Exp}(B) =$) and employment status ($p = .000$, $\text{Exp}(B) = 878$). Interestingly, gender ($p = .547$, $\text{Exp}(B) = 1.075$) was not significant in the adjusted model ($p > 0.05$).

Table 9

Variables in the Equation: Gender, Age, Education Level, Income Level, Employment Status, and Place of Residence

Step 1a	<i>B</i>	<i>SE</i>	Wald	<i>df</i>	Sig.	$\text{Exp}(B)$	Lower	Upper
Gender	.072	.120	0.362	1	.547	1.075	0.850	1.359
Age	.210	.040	28.284	1	.000*	1.234	1.142	1.333
Education level			15.345	5	.009*			
1	.306	.823	0.138	1	.710	1.357	0.271	6.811
2	.602	.243	6.162	1	.013*	1.826	1.135	2.937
3	.761	.249	9.342	1	.002*	2.140	1.314	3.487
4	.571	.171	11.118	1	.001*	1.770	1.265	2.476
5	.320	.159	4.040	1	.044*	1.377	1.008	1.880
Income Level	.007	.031	0.050	1	.823	1.007	0.947	1.070
Employment status	.130	.026	25.488	1	.000*	0.878	0.834	0.923
Metropolitan vs nonmetropolitan counties	.254	.216	1.379	1	.240	1.289	0.844	1.969
Constant			0.177	0.361	0.241	1.000	0.623	1.194

Note: ^a Variable(s) entered on step 1: Gender, Age, Education Level, Income Level, Employment Status, Metropolitan vs. Nonmetropolitan Counties.

Cross-Tabulation and Chi-Square Analysis

A Chi-Square test of association was used to test the hypothesis for RQ 2. The hypothesis for RQ2 was: *there is no relationship between physical activity and place of residence (defined by metropolitan code) among Latinos when controlling for age, gender, and socioeconomic status-income and education level, and employment status.* The dependent variable was physical activity, and the independent variable was the place of residence. The confounding variables were age, gender, and socioeconomic status - income level, employment status, and education.

Table 10 shows a count by gender of Latinos residing in Texas that indicated if they had exercised in the previous 30 days. For this test, of the 2,434 participants, 2,421 were considered valid cases, although only 1,686 (which is well beyond the requirement for statistical power) of the participants reported exercising in the previous 30 days (see Table 10). Of the 1,686 responses, 755 (31%) of the males reported having exercised in the previous 30 days, while 931 (38%) females indicated they had exercised in the same period. Table 11 presents a crosstabulation by percent of Latinos by place of residence and exercise in the previous 30 days. The results show that 1,552 of the participants reported having exercised in the previous 30 days while living in metropolitan counties versus 655 of the participants indicated having no exercise in the same period.

Table 10

Gender and Exercise in Past 30 Days

		Exercise in past 30 days		
		Yes	No	Total
Respondents' gender	Male	755	267	1,022
	Female	931	468	1,399
Total		1,686	735	2,421

Similarly, 139 of the participants indicated having exercised in the previous 30 days while living in nonmetropolitan counties versus 83 that reported having had no exercise in the previous 30 days (see Table 11). More importantly, there were no significant differences with physical activity within the previous 30 days among participants in metropolitan counties versus nonmetropolitan counties, as seen in Table 12.

Table 11

Crosstabulation of Percent of Exercise in the Past 30 Days by Place of Residence

Exercise in previous 30 days		Place of residence		
		Metropolitan	Nonmetropolitan	Total
Yes	Count	1,552	139	1,691
	Expected Count	1,536.4	154.6	1,691.0
	% within	91.8%	8.2%	100.0%
	EXERCISE IN PAST 30 DAYS			
	% within the Place of Residence	70.3%	62.6%	69.6%
	% of Total	63.9%	5.7%	69.6%
No	Count	655	83	738
	Expected Count	670.6	67.4	738.0
	% within Exercise in Previous 30 Days	88.8%	11.2%	100.0%
	% within the Place of Residence	29.7%	37.4%	30.4%
	% of Total	27.0%	3.4%	30.4%
	Total	Count	2207	222
Expected Count		2,207.0	222.0	2,429.0
% within Exercise in Previous 30 Days		90.9%	9.1%	100.0%
% within the Place of Residence		100.0%	100.0%	100.0%
% of Total		90.9%	9.1%	100.0%

Table 12

Place of Residence by Exercise in Previous 30 Days

		Exercise in previous 30 days		
		Yes	No	Total
Place of residence	Metropolitan counties (_URBNRRL = 1,2,3,4)	1,552	655	2,207
	Nonmetropolitan counties (_URBNRRL = 5,6)	139	83	222
Total		1,691	738	2,429

As shown in Table 13, the Pearson chi-square test results were statistically significant $X^2(1, N = 2421) = 14.997, p < .05$ with an effect size of 15%.

Table 13

Chi-Square Tests

	Value	<i>df</i>	Asymptotic significance (2-sided)	Exact sig. (2-sided)	Exact sig. (1-sided)
Pearson chi-square	14.997 ^a	1	.000		
Continuity correction ^b	14.652	1	.000		
Likelihood ratio	15.133	1	.000		
Fisher's exact test				.000	.000
Linear-by-linear association	14.991	1	.000		
<i>N</i> of valid cases	2,421				

Note. *N* of valid cases = 2,421.

Summary

In Section 3, I provided the methods, processes, and analyses for the study. This section intended to describe the steps employed to clean data, organize and prepare a dataset to conduct final data analyses. Data from the 2018 BRFSS was analyzed using SPSS version 25 on 2,434 Latino participants from the state of Texas. The null

hypothesis for RQ1 was, “Is there an association between obesity (defined by BMI) and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status?” The results of the binary logistic regression were statistically significant, $X^2(10, N = 1738) = 60.662, p < .05$ (see Table 6).

The Omnibus Tests of Model Coefficients indicated a 34% to 52%, respectively, of the variance of the dependent variable-obesity (see Table 7). Furthermore, the -2 log-likelihood of 1816.903 and adjusted R square (Nagelkerke R square) of .052 suggest a predictive capacity of this model to produce significant results in 5.2% of the cases after controlling for age, gender, and the socioeconomic status-income level, education level, and employment status. The Chi-Square showed there is a statistically significant association between the distance. The null hypothesis for the RQ2 was, “Is there an association between physical activity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status?” The Pearson chi-square test results were statistically significant $X^2(1, N = 2421) = 14.997, p < .05$ with an effect size of 15%.

Section 4: Application to Professional Practice and Implications for Social Change

Introduction

The purpose of this study was to examine the relationship between obesity, physical activity, and place of residence among Latinos when controlling for socioeconomic status, which was defined by income level, education level, and employment status. Place of residence was defined as residing in metropolitan or nonmetropolitan counties. Data were obtained from the 2018 BRFSS and analyzed using SPSS, version 25. The hypotheses were as follows:

For RQ1: There is no association between obesity (defined by BMI) and the place of residence where Latinos live (defined by metropolitan code) when controlling for age, gender, and socioeconomic status.

For RQ2: There is no association between physical activity and the place of residence where Latinos live (defined by metropolitan code) when controlling for age, gender, and socioeconomic status.

Although several studies have separately examined obesity or physical activity, even among Latinos, none had coupled together these elements with neighborhoods or places of residence. Therefore, the results from this study help to bridge this gap in knowledge.

Interpretation of the Findings

The original BRFSS file contained 437,436 participants across the United States, of which 11,217 participants were from the state of Texas. The file was reduced to include only those individuals from Texas and of Hispanic or of Spanish origins. As a

result, 2,434 identified as Latino/Hispanic and Spanish origins was the sample of the study. Based on the analysis conducted and results from using the G*Power framework and software, a sample of 270 was determined feasible to meet the minimum sample size requirement (see Faul et al., 2009). The variables of interest included obesity (as defined by BMI), physical activity, and socioeconomic status (defined by income level, education level, and employment status) in addition to age, gender, and place of residence, defined as metropolitan or nonmetropolitan status.

For RQ 1, obesity was the dependent variable, and the independent variable was the place of residence. For RQ 2, physical activity was the dependent variable, and place of residence was the independent variable. Findings showed statistically significant results for both RQs, with p values $<.05$. Therefore, the null hypotheses were rejected: RQ1- $X^2(10, N = 1738) = 60.662, p < .05$; RQ2- $X^2(1, N = 2421) = 14.997, p < .05$ with an effect size of 15%. In other words, there is a relationship between obesity, physical activity, and place of residence among Latinos when controlling for socioeconomic status (income level, education level, and employment status).

Although there were fewer males than females who participated in the study, the binary regression results were not significantly different ($p >.05 (.547)$) between Latino men and women when examining obesity and place of residence among Latinos. Moreover, income was not statistically significant ($p >.05 (.823)$) However, concerning the age ($p <.005 (.000)$), education level ($p <.05(.009)$), and employment status ($p <.05(.000)$) variables, the results showed significant differences between obesity, physical activity, and place of residence among Latinos. The results from this study align with previous

studies that have either focused on the effects of obesity or physical activity.

Furthermore, the findings from this study support the evidence that exposure to specific neighborhoods can adversely affect one's health.

For example, Kravitz-Wirtz (2016) conducted a longitudinal study that focused on African Americans. The findings from this study indicated that increased exposure residing in disadvantaged neighborhoods from birth to adolescence resulted in African Americans' poor health, including obesity. Another similar study, Spring (2018), looked at the effects of the neighborhoods and self-rated health outcomes among older adults ages 45 and above across several races, including Latinos. Although the results of this study also support the premise, disadvantaged neighborhoods have adverse effects on health, this study was also limited because only one-fourth of the study population were Latinos.

For this study, the SEM was the framework adopted to understand the effects of obesity, physical activity, and place of residence among Latinos. The SEM has five constructs, which are (a) individual, (b) interpersonal, (c) organization, (d) community, and (e) policy. Decision making cannot occur without an understanding of how these constructs intertwine. For example, in this study, at the individual and interpersonal levels, although gender and income level had no significant effect, age, education level, and employment status all played a role in predicting associations between obesity, physical activity, and place of residence among Latinos. Perhaps most notably, is that there were no significant differences between whether Latinos resided in a metropolitan county versus a nonmetropolitan county. However, to fully understand the neighborhood

conditions and obstacles that may be impeding physical activity among this group, policymakers and community leaders may consider the use of these results. Moreover, the results could be beneficial at the governmental level or to public health leaders in identifying those (a) Latinos who are at risk for obesity or physical inactivity as they consider creating and implementing programs, as well as (b) neighborhoods in which they reside and the factors that may present barriers to achieving healthy lifestyles, (Fertman & Allensworth, 2010).

Limitations of the Study

The analysis for this study was conducted using a secondary dataset. Using secondary data has several advantages as it relates to the timing and costs associated with completing a study. However, for this study, the approach was limited due to the lack of fully understanding the original intent for data collection, including the framework for study (see Creswell, 2009). This can be challenging without knowing the original intent of data collection. Although the methodology and the study design for how these data were collected appeared reasonable, a number of the variables needed to be recorded to address the RQs (i.e., obesity) because the original data file did not support primary interest (see Creswell, 2009).

Recommendations for Future Research

Findings showed statistically significant results for both RQs with p values $<.05$. RQ1 was, “Is there an association between obesity and the place of residence where Latinos live (defined by metropolitan code or place of residence) when controlling for age, gender, and socioeconomic status?” The null hypothesis was rejected, and the

alternative hypothesis was accepted. RQ2 was, “Is there an association between physical activity and the place of residence where Latinos live (defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status?” The null hypothesis was rejected, and the alternative hypothesis was accepted. By understanding the effects of obesity, physical activity, and place of residence among Latinos, researchers can create or modify programs that are uniquely tailored to meet and address the needs and challenges faced by Latinos, particularly in the Texas area.

Scholars can consider this information for inclusion in their decision-making processes at all levels of public health. At the national level, policymakers can use the results from this study to develop new or modify policies that focus on improving Latinos' health and the places they reside (Fertman & Allensworth, 2010). Having a greater understanding of the effects of obesity, physical activity, and neighborhoods has the potential to lead to better opportunities that could better accommodate Latinos while having a positive effect on their health and inspiring social change. Other considerations to undertake may include conducting a longitudinal study that focuses on Latinos using a similar methodology, as well as segmenting the data analysis by county codes to determine whether there are significant differences across counties in Texas. Another consideration is to expand the research to include other underserved or under-researched population groups such as American Indians and Asians.

Implications for Social Change

The implication for social change is also interwoven in professional practice. Understanding obesity, physical activity and place of residence among Latinos is vital

because the growth of the Latino population is growing in the United States and unfortunately so are the rates of chronic diseases; in particular, obesity among Latinos (Anselma et al., 2018; Putrik et al., 2015). Obesity places an immense economic strain on society, and the results of this study underscore the importance of studying this issue to understand the health-related issues affecting Latinos who live in the United States is imperative. As the study results indicated, there is no significant difference between gender or place of residence defined by (defined by metropolitan and nonmetropolitan counties). Hence, this issue is equally critical among Latino males and Latino females age 18 years or older living in metropolitan and nonmetropolitan counties in Texas. Therefore, the results from this in-depth analysis of which couple's obesity, physical activity, and the place of residence raise awareness not only among this group but as well as among scholars to consider. Moreover, this information bridges the gap in the literature and helps to explain the determinants of obesity and physical inactivity among Latinos better. As such, the creation of new or improved programs may afford policymakers to make informed decisions when designing programs and making budget allotments to improve programs tailored for this group, thus, ultimately, effecting a positive social change, which may lead to better opportunities that could better accommodate Latinos.

Conclusion

According to the CDC (2017a), obesity is one of the critical public health drivers for increased morbidity rates. While rates of obesity may differ between races, the obesity rates among Latinos are disproportionately higher (21.9%) when compared to

non-Latino blacks (19.5%) and non-Latino whites (14.7%). Additionally, scholars have also cited linkages associated with obesity and physical activity among this group. Furthermore, scholars have asserted that researchers consider other factors such as the neighborhood when assessing one's health. However, these studies were either narrow in scope or yielded inconsistent results (Anselma et al., 2018; Velasco-Mondragon, Jimenez, Palladino-Davis, Davis & Escamilla-Cejudo, 2016). While obesity, physical activity, and neighborhood have been examined separately and among this group, the gap in the literature was the lack of coupling of the variable's obesity, physical activity, and place residence among Latinos from Texas.

The intent was to bridge the gap in knowledge about the association between obesity, physical activity, and place residence among Latinos. The results from this study can be used by public health leaders and policymakers to make informed decisions when allocating resources and designing programs intended to address the challenges faced by Latinos today. RQ 1 was, "Is there an association between obesity and the place of residence where Latinos live (defined by metropolitan code or place of residence) when controlling for age, gender, and socioeconomic status?" RQ 2 was, "Is there an association between physical activity and the place of residence where Latinos live (as defined by metropolitan and nonmetropolitan counties) when controlling for age, gender, and socioeconomic status?" The findings from this study add to the growing body of literature on this topic and help to refine scholars' focus while improving and guiding public health responses and access. In addition to this information highlights the importance of public health professionals and policymakers to take a holistic view of the

issues surrounding obesity among Latinos and consider places of residence when developing and planning for public health initiatives, which ultimately leads to social change.

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