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Article

Differences in neighborhood social cohesion and aerobic physical activity by Latino subgroup

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ABSTRACT

Previous research has examined the role of neighborhood social cohesion in physical activity outcomes; however, less is known about this relationship across Latino subgroups. The purpose of our study was to examine the association between neighborhood social cohesion and aerobic leisure-time physical activity (LTPA) among Latino adults and to determine whether these associations differ by Latino subgroup. We used cross-sectional 2013–2014 National Health Interview Survey (NHIS) data on Latinos originating from 5 countries/regions (i.e., Latinos of Puerto Rican, Mexican/Mexican-American, Cuban/Cuban-American, Dominican and Central or South American origin) aged ≥ 18 years ($n = 11,126$). Multivariable logistic regression models were used to estimate associations between self-reported neighborhood social cohesion and meeting aerobic LTPA guidelines. Models were adjusted for age, sex, education, and acculturation. We also investigated whether associations varied by Latino subgroup. In adjusted models for all Latino adults, compared with those reporting low social cohesion, individuals who reported high social cohesion (Odds Ratio [OR]: 1.33; 95% Confidence Interval [CI]: 1.17–1.52) were significantly more likely to meet the aerobic physical activity guideline. When stratified by Latino subgroups, among Mexican/Mexicans-Americans (OR: 1.39; 95% CI: 1.16, 1.66) and Cuban/Cuban Americans (OR: 1.73; 95% CI: 1.00, 2.97) high social cohesion was associated with meeting the aerobic activity guideline. Among Dominicans, those who reported medium social cohesion (OR: 0.52, 95% CI: 0.29, 0.93) were less likely to meet the aerobic activity guideline. When examining aerobic physical activity outcomes in the Latino population, the role of neighborhood social cohesion and the variability among Latino subgroups should be considered.

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Introduction

Latino adults are less likely to engage in leisure-time aerobic activity and to meet current aerobic activity guidelines compared with non-Latino adults (Carlson, Fulton, & Schoenborn, 2010; USDHHS, 2008). Although several studies have examined all Latinos within one category, previous research suggests that there is heterogeneity in the prevalence of aerobic activity among Latino subpopulations (Daviglius, Talavera, & Avilés-Santa, 2012; Marquez, Neighbors, & Bustamante, 2010; Neighbors, Marquez, & Marcus, 2008). For example, aerobic activity has been shown to be highest among Mexican/Mexican-Americans and lowest among Dominicans, when compared with other Latino subgroups (Daviglius et al.,

2012; Neighbors et al., 2008; Arredondo, Sotres-Alvarez, & Stoutenberg, 2015). Thus, understanding factors that contribute to the variability in physical activity patterns across Latino subgroups may help inform the development of physical activity interventions among the Latino population.

Previous research has shown that neighborhood factors have an impact on various health outcomes and health behaviors (Ellen, Mijanovich, & Dillman, 2001; Feldman & Steptoe, 2004). Specifically, perceived neighborhood social cohesion, which is generally defined as the solidarity and connectedness within a group of individuals (Sampson, Raudenbush, & Earls, 1997; Kandula, Wen, & Jacobs, 2009), at high levels has been shown to be protective against adverse health outcomes such as hypertension, myocardial infarction, stroke mortality (Clark, Guo, & Lunos, 2011; Kim, Hawes, & Smith, 2014; Kim, Park, & Peterson, 2013; Mujahid, Roux, & Morenoff, 2008) and to be related to positive health behaviors such as greater physical activity (Echeverría, Diez-Roux, & Shea, 2008; Samuel, Himmelfarb, & Szklo, 2015; Cleland, Ball, & Hume,

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2010; Shelton, McNeill, & Puleo, 2011). Further, prior research has shown that neighborhoods with low social cohesion are related to an increase in adverse health outcomes and behaviors, such as depression and smoking (Echeverría et al., 2008).

Among racially/ ethnically diverse populations, aspects of social cohesion such as a sense of belonging and having a shared cultural identity have been cited as protective characteristics that promote health in these communities (Angel & Angel, 2006). There is also some evidence to suggest that residing in an ethnic enclave may have a positive influence on health due to strong social networks, socioeconomic structure, and neighborhood social cohesion (Cagney, Browning, & Wallace, 2007; Peak & Weeks, 2002). Specifically within the Latino population, social connections, including neighborhood social cohesion, have been shown to be important for mental and physical health (Mulvaney-Day, Alegria, & Sribney, 2007; Rios, Aiken, & Zautra, 2012). Although some of these studies have examined the role of neighborhood social cohesion in physical activity outcomes in diverse populations that include Latinos, no studies to the authors' knowledge have examined this relationship across Latino subgroups. A consistent body of evidence has demonstrated that health patterns vary by Latino subgroup likely due to the distinct cultural, socioeconomic, and political histories as well as settlement patterns of each group, all of which are known to influence health (Zsembik & Fennell, 2005; Rodriguez, Allison, & Daviglus, 2014; Motel & Patten, 2012). Therefore, examining whether the association between neighborhood social cohesion and aerobic physical activity varies by Latino subgroup could help identify subgroups for which neighborhood social cohesion has a more deleterious or beneficial effect.

Using data from a nationally representative sample of US Latino adults we examined 1) associations of neighborhood social cohesion with meeting the guideline for aerobic leisure-time physical activity (LTPA) among all Latino adults; and 2) whether there are differences in the association of neighborhood social cohesion and meeting the aerobic activity guideline by Latino subgroup (i.e., Latinos of Puerto Rican, Mexican/Mexican-American, Cuban/Cuban American, Dominican, and Central or South American origin). We hypothesized a priori that high neighborhood social cohesion would be associated with higher odds of meeting the guideline for aerobic activity, versus not meeting the aerobic activity guideline, among all Latino adults. Further, we also hypothesized that there would be variation in this association by Latino subgroup, tested by including an interaction term between Latino subgroup and neighborhood social cohesion in fully adjusted models. For example, we hypothesized that medium or high levels of neighborhood social cohesion, compared with low levels, would be associated with meeting the aerobic activity guideline for some subgroups, but not all.

Methods

Data

We used data from the 2013–2014 National Health Interview Survey (NHIS), a cross-sectional survey conducted annually that employs a multistage probability sample survey design to obtain a nationally representative sample of the non-institutionalized US civilian population. The NHIS gathers information related to health and demographics from all family members. An adult (age ≥ 18 years old) within each family is randomly selected and interviewed to collect additional information, such as information regarding physical activity. Additional NHIS survey details can be found elsewhere (National Center for Health Statistics, 2015a, 2015b). Participants who self-reported being Hispanic or Latino were asked to indicate which Latino group they identified as their

Hispanic origin. Only participants who identified a single country for their Hispanic origin were included in our sample.

Of the 11,389 Latino participants who were 18 years of age and older, and identified a single country for their Latino origin, participants with missing data on education, nativity, neighborhood social cohesion or physical activity were excluded ($n=99$). Therefore, analyses included data from 11,290 Latino adults with complete data on the variables of interest.

Measures

Neighborhood social cohesion

NHIS Participants were asked questions related to their neighborhood. Four items specifically asked individuals whether they agreed or disagreed with the following statements: 1) "People in this neighborhood help each other out"; 2) "There are people I can count on in this neighborhood"; 3) "People in this neighborhood can be trusted"; and 4) "This is a close-knit neighborhood". The original response scales for all neighborhood social cohesion items were reverse coded and a neighborhood social cohesion sum score of the four items was created with a higher score indicating higher levels of neighborhood social cohesion. Using the sum score, approximate tertiles of neighborhood social cohesion were used to create categories of low, medium, and high neighborhood social cohesion. Previous research has used these four items assessing neighborhood social cohesion (Sampson et al., 1997), but has typically included an additional fifth item not measured in the NHIS study. However, we assessed the reliability of the four items and they demonstrated high internal consistency (Cronbach's $\alpha=0.93$).

Aerobic physical activity

Participants were asked how frequently during their leisure-time they engaged in 1) vigorous activity that caused heavy sweating or large increases in their breathing or heart rate; and 2) light or moderate activity that caused light sweating or a slight to moderate increase in their breathing or heart rate for ≥ 10 min at a time. Participants were asked to report the frequency of their activity (in days, weeks, months or year) and duration of each activity session (in minutes or hours).

Aerobic activity was categorized based on criteria from the 2008 Physical Activity Guidelines for Americans (USDHHS, 2008). Participants were classified as meeting the aerobic activity guideline if they engaged in ≥ 150 min of moderate-intensity activity per week, ≥ 75 min of vigorous-intensity activity per week, or ≥ 150 min of an equivalent combination of moderate- and vigorous-intensity activity per week. Individuals were classified as not meeting the aerobic activity guideline if they engaged in < 150 min of moderate- and vigorous-intensity aerobic activity per week. Using guidelines suggested by the 2008 Physical Activity Guidelines for Americans (USDHHS, 2008), reported minutes of vigorous-intensity activity were assigned twice the credit of reported moderate-intensity activity minutes to calculate an equivalent combination when moderate and vigorous-intensity activity were combined.

Covariates. Multivariable models included age, sex, education, and acculturation. Age was modeled continuously and educational attainment was categorized into four education levels (i.e., less than high school, high school graduate, some college or college graduate). To measure acculturation, we used self-reported nativity (foreign-born, US-born) and length of residence in the US to create proxy measures of acculturation. Based on a combination of these variables, we categorized participants as foreign-born with < 10 years of residence in the US, foreign-born with ≥ 10 years in the US, and US-born.

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