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The Limits of Self-Management: Community and Health Care System Barriers Among Latinos With Diabetes

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Abstract

Although numerous studies examine diabetes self-care, few regard ecological framework correlates such as community and institutional level factors as fundamental for understanding diabetes management for Latinos. This article addresses the dearth of research that exists regarding social contextual forces and diabetes management for Latinos. Given the scarcity of research on this topic, studies of non-Latino groups were reviewed to illustrate the importance of community and institutional influences on diabetes care. Consideration of fundamental correlates within the ecological framework may better discern the underlying rationale for inadequate diabetes self-management for individuals who live in impoverished communities.

Keywords

Latinos; community; health care; diabetes self-management

Managing diabetes reduces health risks (Gerberding, 2005; Ofman et al., 2004), resulting in fewer hospitalizations, shorter length of stays, and reduced diabetes-related costs (Lorig et al., 1999). The American Diabetes Association (ADA) recommends that people with diabetes engage in a self-management regimen that includes daily blood glucose monitoring, a nutrition plan, regular physical activity, regular foot check exams, and periodic eye exams and yearly flu vaccinations (ADA, 2007). It has been recommended that diabetes self-management needs to be understood in the socioenvironmental context (Fisher et al., 2005). This is especially true for vulnerable populations who experience disparities in diabetes and overall resources, such as Latinos, who disproportionately face the burden of diabetes (Castro, Shaibi, & Boehm-Smith, 2009). Latinos also disproportionately experience poverty and lack of access to health care (Diaz, 2002), and do not adequately manage their diabetes (Oomen, Owen, & Suggs, 1999; Thackeray, Merrill, & Neiger, 2004; Von Goeler, Rosal, Ockene, Scavron, & DeTorrijos, 2003). Individual factors including low education, income, and acculturation are associated with poorer self-management among Latinos (Karter, Ferrera, Darbinian, Ackerson, & Selby, 2000; Latham & Calvillo, 2009; Schillinger et al., 2002). Yet, it can be argued that social context factors may play a greater role than individual factors among certain ethnic groups with lower socioeconomic status. In 2007,

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21% of Latinos were in poverty compared to 8% of whites, in general, with the percent living in poverty varying by region and metropolitan status (Denavas-Walt, Proctor, & Smith, 2008).

There is some limited evidence that suggests that community and institutional and organizational factors, which are aspects of the social context, influence diabetes self-management practices among Latinos (Dagogo-Jack, Funnell, & Davidson, 2006; Lee, Liu & Sales, 2006). For instance, culture and access to quality food and health care resources are factors associated with diabetes self-management practices among Latinos (Carbone, Rosal, Torres, Goins, & Bermudez, 2007; Dagogo-Jack et al.; Lee et al.).

A discussion of institutional and community factors in addition to individual factors that influence diabetes self-management suggests that an ecological approach to understanding self-management among Latinos is needed. The ecological model (McLeroy, Bibeau, Steckler, & Glanz, 1988) outlines multiple levels of influences that determines behaviors and emphasizes interdependence of these levels, which interact to influence health (Stokols, 1996). The multiple levels include *intrapersonal* factors, such as knowledge, attitudes, and skills related to self-management of diabetes (McLeroy et al.); *interpersonal* processes such as social support and social relationships that influence behavior both positively and negatively; *institutional*-level influences such as the health care systems' impact on health care seeking and care experiences (insurance carrier policies, language concordance, clinic hours, wait time, cost of care, and provider guidance on self-management are institutional-level factors that influence health care seeking and experiences); *community*-level influences such as availability and location of health clinics, access to healthy foods, and places to safely engage in physical activity (Kaplan, Everson, & Lynch, 2000); and finally, the *public policy*-level, which involves regulation or policies related to health care funding on a local, state, or national level (McElroy et al.).

Institutional and community levels of the ecological model are key levels that need to be considered for interventions promoting self-management of diabetes among Latinos (Fisher et al., 2005). For example, at the institutional level, having one doctor for regular care is associated with better self-management of diabetes (O'Connor et al., 1998). Yet, as Latinos are less likely to have health insurance, having one doctor for regular care may not be possible. Community-level factors such as supermarket location and availability of health foods are associated with dietary patterns and a healthy diet (Diez Roux et al., 1999; Moore, Diez Roux, Nettleton, & Jacobs, 2008). Communities characterized by social deprivation and unemployment have reduced access to major supermarkets (Fellowes, 2006; Moore & Diez Roux, 2006; Seligman, Bindman, Vittinghoff, Kanaya, & Kushel, 2007), and often have a lack of exercise facilities or sidewalk accessibility (Deshpande, Baker, Lovegreen, & Brownson, 2005), which can hinder individuals from effectively adhering to a physical activity regimen. Further, communities that do not have easy access to clinics where practitioners provide consultation on self-management practices face both institutional and community level barriers, which are more common among impoverished communities (Vachon et al., 2007).

Institutional- and community-level factors related to diabetes self-management can be further understood by adding Williams' (1997) Frame-work for the Study of the Role of Race in Health. Williams' model articulates the importance of race, as a central construct, in understanding the root causes for health disparities. The model explicitly considers race as the basic premise for shaping and determining access to society's resources. The framework on race considers the interplay of historical context; biological, psychological, and social conditions; and processes influencing health. The model also highlights the importance of

considering specific concepts, termed *basic* and *surface* causes of health when understanding race and health conditions.

Basic causes, such as culture, racism, economic structures, and political factors, are fundamental forces that explain racial variation in health (Williams, 1997). These fundamental causes are responsible for changes in specific health outcomes (Williams). Surface causes are risk factors, such as stress, social support, and medical care, and are related to the outcome but are shaped by basic causes (e.g., racism) and social status (Williams). For example, racism (basic cause) and low income (social status) are associated with stress or reduced health care practices (surface causes), which can in effect increase metabolic/endocrine (biological response) and contribute to obesity or chronic conditions (e.g., diabetes; Williams). Although surface causes are associated with health outcomes, they do not produce change (e.g., health outcomes) because they do not address the underlying basic causes (Williams). Therefore, long-term improvement in behaviors or health outcomes requires the consideration of basic causes, such as racial and economic inequalities to affect positive health (Williams).

The purpose of this article is to review the literature on institutional- and community-level factors that influence diabetes self-management to present support for the importance of the institutional and community levels of the ecological model when working with Latinos to improve diabetes self-care. We also argue that Williams's concept of basic causes should be explicitly included in the institutional and community levels of the ecological model to improve its ability to serve as a guide for understanding and improving diabetes self-management practices in impoverished communities. Including basic causes as an aspect of the community and institutional levels of the model makes explicit the need to consider powerful basic causes such as urban poverty or racial segregation and will help guard against a tendency to view behavioral practices (e.g., glucose monitoring) or outcomes as isolated events devoid of any historically based conditions, such as cutbacks in medical services and segregation. Currently, it is relatively rare to find research that has used the ecological model and has considered basic causes in relation to diabetes self management. This study will provide support for including basic causes of William's conceptual model of race as aspects of the institutional and community levels. Finally, this article will make recommendations for addressing basic causes in future research on self-management of diabetes among Latinos.

Community-Level Influences and Diabetes Self-Management Practices

Food Environment

Dietary practices associated with diabetes self-management vary by neighborhood characteristics including ethnicity, education, and neighborhood income. Older Mexican-Americans consume five daily servings of fruits and vegetables 40% less frequently than whites (Nelson, Reiber, & Boyko, 2002). Low-income and Latino—especially lower-income female-headed—households eat proportionally less nutritious food than non-white Hispanics (Mazur, Marquis, & Jensen, 2003). In East Harlem, where the majority of residents are Latinos and Blacks, reportable barriers to healthy eating options for individuals with diabetes are due to either cost (Horowitz, Williams, & Bickell, 2003) or a dearth of large supermarkets in this community (Horowitz, Colson, Herbert, & Lancaster, 2004).

Research indicates that the lack of food access and consumption of less nutritional rich food items is found among poor and Black neighborhoods. Research among Latinos is scarce, in particular for individuals with diabetes. The lack of access to nutritional food is a basic cause and a community-level influence that can influence many Latinos to follow unhealthy diets that result in poorly managed diabetes care. Consumption of foods low in fat is

associated with their availability and their variations in grocery stores at both the county and zip code level (Cheadle et al., 1991). Supermarkets have left inner-city areas owing to factors related to costs of store development, shifts in population demographics, and market pressure for increased cash flow and profits (Kolodinsky & Cranwell, 2000). This results in less access to lower cost and fresh food for inner city neighborhoods, which are predominantly ethnic minorities including Latinos. Race and ethnicity, neighborhood property values, and socioeconomic status are associated with available food options for residents (Morland, Wing, Diez Roux, & Poole, 2002). For instance, people who live in neighborhoods with high property values have greater access to a variety of food stores whereas those who live in poor neighborhoods tend to have access to smaller stores with higher prices and fewer fresh fruits and vegetables, which consequently results in lower consumption of fruits and vegetables (Diez Roux et al., 1999). Neighborhoods identified as wealthy and racially White tend to have more supermarkets and fewer numbers of small grocery stores and convenience stores compared with communities classified as “poor” and predominately Black (Moore & Diez Roux, 2006). As self-management of diabetes includes improving diet, these associations can be translated to diabetes-related dietary behavior. Those living in poor neighborhoods are often disproportionately minorities and have less access to fresh and low-cost produce and, therefore, may consume less of these foods.

Street Environment

Though research shows that physical activity is an important component of diabetes self-management (Sigal, Kenny, Wasserman, & Castaneda-Sceppa, 2004), Latinos are less physically active than other race and ethnic groups (Ahluwalia, Mack, Murphy, Mokdad, & Bales, 2003; Crespo, Smit, Andersen, Carter-Pokras, & Ainsworth, 2000). Neighborhood characteristics (i.e., physical-street environment) as a basic cause have been shown to predict levels of physical activity. Exercise facilities and well-maintained sidewalks were correlated with being physically active among Puerto Rican women (Pescatello, Alonso, Schaffino, & Leavitt, 2008). The availability of exercise facilities is also a predictor of all physical activity among Latinas in general (Evenson, Sarmiento, Tawney, Macon, & Ammerman, 2003), and poorer neighborhoods often have less access to exercise facilities and many times less access to green spaces (Boehmer, et al., 2007; Powell, Slater, Chaloupka, & Harper, 2006). Older Latinas reported exercising less if their neighborhoods had no one exercising or showed signs of little to no car traffic (Wilbur, Chandler, Dancy, & Lee, 2003). Lack of social support, transportation, and sidewalks were barriers to physical activity for immigrant Latino women (Evenson, Sarmiento, Macon, Tawney, & Ammerman, 2002). The lack of availability of exercise facilities and safe places to walk is more common in poor neighborhoods, which are often predominantly racial-ethnic minority neighborhoods in urban areas. Therefore, these studies suggest that physical environmental factors at the community level influence physical activity and should be considered in studies examining diabetes self-management among Latinos.

Understanding aspects of urban environments and their influence in the availability of food resources or safe open spaces to promote health can be linked to race (Acevedo-Garcia & Osypuk, 2008; Zenk et al., 2005). Therefore, racial-ethnic segregation, a basic cause, should be acknowledged in Latino studies as, according to Williams and Collins (2001), segregation among marginalized groups is a leading cause of poor health outcomes. Neighborhood segregation is the major basic cause that has emerged from the food and street-level research addressed in this article pointing to the influence of place and race on limited or lack of access to healthy foods and reduced physical activity due to unsafe neighborhoods. This basic cause is an important community-level factor that needs further examination to improve our understanding of the social context and its relationship with diabetes management.

Institutional-Level Influences and Diabetes Self-Management Practices

Health Care Environment

Access to health care improves health outcomes and reduces hospitalization for many conditions (Carcillo, Diegel, Bartman, Guyer, & Kramer, 1995; Diaz-Perez, Farley & Cabanis, 2004; Piette, 2000; Sin, Bell, & Man, 2004), yet data on how institutional-level factors affect health care access among Latinos and how they influence diabetes self-management practices are lacking. The health care environment may have an effect on individuals' ability to adhere to self-management treatments via insurance policies, linguistically congruent and culturally competent providers, transportation access to care, and the number of available providers in an area.

Health Insurance Barriers—Health insurance coverage, another basic cause and institutional-level influence of diabetes care, has been studied with regard to its influence on diabetes self-care management. However, the research on diabetes management is still very limited to certain Latino subgroups, mainly Puerto-Ricans and Mexicans (Mainous, Diaz, Saxena, & Geesey, 2007). Diabetes is increasing; it is projected that more than 20% of Latino adults will have diabetes by 2031 (Mainous, Baker, et al., 2007) with diabetes prevalence differing among Latino subgroups (Getaneh & Findley, 2009; Simon, Zeng, Wold, & Felding, 2003).

Health insurance coverage determines the delivery of diabetes services. Diabetes-related services, such as foot exams or diabetes education, are services often covered by private health insurance (Nelson, Chapko, Reiber, & Boyko, 2005). Patients who reported having public insurance or not having insurance also mentioned substantial underuse of diabetes-specific medications owing to cost compared to patients with private insurance or individuals with Veteran Affairs health care benefits (Piette, Wagner, Potter, & Schillinger, 2004).

Although insurance coverage is an essential component of diabetes self-care, proportionally fewer Latinos have health insurance coverage than any other racial-ethnic group, which compromises diabetes care. For instance, about 63% percent of Latinos who are employed report being uninsured (Pew Hispanic Center, 2004). A study based on the National Health Interview Survey found that Latinos were more likely to report being uninsured for more than 1 year compared to Blacks, Asians, and Whites (Cohen & Martinez, 2007). Despite that Medicaid coverage has increased by 44% over a 3-year period (2001–2003), a large proportion of Latinos are still uninsured (Hargraves, 2004).

The cost of medication was identified as a barrier to diabetes self-management for Mexican-Americans (Benavides-Vaello, Garcia, Brown & Winchell, 2004) and in general for Latinos living in East Harlem, who are predominantly on Medicaid and have incomes of less than \$20,000 (Horowitz et al., 2003). Additionally, among a predominantly Puerto Rican sample, lack of access to specialists (e.g., endocrinologist, nutritionist), and high cost for glucose test strips prevented diabetes self-management among Latinas (Adams, 2003).

Geographic Barriers—There is evidence of variations in access to health care based on area of residence. Although there appears to be a dearth of research on geographic variation and its association with diabetes care for Latinos, much research with regard to other chronic conditions (e.g., cancer, heart disease) has shown that the region or location wherein minority groups reside determines differential quality and treatment of care for minority groups (Diez Roux et al., 2001; Fang, Madhavan, Bosworth, & Alderman, 1999; Polednak, 1993). In a report on physician shortage, towns with more than 50% of Latino concentration had lower proportions of physician-to-population ratio than towns with fewer than 20%

Latinos (Pathman, Konrad, & Schwartz, 2002). The low number of available providers in Latino communities makes it difficult to access health care services (Valdez, Giachello, Rodriguez-Trias, Gomez, & De la Roche, 1993). Therefore, living in predominately homogeneous neighborhoods characterized by Latino ethnicity and by poor access to providers is likely to negatively influence diabetes self-management practices for Latinos. Not having a usual source of care has been associated with multiple visits to the ER (Petersen, Burstin, O'Neil, Orav, & Brennan, 1998). In addition, external factors (types of employment) play a role in ambulatory care among Latinos (Zuvekas & Taliaferro, 2003). Lack of access to providers owing to geography or job characteristics is a basic cause and an institutional-level influence that can compromise Latinos' diabetes. Research on geographic mapping of neighborhoods to assess provider-to-patient ratio is necessary to reassess the distribution of health care resources for optimal diabetes management.

Structural Barriers—Many of the barriers Latinos face with health care are related to socioeconomic circumstances (Brown et al., 2003). However, we know little about how structural factors, such as the lack of after-work hours at a clinic, inappropriate medical information for populations with low medical literacy, or poor infrastructure for health care communication, can potentially affect diabetes self-management among Latinos. Structural barriers that were associated with access to care include limited clinic hours and lack of child care services (Johnson, 2001). Other structural factors include the manner in which information is delivered to specific audiences. A recent study on diabetes education and Latinos addressed the importance of keeping materials visual and interactive for individuals with low literacy levels (Rosal, Goins, Carbone, & Cortes, 2004). In a study with Latinas, the high numerical reading of blood sugar was insignificant for Latinas who did not understand the meaning of what constitutes normal or above-normal readings (Adams, 2003). Thus, content material needs to be carefully tailored for different styles of learning. Furthermore, travel time and transportation are structural factors that influence use of health care. Travel time of more than 30 minutes for seeking medical or dental care has been reported among urban African Americans and other minorities (Probst, Laditka, Wang & Johnson, 2007). Among Latinos, transportation to and from providers also has been reported as a barrier for accessing health care (Morales, Lara, Kington, Valdez, & Escarce, 2002).

The U. S. health care system can pose an added barrier for Latinos. Cultural values, including *personalismo* and respect, have important significance in the Latino culture and in health care. Latinos, in general, hold a high regard for doctors and, out of respect for their status, will not question their physician (Sheppard et al., 2008). By the same token, Latinos value interactions that are friendly and warm (Adams, 2003; Diaz, 2002; Flores, 2000; Sheppard et al.). The consideration of Latinos' cultural underpinnings, including family-centered decisions, acculturation, cultural traditions (e.g., respect, collectiveness), and place of origin can assist with health communication (Elder, Ayala, Parra-Medina, & Talavera, 2009). Thus, cultural values and structural barriers as basic causes, and an institutional-level influence of health care delivery should be explored fully to understand its relationship with diabetes management with Latinos.

Perceived Discrimination—There are several studies that suggest that “institutional” racism or discrimination, defined as inequality in health care based on race or immigrant status (Williams, 1997), can affect health care outcomes (Kirby, Taliaferro, & Zuvekas, 2006; Subramanian, Acevedo-Garcia, & Osypuk, 2005) and adherence to self-management. A recent study on diabetes showed that perceived health care discrimination was strongly associated with patients' assessment of how they rated provider interactions (e.g., “courteous” or “respectful”; Piette, Bibbins-Domingo, & Schillinger, 2006).

Being black or Latino has been associated with delays in filling a prescription or decreased likelihood of having prescribed medications (Van Houtven et al., 2005). Not receiving quality treatment because of ethnic bias toward their ethnicity may influence trust and discourage Latinos from practicing daily glucose monitoring or complying with taking diabetes medicines.

Research on perceived discrimination is needed to dissect factors such as ethnicity and their potential influence on adherence to diabetes-management among Latinos. Forbat (2004) affirms that different meanings are created when minority individuals interact with institutional systems of care. Knowing whether discrimination, an institutional-level factor, influences diabetes management can help health care providers tailor and disseminate health information properly to engage Latinos to properly comply with their care.

Language Barriers—Health communication between patient and provider has been shown to influence health care access and adherence to disease management. Limited or no fluency in English and the lack of insurance coverage are reportable barriers related to health care delivery (Doty, 2003). Mexican-Americans who spoke only Spanish were more dissatisfied with provider communication compared to those who were bilingual (Morales, Cunningham, Brown, Liu, & Hayes, 1999). Ineffective provider communication can result in poorer quality of care and treatment outcomes for monolingual Spanish-speaking Latinos (Morales et al.). Evidence further suggests language difficulty is a barrier to effective and daily glucose monitoring among a large managed care population (Karter et al., 2000). Similarly, Spanish-speaking Latino patients with hypertension or diabetes who had physicians who spoke Spanish with them was associated with better health outlook and fewer days with pain (Perez-Stable, Napoles-Springer, & Miramontes, 1997). This suggests that physicians discussing diabetes self-management practices with their Latino patients will not be effective if consideration is not given to the language providers speak. A Commonwealth Fund report (Doty, 2003) has revealed that Spanish-speaking Latinos have fewer options regarding care and more difficulty accessing services and are highly dissatisfied with their medical encounters despite access or health insurance coverage compared to other groups who speak English. In addition, compared with Whites or African-Americans, Latinos experience difficulty navigating the health care culture owing to limited English proficiency and, as a result, report less confidence and trust with their doctors (Doty). Furthermore, for Latinos, nativity has been associated with discrimination in the medical system (Lauderdale, Wen, Jacobs, & Kandula, 2006). Communication between patient and doctor can be improved if patients ask questions, expresses concern, are assertive, and provide doctors with a narrative of their medical ailment (Ashton et al., 2003) as long as language fluency in English is no longer a barrier. Consideration of patient-provider satisfaction and language fluency is necessary to fully understand their role on diabetes management.

Conclusion

The community- and institutional-level literature with regard to Latino diabetes self-management is limited (Table 1). Studies related to social and physical environment have shown that individuals with diabetes can be challenged with performing effective diabetes self-management practices if they reside in neighborhoods characterized by limited resources or by health care plans that are inadequate (Horowitz et al., 2004; Nelson et al., 2005; Piette et al., 2004). Although there are many more studies that explain the barriers to health care (Baicker, Chandra, & Skinner, 2005), these studies do not comprehensively address the access problems that exist among Latinos with diabetes.

Investigators have given credence to the relevancy of socioecological factors in explaining behavior (Dergance, Mouton, Lichtenstein, & Hazuda, 2005; Hubert, Snider, & Winkleby, 2004), yet the research is limited with regard to diabetes management in general and specifically with Latinos. Two major gaps were noticeable in reviewing diabetes self-management literature: a lack of studies on Latinos and diabetes self-management and the scarcity of studies that considered community and institutional levels of influence on chronic disease, specifically diabetes self-management.

Very little work is being conducted among Latinos with diabetes within a contextual framework that embodies their specific living conditions (Castro, Shaibi, & Boehm-Smith, 2009; Rosal et al., 2005; Bull, Eakin, Reeves, & Kimberly, 2006; Candib, 2007). At the community level, important consideration should be given to the community in which a specific sample is being studied. The environment in which residents live may be as important as individual-level influences. Researchers asserted that lack of access to services can be related to living in segregated neighborhoods (Williams & Collins, 2001). The lack of exercise facilities, diabetes medical services, or workshops can potentially influence diabetes management. A safe environment and open public places facilitate exercise (Giles-Corti & Donovan, 2002; Evenson et al., 2002).

At the institutional level, research is needed regarding the importance of culturally competent communication between providers and patients and its influence on health care outcomes. Latinos with limited English proficiency reported very poor/poor explanation regarding prescription medication (31%) compared with Latino/English respondents (18.6%; Morales et al., 1999). In addition, best practices regarding effective means for providing health information to Latinos is needed as many Latinos tend to favor cultural values such as *simpatia* and *personalismo* in health care settings (Adams, 2003; Diaz, 2002; Flores, 2000). The location of health care facilities, the percent of providers-per-patient ratio, the different types of health care plans per state, and/or the manner in which health care is delivered should be considered in the context of improving diabetes management. Therefore, depending on the social context, many or all of these factors need to be considered in trying to understand why some populations falter in diabetes management.

Consideration of basic causes as an aspect of the institutional and community levels of the ecological model can help fill the gaps in our understanding of diabetes self-management among Latinos by highlighting structural and social factors not often studied. The understanding of basic causes in diabetes self-management research has important implications for social determinants of health (Williams, 1997). For instance, individuals with diabetes may not follow a specific diet because of the types of foods accessible, available, or affordable in their respective communities. We must explore whether it is something in their communal environment that is creating an unhealthy dietary pattern. The interplay between basic correlates, such as access to health care facilities, culturally competent community health resources, and diabetes self-management practices, needs to be studied. Thus, the study of community and institutional level influences of an individual's contextual environment as basic (fundamental) forces of health behaviors will help us understand the many access barriers that may exist in impoverished communities and that are primordial in quality of life. We invite researchers and practitioners to consider not only the interconnectedness of people and their surrounding environment as an important predictor of health status and a driving principle of the ecological perspective (Kaplan, 1983; Stokols, 1996) but, within these connections, to regard community- and institutional-level influences as the basic (fundamental) premises that ultimately affect health behaviors.

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TABLE 1
Selective Community and Health Care System Studies

Food environment	Study design	Subjects	Finding
Neighborhood differences in diet: The Atherosclerosis Risk in Community (ARIC) study. Diez Roux, Nieto, Caufield, Tyroler, Watson & Szklo, 1999	Prospective study	African-American; Caucasians	Neighborhood defined by poor wealth was associated with decreased dietary intake (e.g., fruit and vegetables), in general, for African-Americans in this study (OR = >1.0)
Neighborhood characteristics associated with the location of food stores and food service places. Morland, Wing, Diez-Roux & Poole, 2002	Exploratory study	African-American; Caucasians	Fewer supermarkets are located in predominately low-wealth neighborhoods (where African-Americans reside) compared to white neighborhoods (PR = 4.3, 95% CI = 1.5–12.5)
Street Environment			
Correlates of physical activity in Urban Midwestern Latinas. Wilbur, Chandler, Dancy & Lee, 2003	Cross-sectional	300 volunteer Latinas (Urban dwelling Latinas)	Social environmental correlates Seeing people in the neighborhood exercise (OR = 1.66, 95% CI = 1.66) and attending religious services (OR = 1.23, 95% CI = 0.60–2.54) has been associated with physical activity. Physical environmental correlates Women who reported light traffic were less likely to be active compared to women who reported heavy traffic (OR = 0.26, 95% CI = 0.09–0.71)
Diet and exercise with type 2 diabetes. Nelson, Reiber & Boyko, 2002	Cross-sectional	Mexican-Americans, African-Americans and whites	Individual correlates, such as age (OR = 1.9, 95% CI = 1.2–3.0), sex (OR = 2.3, 95% CI = 1.5, 3.4) and income (OR = 4.2, 95% CI = 2.0, 9.2) were independently associated with physical inactivity.
Health Care Environment			
Are Latinos less satisfied with communication by health care providers? Morales, Cunningham, Brown, Liu & Hays, 1999	Cross-sectional	African Americans, Asian or Pacific Islander, Native Americans or American Indians, Latino/Spanish, Latino/English and White respondents	Satisfaction with provider communication was most evident for those who were able to speak the provider's common language. Spanish/English speakers rated a higher average score (M = 48.6) than Spanish-only speakers (M = 44.9) with regards to provider satisfaction, $p < .01$.
The association between health insurance and coverage and diabetes care: data from the 2000 BRFSS, Nelson, Chapko, Reiber & Boyko, 2005	Cross-sectional	White, Latino, African-American	Type of insurance (i.e., veteran's) was associated with specific diabetes care (e.g., diabetes education, foot care). Individuals who reported no insurance were less likely to receive foot care (OR: 0.5, 95% CI: 0.3, 0.8) or HBA1c last year (OR: 0.4, 95% CI: 0.3, 0.7) compared with individuals with private insurance.