Published in final edited form as:

Hisp Health Care Int. 2017 September ; 15(3): 121–129. doi:10.1177/1540415317727569.

Using CBPR to Decrease Health Disparities in a Suburban Latino Neighborhood

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Abstract

Introduction—This project tested the feasibility of using a community-based participatory research (CBPR) approach to deliver health and social resources in two high-risk, suburban neighborhoods.

Method—An established research network was used to engage stakeholders to design and deliver a neighborhood-based intervention targeting a Latino immigrant population. The intervention provided screenings for hypertension, diabetes, and depression; primary care provider visits; and information about navigating health care delivery systems and related community-based resources. Participants ($N = 216$) were consented for participation and their subsequent use of health and social services were measured at baseline and 1 year post intervention.

Results—At baseline, 5.1% of participants had health insurance, 16.7% had a primary care provider, and 38.4% had a chronic illness. SF-12 scores showed a majority of participants with low perceived health status (56%) and high risk for clinical depression (33%). Self-reported use of primary care services increased from 33.8% at baseline to 48% 1 year after the intervention, and 62% reported use of social services.

Conclusion—Neighborhood-based interventions informed by a CBPR approach are effective in both identifying community members who lack access to health care–related services and connecting them into needed primary care and social services.

Keywords

community-based participatory research; Latino/Hispanic; neighborhood; community health; primary care

Charlotte, North Carolina, is a one of the fastest growing cities in the United States with about 800,000 residents, 15.7% of whom are foreign-born. Of these immigrants, 45.8%

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Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

identify as Hispanic or Latino (U.S. Census Bureau, 2015). Prior to 1990, Charlotte had relatively few foreign-born residents, but has experienced rapid immigrant growth over the past several decades. Charlotte has been identified as one of the nation's emerging immigrant gateways—a city where, among other factors, rates of foreign-born growth outpace the national average by at least two times (Singer, 2015). The Charlotte health care delivery system has faced the subsequent challenge of meeting the needs of a culturally distinct, low-income, non-English-speaking population.

Just over half of the Latino residents in Charlotte are foreign-born (53.1%) and are primarily Mexican (38.2%) or Central American (33.2%). Of the foreign-born, about 28% report having an income below the poverty level; and of those over the age of 25 years, 41.2% have less than a high school education (U.S. Census Bureau, 2015). Latino adults use fewer health care services than non-Latino Whites and are significantly more likely to go without health care (Kaiser Family Foundation, 2016). Many Latinos in the Charlotte area do not have a regular health care provider and most lack health insurance (Smith, 2007). Barriers to health care access are compounded by the limited availability of free or low-cost clinics and a lack of culturally sensitive, bilingual providers (Tapp, Smith, Dixon, Ludden, & Dulin, 2013).

For Latino immigrants in emerging gateway cities, the social determinants of health are complex and include the following: age at arrival, length of time in the United States, documentation status, insurance coverage, English proficiency, and country of origin (Berk & Schur, 2001; Kao, 2009; Martinez & Carter-Pokras, 2006). Neighborhood characteristics also influence health care access and outcomes (Patel, Eschbach, Rudkin, Peek, & Markides, 2003; Yang, 2010). Latino immigrants are more likely to move into neighborhoods with high rates of poverty, poor quality of life, limited access to health care services, and high rates of crime (Cubbin, Egerter, Braveman, & Pedregon, 2008; Williams, Mohammed, Leavell, & Collins, 2010). In new gateways, those neighborhoods tend to be located in aging and sometimes peripheral suburbs that were traditionally home to non-Hispanic White working- and middle-class groups (Singer, Hardwick, & Brettell, 2008; Smith & Furuseth, 2004).

Expanded access to primary care can help populations overcome health disparities and improve outcomes (Beal, Hernandez, & Doty, 2009; Starfield & Shi, 2007; Starfield, Shi, & Macinko, 2005). While traditional health service delivery models have had little effect on social determinants of health (Martinez & Carter-Pokras, 2006; Patel et al., 2003; Ramos, Correa, & Trinidad, 2015; Yang, 2010), bringing care to the neighborhood level, connecting people to resources, and creating local social networks can empower vulnerable populations to improve the health of their communities (Deri, 2005; Mulvaney-Day, Alegria, & Sribney, 2007; Starfield et al., 2005).

The Mecklenburg Area Partnership for Primary Care Research, a practice-based research network, was created in Charlotte in 2004 to improve health care access and quality using key principles of community-based participatory research (CBPR; Dulin et al., 2010; Tapp et al., 2014). With the support of the Mecklenburg Area Partnership for Primary Care Research, this project was designed to test a CBPR approach to health care and related social resource delivery in two suburban Charlotte neighborhoods with high concentrations of recently arrived Latino immigrant residents. The CBPR framework deployed for this

intervention includes building relationships with community partners and key stakeholders, cultivating capacity among partners, empowering a community advisory board (CAB), and including partners in identification, prioritization, validation, and dissemination (Israel, Eng, Schulz, & Parker, 2005; Wallerstein & Duran, 2006). This article presents the intervention development process, implementation, and outcomes.

Method

Social determinants of health were identified and validated at the neighborhood level using analysis of quantitative health system and community data, and qualitative data collected from key informants, focus groups, and photovoice (Schuch et al., 2014). The CAB consisting of 20 to 25 active members from academic, health care, school system, and nonprofit settings oversaw the work. Using geospatial modeling, four potential intervention neighborhoods were identified based on economic status, average time of arrival in the United States, education attainment, and neighborhood-level crime statistics (Ludden et al., 2017). The CAB prioritized two of the neighborhoods for intervention development and deployment. Each targeted area was located amid the densest areas of Latino settlement in the city where comparatively high numbers of recently arrived Latino immigrants reside (Figure 1). Carolinas HealthCare System's institutional review board approved the study. The entire study was conducted between 2010 and 2015.

Community Needs Assessment

Interviews and focus groups—Following identification of the target neighborhoods, semistructured interviews were conducted to gain insights on social and spatial conditions affecting health, perceived barriers to health care access, and the Latino community's health care experience. Interview guides were developed by the research team and reviewed by the CAB. The CAB identified 13 key informants who in their professional or outreach work served the residents of the two neighborhoods. Key informants included health and social service providers, business leaders, apartment managers, public school employees, police, and fire department officers. Several key informants were selected for interviews because they both identified as Latino and were leaders in the Latino community. Interviews were held in English or Spanish as determined by the preference of the key informant.

To validate the interviews and further explore information collected, three focus groups with six to eight participants were also held with Latino residents of each of the two neighborhoods. Focus group guides were developed by the research team and approved by the CAB. Bilingual and bicultural research team members facilitated the focus groups in Spanish as this was the language spoken by all focus group participants.

The interviews and focus groups were audio-recorded, transcribed, and the final transcript was translated into English, and summarized for presentation to the CAB. Interview or focus group participants were compensated \$20.

Interview and focus group results—Findings from both the key informant interviews and focus groups reinforced the “high-risk” classification of the target areas and revealed recurring themes, including (a) multiple barriers to health care access, (b) lack of

understanding on how/when to access care, and (c) impact of neighborhood living conditions on health. Barriers to health care services included lack of transportation to health care facilities, the costs of health care and the related effects of not having health insurance, cultural differences and language barriers, immigration status, and limited knowledge about the U.S. health care system. Participants stated they were concerned about dental, vision, and mental health, but had difficulty accessing services to address those needs. Community members shared that they were willing to pay for services, but wanted affordable clinics within or near their neighborhoods where they felt safe and welcomed. Women were more likely to seek care than men, and they consistently expressed interest in nutrition, exercise, and health education.

Community members used many different strategies to navigate the system and access health care services. The Internet was identified as a key source of health information, along with information provided by family and friends. Bilingual children would often serve as interpreters between parents and service providers. When prescription drugs were inaccessible, participants chose over-the-counter and natural options, borrowed medicine from family and friends, or had medicine sent from their country of origin.

More recent immigrants (i.e., migrated within a 5-year time frame) tended to live in apartments, which created a different neighborhood experience than that experienced by residents of single-family homes. Specifically, for those living in apartments, factors affecting health and well-being included poor housing conditions, lack of maintenance of public and apartment complex spaces, stresses of poverty and discrimination, and neighborhood safety concerns. In general, avoidance of authorities and the consequent failure to report crimes made undocumented community members targets for crime and fraud. Positive factors included grocery stores within walking distance, proximity to fire and police stations, and neighborhood churches, schools, and parks.

Intervention Development

Neighborhood forums—Following completion of the interviews and focus groups, a forum was held in each neighborhood to allow community members to review project findings and provide input into intervention design. Attendees were recruited through word-of-mouth using the CAB members, key informants, and focus group participants; approximately 50 people (e.g., community leaders, residents, providers) attended each forum including community leaders, neighborhood residents, and local service providers. To allow communication across all attendees, the forums were conducted in Spanish with simultaneous professional interpretation provided in English. The forums lasted 5 hours with both breakfast and lunch served. Curated qualitative and quantitative data describing the neighborhoods and associated needs were shared with all participants before breaking-up into groups. Eight groups composed of five to seven participants, including a facilitator from the CAB, were formed based on English or Spanish language preference.

Each group reviewed the interview and focus group findings and proposed an intervention to improve the health of neighborhood residents. The groups presented their ideas to the audience as whole and all forum participants voted on the interventions they felt would best address the neighborhood needs. Three potential interventions were prioritized: (a) resource

events held at various locations throughout the year, (b) low-cost health care clinics with a focus on prevention, and (c) exercise and nutrition classes held at apartment complexes. In the afternoon, the groups reconvened to brainstorm how each of the three interventions might be best designed and implemented.

Intervention design—After the forum, the CAB was tasked with evaluating the top three recommendations. The CAB selected and designed a community health intervention that consisted of five events held over a 6-month period at neighborhood elementary schools. The intervention was designed to include community organizations that offered education on wellness and behavior change, primary care providers who performed focused physical assessment and made referrals, and data collection of basic physical and mental health measures.

Recruitment—The study population included self-identified Latino adults living in or within ¼ mile of the previously identified census tracts (Figure 1). In the first neighborhood, invitation postcards were mailed to residents of each neighborhood 3 weeks before the first of the five events. In the second neighborhood, rather than postcards, an existing parent-led group from the elementary school distributed flyers locally—an example of the way the events were tailored to the community's specific needs. Residents of apartment complexes were targeted for recruitment since they tended to be high users of emergency department services (Dulin et al., 2010). Reminder flyers were distributed 1 week prior to each event, and in-person recruitment was done at a local Latino grocery store. A bilingual automated phone call was sent to all families of children attending the elementary school where the events were held.

Intervention Delivery

The community health events were open and free to anyone, though only Latino adults over 18 years of age living in the targeted area were enrolled in the study. Participants were screened for eligibility, consented by the research staff, and then completed a survey that provided information about demographics and served as the primary data collection point for changes in health and social support, and neighborhood context overtime. The survey included the Short Form–12 Version 2 (SF-12v2; Ware, Kosinski, & Keller, 1996) and Medical Outcomes Study Social Support Survey (Sherbourne & Stewart, 1991). All surveys were in Spanish and English and took 30 minutes to complete, with assistance offered as needed. Participants received \$35 compensation for completing the survey. After surveys were completed, blood pressure and random blood glucose were assessed, and participants were provided the opportunity to see a health care provider. During each event, participating social support and health organizations stamped a booklet given to each participant to verify attendance. Participants were asked to provide feedback about services available at future events. These suggestions were reviewed by the research team and led to enhancements for each subsequent event. As an example, vision screening and police officers from the local station were added as services and informational resources. In the second neighborhood, because the intervention extended into the summer months, the intervention consisted of four events over a 5-month period.

After each event, phone surveys were conducted at 2 weeks and 4 weeks post to assess self-reported health and social services used. For 1 year after the final event, monthly follow-up phone surveys tracked primary care provider and social service utilization. The research team also received consent to access the medical records of study participants to examine health service utilization from Carolinas Health-Care System. Enrolled participants in the study were identified in the hospital system's clinical data using their name, address, and date of birth. Patterns of health care utilization were examined for 1 year prior to the first event and then prospectively for 1 year. Data were entered into a secure, password-protected database and descriptive analysis was conducted using SAS Version 9.4. Data were reported as means and standard deviation or percentages.

Results

Over the course of the study, 238 participants were enrolled from both neighborhoods. Twenty-two participants were later excluded because they withdrew consent, moved out of the neighborhoods, or could no longer be contacted. The remaining 216 participants were included in the final analysis (Table 1). Most participants were of ages 18 to 44 (80.6%), female (68.1%), born in Mexico (65.3%), and spoke primarily Spanish (99.1%). Although 38.4% had diabetes, hypertension, or self-reported a chronic illness, few participants had health insurance (5.1%), had a primary care provider (16.7%), or self-reported visits to a primary care provider (33.8%).

Over half of participants had mental health scores below national norms (66%) and one third (33%) were at risk for clinical depression. Social support scores ranged from 1 to 100, with higher scores indicating greater support. Tangible support ($M = 53.2$, $SD = 30.8$) and emotional/informational support ($M = 54.3$, $SD = 29.1$) scores were lower than affectionate support ($M = 68.6$, $SD = 30.6$) and social interaction ($M = 63.5$, $SD = 30$) scores (Table 2). According to self-reported data, use of health and social services increased post intervention 48.1% received primary care services and 62% used at least one social service (Table 3).

Health care utilization data from the Carolinas HealthCare System electronic medical record were identified for 58 intervention participants. Of these, 26 (44.8%) had a health care encounter within the Carolinas HealthCare System in the year prior to the intervention and 24 (41.4%) had a health encounter in the year following the intervention. According to the electronic medical record, primary care visits were 12.1% and 8.6% before and after the intervention, respectively. Emergency department visits increased from 17.2% to 25.9% 1 year before and after the intervention, respectively (Table 4).

Post Intervention Focus Group Evaluation

Focus groups with participants, volunteers, and organization representatives were conducted to collect information regarding the experience participating in the intervention and improvements needed for future events. Focus group participants provided consent and were audio-recorded. Content analysis revealed recurring themes.

Participants were pleased with the intervention and were grateful to receive a physical exam, speak with a provider, and receive information on health and social services. Despite

positive reports regarding their involvement in the intervention, many providers, organizational representatives, and interpreters felt frustrated that they were unable to refer patients to needed services because of lack of health insurance and documentation status. Another challenge was that agencies and free clinics were sometimes not accepting new patients or did not have staff that spoke Spanish. As such, the experience of providers, organizational representatives, and interpreters emphasized the dominating role of policy and structural constraints in limiting health care access for newly arrived immigrants. Participants and providers identified the need for accessible mental health services.

Discussion

Charlotte's Latino immigrant population faces challenging economic, social, and spatial circumstances that affect their health (Dulin et al., 2010; Dulin et al., 2012; Dulin, Tapp, Smith, de Hernandez, & Furuseth, 2011). This CBPR-driven intervention successfully engaged Latino community members and connected many with needed health and social services that were identified by the community itself through the CBPR process (Mann et al., 2016). The intervention also connected participants to primary care, specialty care, and support services within and beyond their neighborhood areas that addressed previous accessibility and utilization challenges. Such support is considered especially valuable for newly arrived immigrants who are in the earliest stages of settlement, adjustment, and integration (Bustamante et al., 2012; Nandi et al., 2008). Mixed methods and data sources provided a critical foundation on which to build knowledge about community and context before intervention building (Onwuegbuzie & Leech, 2005).

This work highlighted how CBPR can be used to develop local scale interventions designed to address health disparities in a manner that is attuned to the distinctive nature of both the community served and the neighborhood context. Participatory strategies are thought to affect health by empowering participants, which produces psychological, community, and cultural outcomes. This work supports the growing array of research suggesting that community participation provides additional health benefits as well as enhanced community capacity (Mulvaney-Day, Rappaport, Alegria, & Codianne, 2006; Schulz et al., 2011; Shetgiri et al., 2009). In the follow-up surveys, many participants specifically mentioned that they would not have been able to access health and social services without the intervention. Though the intervention was designed to meet the needs of Latino immigrants, it also informed service providers and community organizations who emerged more knowledgeable and better equipped to serve communities and neighborhoods more effectively and appropriately.

A significant number of participants in the study had a self-reported chronic illness, but few had a primary care provider. Though self-report data demonstrated increased primary care use, according to data available from electronic medical records, primary care visits decreased from 12.1% prior to and 8.6% following the intervention. The intervention may have made participants more aware of previously undiagnosed chronic diseases, leading to an increase in emergency department use, which is a location where some Latinos seek care (Tang, Stein, Hsia, Maselli, & Gonzales, 2010). This would suggest that targeting individuals who are using the emergency department inappropriately may be a more

effective approach. It is important to recognize that these data only reflect visits made through Carolinas HealthCare System. Though this hospital system is the public option, it is one of many primary care and emergency room providers across the city.

Social support scores suggested that participants may have adequate personal and family relationships, but lack resources and information regarding support services beyond their immediate circles (Hurtado-de-Mendoza, Gonzales, Serrano, & Kaltman, 2014; Viruell-Fuentes & Schulz, 2009). This population needs effective and consistent mechanisms to communicate information, provide referrals, and follow-up. The high number of participants who reported depressive symptoms or risk for depression is cause for concern. Assuring that this population has access to adequate mental health screenings and treatment requires urgent attention that is mindful of the barriers identified by providers who attempt to refer for services.

Post intervention focus group data showed consistent positive feedback from the Latino community and volunteers about components of the intervention including organization and location. Service providers also benefited from the exposure and ability to interact with groups they served. While serving and “giving back” to others, the volunteers learned about the Latino community and their health care needs and had opportunities to interact with them in ways that they reported might otherwise not be possible. Having a series of events allowed participants and providers to interact over time, which was seen as positive.

Feedback from the participants, community stakeholders, and the research team was used to improve future community-based interventions. For example, providing onsite child care made it easier for parents to participate. Holding future events later in the evening or on Sunday could facilitate increased male participation, since they were often working. Also, increasing the frequency of communication and maintaining positive and open relationships with schools, organizations, and volunteers were key elements in the success of the intervention. The research team used several feedback strategies to understand the needs of the community.

The challenges encountered during the study can inform future research and intervention building. During the intervention, participants were given the opportunity to see a health care provider and be referred for services; however, finding resources for participants who needed affordable mental health services, dental care, and vision services was very challenging. Participation in the first targeted area was better than in the second, which could be explained in part by the location of the intervention. The elementary school in the first area was more easily accessible by public transportation than the second, which was embedded in a residential enclave of single family homes some distance from public transit stops and main transportation arteries. Though one goal of the study was to improve social networks in a defined geographic area, limiting study participation to preset boundaries was challenging because it restricted participation and attendees who lived outside the area may have felt excluded.

While a strength of the study was engaging, connecting, and informing a broad group of stakeholders including community members for an extended period, some major barriers to

primary care access including immigration policies and the high costs of health care were beyond the scope of this study. In addition, though social determinants of health are a comprehensive framework to conceptualize and understand the multi-faceted nature of community health, it is challenging to measure and change. This study looked broadly at the social determinates related to health; however, it recognized that many including economic factors, legal status, environment, education level, and others could not be influenced. This study addressed other factors such as health behavior, engagement, social support, and access to resources.

Conclusions

Even while significant barriers remain to accessing traditional health care services, it is essential to find cost-effective, preventative care services for vulnerable populations. Developing interventions that are sustainable beyond the funding period is difficult; however, community capacity building is one strategy that can be used to empower neighborhoods. Over the course of the intervention, health care use increased and most participants used a social service following the intervention, suggesting the strategies used to improve access were effective. The intervention made participants aware of a broader range of primary and urgent care options both within their immediate neighborhoods and across the city, as well as the comparative advantages and disadvantages of different provider types. Future interventions could target individuals who are struggling to access care.

This study illustrates how the CBPR process can successfully bring health care and information about services to communities in need, engage a neighborhood, and provide information of value to all stakeholders that can translate into enhanced access and improved health outcomes. Paying attention to place-specific variables can help tailor interventions to specific community needs and strengths. Ensuring that all community members can access health care, especially primary care services, may prevent disease progression that exacerbates health disparities and increases the cost of care.

Acknowledgments

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This study was funded by National Institute of Minority Health and Health Disparities (Grant Number R01MD006127).

References

- Beal A, Hernandez S, Doty M. Latino access to the patient-centered medical home. *Journal of General Internal Medicine*. 2009; 24(Suppl 3):514–520. DOI: 10.1007/s11606-009-1119-1 [PubMed: 19842000]
- Berk ML, Schur CL. The effect of fear on access to care among undocumented Latino immigrants. *Journal of Immigrant Health*. 2001; 3:151–156. DOI: 10.1023/A:1011389105821 [PubMed: 16228780]
- Bustamante AV, Fang H, Garza J, Carter-Pokras O, Wallace SP, Rizzo JA, Ortega AN. Variations in healthcare access and utilization among Mexican immigrants: The role of documentation status. *Journal of Immigrant and Minority Health*. 2012; 14:146–155. [PubMed: 20972853]

- Cubbin, C., Egerter, S., Braveman, P., Pedregon, V. Where we live matters for our health: Neighborhoods and health. 2008. Retrieved from <https://folio.iupui.edu/handle/10244/638>
- Deri C. Social networks and health service utilization. *Journal of Health Economics*. 2005; 24:1076–1107. DOI: 10.1016/j.jhealeco.2005.03.008 [PubMed: 16139910]
- Dulin MF, Ludden TM, Tapp H, Smith HA, de Hernandez BU, Blackwell J, Furuseth OJ. Geographic information systems (GIS) demonstrating primary care needs for a transitioning Hispanic community. *Journal of the American Board of Family Medicine*. 2010; 23:109–120. [PubMed: 20051550]
- Dulin MF, Tapp H, Smith HA, de Hernandez BU, Coffman MJ, Ludden T, ... Furuseth OJ. A trans-disciplinary approach to the evaluation of social determinants of health in a Hispanic population. *BMC Public Health*. 2012; 12:769.doi: 10.1186/1471-2458-12-769 [PubMed: 22966865]
- Dulin MF, Tapp H, Smith HA, de Hernandez BU, Furuseth OJ. A community-based participatory approach to improving health in a Hispanic population. *Implementation Science*. 2011; 6:38.doi: 10.1186/1748-5908-6-38 [PubMed: 21481262]
- Hurtado-de-Mendoza A, Gonzales FA, Serrano A, Kaltman S. Social isolation and perceived barriers to establishing social networks among Latina immigrants. *American Journal of Community Psychology*. 2014; 53:73–82. [PubMed: 24402726]
- Israel, B., Eng, E., Schulz, A., Parker, E. *Methods in community-based participatory research*. San Francisco, CA: Jossey-Bass; 2005.
- Kaiser Family Foundation. Key facts about the uninsured population. 2016. Retrieved from <http://kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population/>
- Kao DT. Generational cohorts, age at arrival, and access to health services among Asian and Latino immigrant adults. *Journal of Healthcare for the Poor and Underserved*. 2009; 20:395–414. DOI: 10.1353/hpu.0.0144
- Ludden T, Simmons L, Taylor YJ, Smith HA, Hernandez BU, Tapp H, ... Dulin M. Using community-based participatory research to develop geospatial models toward improving community health for disadvantaged Hispanic populations in Charlotte, North Carolina. 2017 Manuscript submitted for publication.
- Mann L, Siman FM, Downs M, Sun CJ, de Hernandez BU, Garcia M, ... Rhodes SD. Reducing the impact of immigration enforcement policies to ensure the health of North Carolinians: Statewide community-level recommendations. *North Carolina Medical Journal*. 2016; 77:240–246. [PubMed: 27422942]
- Martinez IL, Carter-Pokras O. Assessing health concerns and barriers in a heterogeneous Latino community. *Journal of Healthcare for the Poor and Underserved*. 2006; 17:899–909. DOI: 10.1353/hpu.2006.0129
- Mulvaney-Day NE, Alegria M, Sribney W. Social cohesion, social support, and health among Latinos in the United States. *Social Science & Medicine*. 2007; 64:477–495. DOI: 10.1016/j.socscimed.2006.08.030 [PubMed: 17049701]
- Mulvaney-Day NE, Rappaport N, Alegria M, Codianne LM. Developing systems interventions in a school setting: An application of community-based participatory research for mental health. *Ethnicity & Disease*. 2006; 16(Suppl 1):S107–S117. [PubMed: 16681134]
- Nandi A, Galea S, Lopez G, Nandi V, Strongarone S, Ompad DC. Access to and use of health services among undocumented Mexican immigrants in a US urban area. *American Journal of Public Health*. 2008; 98:2011–2020. [PubMed: 18172155]
- Onwuegbuzie AJ, Leech NL. On becoming a pragmatic researcher: The importance of combining quantitative and qualitative research methodologies. *International Journal of Social Research Methodology*. 2005; 8:375–387.
- Patel KV, Eschbach K, Rudkin LL, Peek MK, Markides KS. Neighborhood context and self-rated health in older Mexican Americans. *Annals of Epidemiology*. 2003; 13:620–628. DOI: 10.1016/S1047-2797(03)00060-7 [PubMed: 14732301]
- Ramos AK, Correa A, Trinidad N. Perspectives on breast health education and services among recent Hispanic immigrant women in the Midwest: A qualitative study in Lancaster County, Nebraska. *Journal of Cancer Education*. 2016; 31:666–672. DOI: 10.1007/s13187-015-0886-0 [PubMed: 26194778]

- Schuch JC, de Hernandez BU, Williams L, Smith HA, Sorensen J, Furuseth OJ, Dulin MF. Por Nuestros Ojos: Understanding social determinants of health through the eyes of youth. *Progress in Community Health Partnerships*. 2014; 8:197–205. DOI: 10.1353/cpr.2014.0027 [PubMed: 25152101]
- Schulz AJ, Israel BA, Coombe CM, Gaines C, Reyes AG, Rowe Z, ... Weir S. A community-based participatory planning process and multilevel intervention design: Toward eliminating cardiovascular health inequities. *Health Promotion Practice*. 2011; 12:900–911. DOI: 10.1177/1524839909359156 [PubMed: 21873580]
- Sherbourne CD, Stewart AL. The MOS Social Support Survey. *Social Science & Medicine*. 1991; 32:705–714. [PubMed: 2035047]
- Shetgiri R, Kataoka SH, Ryan GW, Askew LM, Chung PJ, Schuster MA. Risk and resilience in Latinos: A community-based participatory research study. *American Journal of Preventive Medicine*. 2009; 37(6 Suppl 1):S217–S224. DOI: 10.1016/j.amepre.2009.08.001 [PubMed: 19896022]
- Singer, A. Metropolitan immigrant gateways revisited, 2014. 2015. Retrieved from <https://www.brookings.edu/research/metropolitan-immigrant-gateways-revisited-2014/>
- Singer, A., Hardwick, S., Brettell, C. Twenty-first century gateways: Immigrants in suburban America. Washington, DC: Brookings Institution Press; 2008.
- Smith HA. Latino settlement, service provision and social justice in Charlotte, North Carolina. *Southeastern Geographer*. 2007; 47:114–117.
- Smith HA, Furuseth OJ. Housing, Hispanics and transitioning geographies in Charlotte, North Carolina. *Southeastern Geographer*. 2004; 44:2016–2235.
- Starfield B, Shi L. Commentary: Primary care and health outcomes: A health services research challenge. *Health Services Research*. 2007; 42(6 Pt 1):2252–2256. 2294–2323. DOI: 10.1111/j.1475-6773.2007.00739.x [PubMed: 17995564]
- Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Quarterly*. 2005; 83:457–502. DOI: 10.1111/j.1468-0009.2005.00409.x [PubMed: 16202000]
- Tang N, Stein J, Hsia RY, Maselli JH, Gonzales R. Trends and characteristics of US emergency department visits, 1997–2007. *Journal of American Medical Association*. 2010; 304:664–670.
- Tapp H, Kuhn L, Alkhazraji T, Steuerwald M, Ludden T, Wilson S, ... Dulin MF. Adapting community based participatory research (CBPR) methods to the implementation of an asthma shared decision making intervention in ambulatory practices. *Journal of Asthma*. 2014; 51:380–390. [PubMed: 24350877]
- Tapp H, Smith HA, Dixon JT, Ludden T, Dulin M. Evaluating primary care delivery systems for an uninsured Hispanic immigrant population. *Family and Community Health*. 2013; 36:19–33. DOI: 10.1097/FCH.0b013e31826d7562 [PubMed: 23168343]
- U.S. Census Bureau. American fact finder. 2015. Retrieved from <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>
- Viruell-Fuentes EA, Schulz AJ. Toward a dynamic conceptualization of social ties and context: Implications for understanding immigrant and Latino health. *American Journal of Public Health*. 2009; 99:2167–2175. DOI: 10.2105/AJPH.2008.158956 [PubMed: 19833986]
- Wallerstein MB, Duran B. Using community-based participatory research to address health disparities. *Health Promotion Practice*. 2006; 7:312–323. [PubMed: 16760238]
- Ware JE, Kosinski M, Keller SD. A 12-item short-form health survey: Construction of scales and preliminary tests of reliability and validity. *Medical Care*. 1996; 34:220–233. [PubMed: 8628042]
- Williams DR, Mohammed SA, Leavell J, Collins C. Race, socioeconomic status, and health: Complexities, ongoing challenges, and research opportunities. *Annals of the New York Academy of Sciences*. 2010; 1186:69–101. [PubMed: 20201869]
- Yang JS. Contextualizing immigrant access to health resources. *Journal of Immigrant and Minority Health*. 2010; 12:340–353. DOI: 10.1007/s10903-008-9173-z [PubMed: 18704685]

Figure 1.

Concentration of Latino residents in Mecklenburg County, North Carolina, 2010.

Note. Copyright permission not required since the map was created by Claire Schuch.

Table 1Self-Reported Participant Demographics ($n = 216$).

Characteristics	<i>n</i>	%
Gender		
Male	68	31.5
Female	147	68.1
Missing	1	0.5
Age (years) on survey date		
18–44	174	80.6
45+	41	19.0
Missing	1	0.5
Country of birth		
Mexico	141	65.3
Central America	57	26.4
South America	12	5.6
Other	6	2.8
Time in the United States		
0–4 years	16	7.4
5–9 years	65	30.1
10 or more years	119	55.1
Missing	16	7.4
Time in North Carolina		
0–4 years	27	12.5
5–9 years	85	39.4
10 or more years	86	39.8
Missing	18	8.3
Time in Charlotte		
0–4 years	30	13.9
5–9 years	85	39.4
10 or more years	86	39.8
Missing	15	6.9
Years of formal education		
No schooling	1	0.5
Elementary (about 6 years or less)	87	40.3
Middle school (about 7–9 years)	67	31.0
High school	36	16.7
Some college or higher	15	6.9
Unknown	10	4.6
Primary language		
Only Spanish	138	63.9
Spanish better than English	62	28.7
Both equally	14	6.5

Characteristics	<i>n</i>	%
English better than Spanish	2	0.9
Language acculturation score		
Low acculturation <3	216	100.0
Household income (\$)		
0	14	6.5
1–9,999	46	21.3
10,000–19,999	84	38.9
20,000–29,999	42	19.4
30,000–39,999	8	3.7
40,000 or more	3	1.4
Missing	19	8.8
Personal income (\$)		
No income	54	25.0
1–9,999	56	25.9
10,000–19,999	56	25.9
20,000–29,999	23	10.6
30,000–39,999	2	0.9
40,000 or more	3	1.4
Missing	22	10.2
Employment status		
Working	107	49.5
Not working	104	48.1
Missing	5	2.3
Has primary care provider		
Yes	36	16.7
No	175	81.0
Does not know	3	1.4
Missing	2	0.9
Saw primary care provider 1 year prior to intervention		
Yes	73	33.8
No	135	62.5
Does not know	2	0.9
Missing	6	2.8
Hospitalized 1 year prior to intervention		
Yes	32	14.8
No	179	82.9
Does not know	3	1.4
Missing	2	0.9
Has health insurance		
Yes	11	5.1
No	200	92.6
Missing	5	2.3

Characteristics	<i>n</i>	%
Self-reported health		
Excellent	17	7.9
Good	74	34.3
Normal/okay	108	50.0
Poor/bad	13	6.0
Missing	4	1.9
Blood glucose (< 140 mg/dL)		
Yes	11	5.1
No	122	56.5
Missing	83	38.4
Systolic blood pressure (< 140 mmHg)		
Yes	37	17.1
No	105	48.6
Missing	74	34.3
Self-reported chronic illness		
Yes	83	38.4
No	133	61.6

Table 2**Mental Health and Social Support.**

Characteristics	<i>n</i>	%
Mental health score below population norm ^a	138	66.0
At risk for depression ^a	69	33.0
Social support score ^b	<i>M</i>	<i>SD</i>
Scaled social support score	57.5	27.0
Tangible support	53.2	30.8
Affectionate support	68.6	30.6
Positive social interaction	63.5	30.0
Emotional/informational support	54.3	29.1

^aData from 209 participants with nonmissing data for mental health questions. Risk of depression in general population is 20% based on SF-12v2 survey.

^bData from 148 respondents with nonmissing data using the Medical Outcomes Study Social Support Survey; Range 0 to 100, with higher score indicating greater social support.

Table 3Self-Report Health Care and Service Use 1 Year Following the Intervention ($N = 216$).

Characteristics	<i>n</i>	%
Saw primary care provider since intervention		
Yes	104	48.1
No	112	51.9
Use of social service since intervention		
Yes	134	62
No	73	33.8
Missing	9	4.2
Emergency room visit since intervention		
Yes	31	14.4
No	179	82.9
Missing	6	2.8

Table 4Utilization of Health Services Before and After the Intervention ($n = 58$)^a.

Service category	One year before intervention			One year after intervention		
	Visits	Patients	% of patients	Visits	Patients	% of patients
Any service	139	26	44.8	89	24	41.4
Obstetrics/gynecology	54	12	20.7	35	9	15.5
Lab/pharmacy	30	7	12.1	6	4	6.9
Primary care	22	7	12.1	14	5	8.6
Emergency	19	10	17.2	15	15	25.9
Inpatient/observation	10	9	15.5	6	5	8.6
Radiology/oncology	0	0	0.0	8	1	1.7
Urgent care	0	0	0.0	3	2	3.4
Other-outpatient	2	1	1.7	0	0	0
Outpatient surgery	1	1	1.7	2	2	3.4

^aData source: Carolinas HealthCare System Electronic Medical Record.