Published in final edited form as:

Glob Public Health. 2018 October ; 13(10): 1507–1519. doi:10.1080/17441692.2017.1409783.

Social networks, migration, and HIV testing among Latinos in a new immigrant destination: Insights from a qualitative study

Clare Barrington^{a,b,*}, Anisha Gandhi^{c,d}, Adrienne Gill^a, Laura Villa Torres^a, Maria Priscila Brietzke^a, and Lisa Hightow-Weidman^{a,e}

^aDepartment of Health Behavior, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, US

^bCarolina Population Center, University of North Carolina at Chapel Hill, Chapel Hill, US

^cNew York City Department of Health and Mental Hygiene, Queens, US

^dDepartment of Sociomedical Sciences, Mailman School of Public Health, Columbia University, New York, US

^eSchool of Medicine, Institute for Global Health and Infectious Diseases, University of North Carolina at Chapel Hill, Chapel Hill, US

Abstract

Latinos in the US are disproportionately affected by HIV and are more likely than non-Latinos to present with a late diagnosis, which delays engagement in HIV care and treatment. Social networks may provide normative influence and social support for HIV testing, but a contextualized understanding of networks is needed in order to maximize these social resources. We conducted qualitative interviews with foreign-born Latino men and transgender women (n=17) in a new immigrant destination to explore their social networks. Most participants described having smaller social networks after migrating. Networks included both local and transnational ties, but most participants had few close ties. Contextual factors including stigma and geographic dispersion limited the re-construction of networks with close ties after migration. HIV testing was not a common topic of discussion with social network ties. Efforts to improve early uptake of HIV testing among Latino immigrants may benefit from engaging with social networks, but such efforts need to address how the context in which networks operate enables access to testing.

Keywords

social networks; migration; Latinos; HIV testing; context

Background

Social networks, migration and health promotion

Social networks are a form of social capital that facilitate the exchange of resources between and among migrants (Aguilera & Massey, 2003). Bourdieu (1986) referred to networks as

*Corresponding author. cbarrington@email.unc.edu.

“institutionalized relationships of mutual acquaintance and recognition.” In the migration literature, social networks have been identified as central to out-migration, job seeking, and wages among Mexican immigrants (Aguilera & Massey, 2003; Massey et al., 1993). Network contacts are often critical in facilitating both the financial and logistical aspects of the actual journey to the US. Once in a new destination, network contacts often facilitate identification of job and housing opportunities, as well as providing an initial place to stay upon arrival. Such social resources can directly impact how easily migrants get jobs and higher wages and indirectly impact how and where jobs are obtained (Aguilera & Massey, 2003).

The centrality of social networks to the migration process has extended into the design of health promotion efforts with Latinos in the US. A popular health promotion strategy used to target Latino communities, namely the lay health advisor or *promotor(a) de salud* model. This model draws upon principles of social influence and diffusion, among others, which propose that these advisors can deliver health education and promote healthy behaviours within the same networks that facilitated the migration and resettlement processes (Rhodes, Foley, Zometa, & Bloom, 2007). Within HIV prevention, the effectiveness of lay health advisors to promote condom use and HIV testing among Latinos in a sustainable manner has been demonstrated in NC (Rhodes, Leichter, Sun, & Bloom, 2016; Rhodes, Hergenrather, Bloom, Leichter, & Montano, 2009; Rhodes et al., 2011; Sun, Mann, Eng, Downs, & Rhodes, 2015; Sun, García, Mann, Alonzo, Eng, & Rhodes 2015).

HIV among Latinos in North Carolina

The Latino population in NC has grown dramatically in the last 25 years, experiencing nearly 400% growth from 1990 to 2000 (Kochhar, Suro, & Tafoya, 2005) and doubling again from 2000 to 2010 (Ennis, Rios-Vargas, & Albert, 2011). Currently, 9% of the state population identifies as Hispanic or Latino (Bureau, 2015). Latinos comprise over 51% of the foreign-born population in North Carolina, with over 61% of the Latin American-born population originating in Mexico and an additional 20% from Central America (Bureau, 2014). It is estimated that Latin Americans comprise the majority of unauthorized immigrants in North Carolina (Passel & Cohn, 2014). As elsewhere in the US, the Latino immigrant population in NC has been negatively affected by the adoption of state-wide laws that increase opportunities for deportation of unauthorized residents via the involvement of state and local law enforcement (Gordon & Raja, 2012; Nguyen & Gill, 2010; Santiago & Burns, 2015). In a review of state policies impacting the health and well-being of undocumented immigrants, Rodríguez et al. found that NC laws reduced access to public health and welfare benefits, higher education, and the ability to obtain legal identification (Rodríguez, Young, & Wallace, 2015). This information is critical for framing and understanding the context in which Latino migrants are navigating their access to HIV testing.

Latino men in the United States (US) are disproportionately affected by HIV (CDC, 2013). In North Carolina (NC), a relatively new immigrant destination, HIV diagnosis rates among Latino men are more than two times as high as rates among non-Latino whites, and most transmission is attributed to sexual transmission between men (North Carolina Division of

Public Health, 2012). While some Latino immigrants are infected prior to migration, in a recent study, Dennis et al (2015) demonstrated that most transmission among Latinos in NC occurs after migration, especially among men who have sex with men (MSM)(Dennis et al., 2015). Wiewel et al (2015) found a similar pattern among Central American immigrants to New York City, 68% of whom were estimated to be infected in the US (Wiewel, Torian, Hanna, Bocour, & Shepard, 2015). The number of reported HIV cases, however, may represent a small fraction of the HIV burden among Latinos due to low rates of testing (Seña, Hammer, Wilson, Zeveloff, & Gamble, 2010).

In order to facilitate timely linkages to care and achieve optimal health outcomes following HIV diagnosis, there is an urgent need to facilitate early diagnosis among Latino men in NC, who are over two times more likely to present with a late HIV diagnosis than non-Latinos, as well as Latina transgender women (Ramirez-Valles, Garcia, Campbell, Diaz, & Heckathorn, 2008; Rhodes et al., 2012). This finding is consistent with data from other locations in the US, where Latinos are significantly more likely to test late for HIV (Sheehan et al., 2015; Solorio et al., 2016). Traditional HIV testing strategies for Latinos, such as health fairs and venue-based testing, may not effectively reach foreign-born Latino men and transgender women, who are often mobile, socially isolated, and reluctant to use health services. Additionally, population-based testing approaches, such as offering testing within predominantly Latino apartment complexes, may not identify those who are highest risk (Seña et al., 2010). Therefore, there is a need for innovative strategies to improve access to and uptake of HIV testing among Latinos.

In order to build on previous and ongoing efforts to reach individuals who have never tested for HIV, there is a need to continue improving understanding of Latino migrant networks and the context in which they function. The ability of a lay health advisor to reach individuals who have never tested for HIV is dependent on those individuals being a part of the advisor's networks, as well as the composition and structure of social networks and communication patterns between network members (Abdul-Quader, Heckathorn, Sabin, & Saidel, 2006; Abramovitz et al., 2009; Clark et al., 2013; Forrest et al., 2014; McCreesh et al., 2011; Toledo et al., 2011). In addition to the structural and functional characteristics of networks, the context surrounding networks can also influence the efficiency and reach of these approaches (Gandhi, 2012; Viruell-Fuentes & Schulz, 2009). This attention to context reflects Jennifer Hirsch's work on meso-level determinants of HIV vulnerability among Latino migrants, which:

“...focuses attention on modifiable population-level determinants of health inequalities, stimulating consideration of the processes through which inequalities translate into embodied suffering. A focus on the meso-level can move us from broad contentions about the political economy of HIV risk to a more policy- and program-relevant understanding of HIV vulnerability”. (Hirsch, 2014, page 2)

Therefore, an in-depth understanding of social network and contextual factors, ranging from geography to policy, which may influence the process of network formation, social influence, and social support among Latino immigrants is essential to inform effective use of these networks to promote HIV testing. The purpose of this inductive, formative study was

to improve understanding of the social networks of Latino men and transgender women in a new immigration destination and how they affect HIV testing behaviours.

Methods

Design and sample

We used an iterative, formative qualitative approach (Gittelsohn et al., 2006). We initially conducted interviews with key informants (n=9) who worked with the Latino community in NC and had experience with HIV prevention to learn more about the HIV landscape among Latinos in NC. We used the information provided in these interviews to develop a semi-structured guide for the in-depth interviews with Latino men and transgender women. Participants were eligible if they were cisgender male or transgender women, foreign-born of Latin American origin, 18 years of age or older, and lived or spent time in the city where the research was conducted. These criteria reflect our interest in understanding social and testing dynamics among the populations more affected by HIV in NC.

Recruitment and data collection—This study was conducted in collaboration with a community-based organization dedicated to improving the quality of life of Latinos and strengthening the local community. As this was a formative study, we purposefully sought out a diverse sample of in terms of gender identity and sexual orientation in order to obtain a broad understanding of HIV testing behaviours and network dynamics among the two populations most affected by HIV among Latinos in NC, men and transgender women. Staff at our partner organization identified potential in-depth interview participants at the beginning of the study; study participants also made referrals to potential participants during data collection. We determine the final sample size of 17 based on monitoring thematic saturation, which entailed identifying recurring themes related to social networks and HIV testing and assessing when new information was ceasing to emerge (Creswell, 2013).

In the in-depth interviews, we elicited a social network inventory by asking participants to make a list of the people who were most important in their lives, with whom they spoke the most, and whom they counted on for support. We explained that the list could include family, friends, intimate partners, co-workers, among others. We probed about the nature of ties with each network member, the exchange of support, and connections among network members. We also asked participants to describe their HIV testing practices and communication regarding HIV with their network members. Interviews were conducted in Spanish or English, per the participants' preference, audio recorded, and transcribed verbatim. All interviews were conducted by three trained female interviewers; two were native Spanish speakers who were also fluent in English and had migrated to the US, and one was a bilingual native English speaker. Having women conduct the interviews may have facilitated more detail and sincerity, or may have made some participants feel more timid about sharing details of their private lives and social worlds. In our past experience conducting interviews with men about their social networks and HIV related behaviours, participants preferred having a female interviewer because they said they felt more comfortable talking with a woman (Barrington et al 2009; Barrington et al 2014). Participants received an incentive of \$30 following completion of their interviews.

Data Analysis—Our analysis was informed by Maxwell and Miller’s theory of qualitative data analysis (Maxwell, & Miller, 2008). We integrated both categorizing (i.e. systematic thematic coding, comparative matrices) as well as connecting (i.e. narrative analysis) techniques to develop a holistic and contextualized understanding of social networks and HIV testing (Maxwell & Miller, 2008). Following multiple readings of the transcripts in the language in which they were conducted, we prepared a “social network summary” for each participant describing the composition and nature of ties (Edwards, 2010; Sandelowski, 1995). These summaries facilitated an in-depth understanding and characterization of different network structures and dynamics (Edwards, 2010; Heath, Fuller, & Johnston, 2009). Building from these summaries, we manually coded the transcripts around key HIV-related behaviours, and in particular around HIV testing. We then constructed matrices to compare themes and experiences throughout the study population and identify illustrative quotes (Sandelowski, 1995). This study was approved by the Institutional Review Board of the University of North Carolina.

Results

We begin by describing the study population, the composition and dynamics of social networks. We then describe patterns of communication about HIV, including testing, within social networks.

Description of the study population

Among the participants, 13 identified as men and 4 as transgender women. Average age was 34 years (range 18 to 57). Most participants (n=12) were from Mexico, followed by Honduras (n=4) and Colombia (n=1). The average time since migrating to the US was 14 years (range 2 to 32 years). Most participants had not migrated directly to NC and had previously lived in other states in the US. Family, low cost of living, and job availability were the most common reasons for coming to live in NC. With regard to sexual behaviour, the 4 transgender women all reported having sex exclusively with men. Of the 13 participants who identified as male, 7 reported being heterosexual and having sex with women; one of these participants also reported having sex with men. Five participants reported being gay and only having sex with men with the exception of 1 participant who was gay but had been married in the past and had previously had sex with women. One participant was not sexually active and did not indicate his preferences.

Personal network composition and dynamics

We begin by describing social network composition, or who made up the network. Study participants named between one and eight contacts (the maximum allowed) in their social network inventories; 4 was the modal number of contacts nominated. Table 1 provides a summary of the size, composition and location of each participant’s social network. Overall, most participants conveyed that their social networks were smaller in NC compared to in their country of origin. *The exception to this were younger participants, or those who had migrated when younger, who generally had larger networks with more diverse composition.* Family members were generally less prominent in the networks of gay and transgender participants, usually due to social rejection related to gender identity and sexual orientation,

compared to the networks of heterosexual-identifying participants. Networks included both local, or US-based, and transnational ties (Table 1). Of the 17 participants, 10 described networks that were located entirely in the US, most of which (n=7) were exclusively based in NC. Five participants described networks with both domestic and transnational ties in the country of origin, and two described networks that were all outside the US.

Beyond composition, we were also interested in the dynamics within networks that help to explain whether or not they serve as an influence on HIV testing. We identified three factors that seemed to shape local and transnational networks dynamics: trust; geography; and stigma related to sexual identity. First, our participants emphasized the importance of but also challenges with establishing a trusted network in NC. A 32-year-old transgender participant had only 1 network member, her mother, in her country of origin despite having migrated to NC because of family connections 7 years before the interview. She worked 12 hours a day, 7 days a week and preferred to stay home when she was not working. *She indicated that she did not trust anyone in NC and, therefore, stayed on the “periphery” of social groups:*

In our [the transgender] scene, I don’t like it because people are really gossipy..... I don’t like it when people tell me [others people’s gossip], or for people to tell others what I told them, that I don’t like. And so I try to avoid these things. I stay on the periphery of people.

This quote reflects how this participant’s lack of trust in the transgender scene limited the size and composition of her social network. She preferred having just one strong, trusted tie with her mother rather than creating a new network that she could not trust. While this interview occurred before the infamous NC “bathroom bill”, which, among other things, required transgender people to use the bathroom associated with their sex at birth, it still reflects the additional barriers to creating social connections within the transgender community due to this lack of trust.

A 30 year-old heterosexual participant who had a relatively large (n=5) and well-connected network in NC, including family, friends and his female partner, also explained that meeting people in the US was different than in his home country, Honduras:

It’s different with friends that you meet here because you don’t know what family they come from, you don’t know what they are, if they have killed, robbed, you know what I mean? ... [when] you make friends in your country, you know what family they come from, you practically know all about their lives...

Both of these quotes, from diverse participants, highlight the salience of *confianza*, or trust, which for some was not easily established after migrating as really knowing people was considered more difficult than in their countries of origin. This quote also highlights how establishing trusted social ties and networks required an intentional process in the migration destination, compared to the more organic and natural process of meeting people in the country of origin where, as stated above, “*you practically know all about their lives...*”. Not knowing about who people were and what families they came from appeared to be a barrier to creating new social ties beyond the family.

Geographic position was a key contextual driver of the challenges to creating new social ties. Participants mentioned that living far from social network contacts, even within NC, limited their amount of contact. Though all lived, worked, or spent substantial amounts of time in a common city, they were dispersed across a large geographic area with limited public transportation. While some participants lived in neighbourhoods with concentrations of Latino residents, this was not an automatic source of social connection or capital. Others indicated living in areas that were predominantly “Americanos” or “Morena” (Brown, referring to African Americans) and did not have much interaction even if they lived in close proximity.

A 35-year-old heterosexual Mexican participant described his preference for living in a more rural area of the county in order to have more “*tranquilidad*”,

Well, it is really tranquil here [in the county]. Really tranquil, in comparison to other counties such as [name of other county], where it is, they seem to have more problems with the police. Like they chase [Latino] people more than here. Here... one has, has more freedom.

This quote highlights how the context of fear related to police and, for many, immigration status, determined where people lived and could impact their social ties. On the other hand, living in a rural area could also be isolating and create challenges for creating new social connections. A 22-year-old participant who had lived in a rural area of NC previously described that when he got bored in that area he just had to stay bored since there was nothing to do and no way to get around. He appreciated living in a more dense area of the city at the time of the interview, which allowed him to be able to do more and make more social connections. In addition to geographic dispersion, most participants worked long hours and at least some evenings, and thus had difficulty finding time to socialize.

As a consequence of the trust, geography and time factors, we found few examples of cohesive friend networks or networks that functioned as groups. This was reflected in participants’ network inventories; network members who were not family were generally not closely acquainted with each other, and few participants described having a “group”. A 57-year-old heterosexual-identified participant highlighted the fluidity of his network in the migration destination. At the time of the interview, this participant’s network was mostly family-based and also included his pastor, whereas in the past he had more friends in his network, which could also reflect network transitions with age. He attributed having no friends in his network to the fact that he had moved in the last year and stopped going out and drinking following a religious conversion:

Now I don’t [have Friends]. Now I don’t drink. I have very few friends because... the way to have a lot of friends is that, that you drink. Because, you get together to drink, not me. I don’t drink. I have hardly any friends.

For this participant, social connections were connected to drinking and that social isolation was a consequence of not drinking, which could be viewed as simultaneously health-promoting and detrimental to well-being through the isolation. Due to the connection to drinking, his social network was not a “*relationships of mutual acquaintance and recognition*” (Bourdieu 1986).

Contrasting these experiences and perspectives on the barriers to forming and sustaining social networks after migration, a 35-year-old male, gay-identifying participant highlighted how his social network expanded after moving to NC when he was 17. He named six people in his network, including a mix of family, friends, and co-workers who were all in NC. This participant came out as gay after starting to work at a Latino-based organization, which helped him to feel comfortable to express his sexual orientation and make connections with other gay men in NC,

Participant (P): And when I started working here I was in the closet.

Interviewer (I): Okay.

P: You know, that's when I started like, oh my god, you know, gay people come in and I used to run to the bathroom so they wouldn't see me (laughing). But yeah, [Latino organization] helped me- [Latino organization] helped me a lot to find my own, you know.

For this participant, who migrated at a young age when youth are still forming networks through school and work, migration and coming out expanded his peer network and provided more freedom to form friendships with other gay men, which had not been an option to him in his country of origin or early in his migration experience. This experience also highlights how a contextual factor, stigma related to sexual orientation, served as a barrier to creating social ties prior to this participant coming out. It is noteworthy that in addition to working at an organization that supported his process of coming out, this participant's family was accepting of his sexuality, which created an environment in which he could safely express himself and maintain his family network ties. By reducing internalized and anticipated stigma through his supportive family and organizational affiliation, this participant was able to expand his network and access to support.

Networks and HIV-related communication

When asking about communication within personal networks, we found that regular and/or open dialogue about personal sexual behaviours was rare. HIV-related conversations among network members were often portrayed as superficial – they may have discussed the overall epidemic or the importance of “protecting oneself” (i.e. using condoms), but not specifics regarding actual experiences with condom use and testing. A thirty-year old heterosexual participant who had a close relationship with his younger brother described how they talked about HIV,

[We talk] About that he should, eh, that one should be careful. That it is always best to protect yourself when you are going to have a sexual relationship because you can never be sure about other people and all that. Basically I give him advice, that always, that as soon as he gets into a relationship with someone, [he should] protect himself, using condoms. Mmhmm. Basically the same things they talk about at school.

The comment about their conversations covering the same content that his younger brother gets at school reflects the lack of discussion about personal behaviours even in the context of a close, supportive relationship between brothers. One participant with a transnational

network indicated that he sent condoms to family members in his country of origin, but didn't discuss HIV or sexual behaviour with them.

We asked participants about whether they had discussed HIV testing with each of their social network contacts and how comfortable they would feel sharing their results. Few participants had discussed their own testing or knew definitively if their social network members had tested, reflecting that testing was not a common topic. While HIV testing was the "outcome" of interest in our study, we ultimately learned that it was not a salient topic within networks. However, several of those who had not discussed testing with network members indicated that they would be open to doing so and to sharing their results, suggesting that there may be opportunities to involve networks in promotion and support around testing if the conversations can be started. Among those who had shared results, the most common types of network contacts with whom they had shared were sexual partners and close friends. For example, the Colombian participant above with the expanded network in NC had discussed HIV testing with this friends and sexual partners, but not with this mother. He had only tested for HIV once in his life, but he indicated that he would like to test more regularly in the future.

Discussion

In our qualitative exploration of the social networks of Latino men and transgender women in NC, we found that most participants had fairly small personal networks that were not cohesive and included both local and transnational ties. For a limited number of participants, personal networks expanded after migrating to the US, especially those who connected with an identity-based community, such as a gay community, for the first time after migrating. While they did not state it explicitly, among both gay and transgender participants, we found that participants had engaged in what Carrillo et al (2008) refer to as sexual migration, or migration motivated by a combination of economic factors along with seeking the opportunity to live a more open life with regard to gender identity and sexual orientation (Carrillo et al., 2008). Expanding the social network and being able to live openly as gay facilitated an expanding of the social network in a positive way, which could increase the resources and utility of this form of social capital, including increased exposure to and engagement in HIV protective behaviours such as HIV testing. It is worth noting that over half of the participants in the in-depth interviews had networks that were exclusively based in NC. This may reflect our sample's substantial length of stay in the US and the impact of current immigration policies on our participants' ability to return home and maintain transnational relationships (Gill, 2012).

Bianchi et al have described increased sexual networks among immigrant Latino men in New York City, a "gay epicenter" as well as an established destination for immigrants. There has been less analysis of the social networks of gay Latino immigrants, which may or may not overlap with sexual networks (Bianchi et al., 2007). The process of increasing social networks could represent what Viruell-Fuentes has described as "identity support" to create not only a positive ethnic identity, but also a positive gender and sexual identity (Viruell-Fuentes & Schulz, 2009). Social networks represent an important meso-level determinant

that may be shaped by structural and cultural factors, but ultimately transcends them and provides an accessible point of engagement for interventions (Hirsh et al 2014).

However, we found that participants did not talk much about their sexual behaviour or HIV testing within peer or kin networks. This resonates with findings from a study of social networks among men who have sex with men and transgender women in Guatemala, where the few conversations on these topics were limited to normative perceptions and beliefs rather than personal experiences (Tucker, Arandi, Bolaños, Paz-Bailey, & Barrington, 2014). Participants also indicated that the practice of getting an HIV test itself was not normative in their communities, and many had not discussed HIV testing with network contacts, though they said they might be open to doing so. In designing efforts to promote early HIV testing among Latinos in NC and elsewhere, it is important to understand the communication and support dynamics around HIV testing within existing networks to inform promotion strategies.

It is possible that the lack of discussion about sexual behaviour and HIV may reflect a lack of trust with network contacts as well as stigma and/or broader cultural norms that discourage such conversations. However, another study conducted among networks of Mexican-origin men and women in Texas found that support for health-promoting behaviour was only provided by small fractions (<15%) of individuals' social networks (Ashida, Wilkinson, & Koehly, 2010, 2012), suggesting that discussion of health in general, not just HIV, may not be common. We did not find any evidence that the migration process itself triggered discussion about HIV testing.

Our findings highlight the continued need for ongoing HIV stigma reduction at the community level and the development of creative approaches to promote accessible HIV testing, especially in light of the significant health benefits of early treatment initiation among those living with HIV (Group et al., 2015). Parker & Aggleton (2003) argue that HIV stigma, "*feeds upon, strengthens and reproduces existing inequalities of class, race, gender and sexuality*" (p 13). They argue for the importance of contextualizing HIV stigma in order to fully address its impact on HIV prevention. Social networks are one such context that can both reproduce stigma or create safe social space that challenge and protect against stigma. Any effort to engage with social networks must include a process of understanding the local context and developing strategies to make it feasible for networks to be health promoting (Villa-Torres, Fleming, & Barrington, 2015). Alternatively, HIV self-testing could be an option to complement existing HIV testing promotion efforts that provide high levels of discretion and flexibility (Hurt & Powers, 2014; Solorio et al., 2016; Young, Cumberland, Lee, Jaganath, & Szekeres, 2013).

Given the number of participants with family members in their social networks, HIV testing promotion efforts should also explore how to work with families to increase communication and challenge the multiple, intersecting forms of stigma that may shape use of HIV testing. The salience of family support has been more prominently explored in HIV literature with Latino youth (Ma & Malcolm, 2016; Muñoz-Laboy et al., 2009) and in Latin American settings (Barrington et al., 2016; Tucker et al., 2014), but our findings reaffirm the centrality of family ties for adult Latino immigrants in NC, especially those who migrate as adults.

In addition to understanding the composition and structure of the networks themselves, we also identified contextual factors that may operate on the ability to generate and benefit from social and informational support (Menjívar, 2000; Viruell-Fuentes, 2007; Viruell-Fuentes & Schulz, 2009). In her seminal study of Salvadoran kinship networks in San Francisco, Menjivar (Menjívar, 1997) highlighted how, “*forces in the receiving context affect the internal dynamics of immigrant kinship networks...such as the absence of a state reception, an economy in crisis, a short history of large-scale migration, and a community that in general is poor and politically weak.*” Menjivar’s findings resonate with how participants described their context in NC, including geographic dispersion, intense work demands, and an oppressive immigration context, which hindered the formation of close networks, or what Granovetter has classically labelled “strong ties” (Granovetter, 1973). Additionally, these same factors may limit individuals from accessing “weak ties”, or ties that extend beyond the personal network and can provide exposure to new ideas and sources of support and bridging capital, which we have found in network studies of HIV-related behaviours in other settings (Tucker et al., 2014). There has been debate within the social capital literature with regard to whether networks must be close, dense groups composed of “strong ties” in order to serve as a source of social capital (Lin, 1999). Lin (1999) argues that for “preserving or maintaining resources”, such dense, close networks are important while for “searching and obtaining resources”, weaker ties may be more helpful. Our findings resonate with Lin’s argument to match the ideal network structure to the desired outcome in order to stimulate social capital. In the case of HIV testing, this requires identifying whether the network can support engaging in HIV testing or provide exposure to new resources for HIV testing.

This study had several limitations. Our egocentric approach, which entailed interviewing individuals about their social network contacts, did not allow us to analyse the structure of the underlying social network from multiple perspectives. The breadth of our study population’s identities in terms of gender, sexual orientation and country of origin was a strength given the formative nature of this research, but did not allow us to make many in-depth conclusions about sub-groups. Only having one interview with each participant also limited our ability to probe more extensively. Nevertheless, we believe the information provided through these rich interviews make an important and holistic contribution to the understanding of HIV testing dynamics and social networks among Latino immigrants in a new immigrant destination.

Conclusions

We found that the impact of migration on social networks, together with the context of a new immigrant destination, created challenges for creating and maintaining both strong and weak social network ties in NC. HIV testing was not a prominent topic of conversation within networks. Future efforts to promote HIV testing among Latino men and transgender women must identify appropriate strategies to engage with existing networks, to harness existing ties with family and friends, and cultivate innovative strategies to make HIV testing more acceptable and accessible. Additionally, understanding and addressing the social, political and geographic context in which social networks function will be critical to the effectiveness of network approaches to promote HIV testing.

Acknowledgements

We are grateful to the participants in this study for their time and willingness to share their experiences and opinions with us.

Funding

This study was supported by funding from the National Institute on Minority Health and Health Disparities (NIMHD) grant number 5 P60 MD000244-10. We are grateful to the Carolina Population and NIH/NICHD for training support (T32 HD007168) and for general support (P2C HD050924).

References

- Abdul-Quader AS, Heckathorn DD, Sabin K, & Saidel T (2006). Implementation and analysis of respondent driven sampling: lessons learned from the field. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*, 83, i1–5. doi: 10.1007/s11524-006-9108-8 [PubMed: 17058119]
- Abramovitz D, Volz EM, Strathdee SA, Patterson TL, Vera A, Frost SDW, & ElCuete P (2009). Using respondent-driven sampling in a hidden population at risk of HIV infection: who do HIV-positive recruiters recruit? *Sexually Transmitted Diseases*, 36, 750–756. doi: 10.1097/OLQ.0b013e3181b0f311 [PubMed: 19704394]
- Aguilera MB, & Massey DS (2003). Social Capital and the Wages of Mexican Migrants: New Hypotheses and Tests. *Social Forces*, 82, 671–701. doi: 10.1353/sof.2004.0001.
- Ashida S, Wilkinson AV, & Koehly LM (2010). Motivation for Health Screening: Evaluation of Social Influence Among Mexican-American Adults. *American Journal of Preventive Medicine*, 38, 396–402. doi: 10.1016/j.amepre.2009.12.028 [PubMed: 20307808]
- Ashida S, Wilkinson AV, & Koehly LM (2012). Social influence and motivation to change health behaviors among Mexican origin adults: Implications for diet and physical activity. *American Journal of Health Promotion*, 26, 176–179. doi: 10.4278/ajhp.100107-QUAN-2
- Barrington et al. (2009). Talking the talk, walking the walk: social network norms and condom use among male clients of female sex workers in La Romana, Dominican Republic. *Social Science and Medicine*, 68, 2037–2044. doi: 10.1016/j.socscimed.2009.03.009. [PubMed: 19356834]
- Barrington et al. (2014). “Debe cuidarse en la calle”: Normative influence on condom use among the steady male partners of female sex workers in the Dominican Republic. *Culture, Health and Sexuality*, 16, 273–287. doi:10.1080/13691058.2013.875222.
- Bianchi FT, Reisen CA, Zea MC, Poppen PJ, Shedlin MG, & Penha MM (2007). The sexual experiences of Latino men who have sex with men who migrated to a gay epicentre in the USA. *Culture, Health and Sexuality*, 9, 505–518. doi: 10.1080/13691050701243547
- Bourdieu P (1986). The forms of capital Richardson W:J (red.) *Handbook of theory and research for the sociology of education* (s. 241–258): New York, NY: Greenwood Press.
- Bureau, U. S. C. (2014, 2014). 2014 American Community Survey. Retrieved from <http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t>
- Bureau, U. S. C. (2015). State and County QuickFacts. Retrieved from <https://www.census.gov/quickfacts/table/PST045215/37>
- Carrillo H (2004). Sexual Migration, Cross-Cultural Sexual Encounters, and Sexual Health. *Sexuality Research & Social Policy*, 1, 58–70. doi: 10.1525/srsp.2004.1.3.58.
- Centers for Disease Control and Prevention (CDC). (2013). HIV Among Hispanics/Latinos in the United States and Dependent Areas: Centers for Disease Control and Prevention (CDC).
- Clark JL, Konda KA, Silva-Santisteban A, Peinado J, Lama JR, Kusunoki L, ... Sanchez J. (2013). Sampling Methodologies for Epidemiologic Surveillance of Men Who Have Sex with Men and Transgender Women in Latin America: An Empiric Comparison of Convenience Sampling, Time Space Sampling, and Respondent Driven Sampling. *AIDS and Behavior*, 18, 2338–48. doi: 10.1007/s10461-013-0680-0
- Creswell JW (2013). *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*: SAGE.

- Dennis AM, Hué S, Pasquale D, Napravnik S, Sebastian J, Miller WC, & Eron JJ (2015). HIV Transmission Patterns Among Immigrant Latinos Illuminated by the Integration of Phylogenetic and Migration Data. *AIDS Research and Human Retroviruses*, 31, 973–980. doi: 10.1089/AID.2015.0089 [PubMed: 26214548]
- Edwards G (2010). Mixed-method approaches to social network analysis. *Economica and Social Research Council, National Centre for Research Methods Review paper*. Retrieved from: http://eprints.ncrm.ac.uk/842/1/Social_Network_analysis_Edwards.pdf.
- Ennis S, Rios-Vargas M, & Albert N (2011). *The Hispanic Population 2010*. Washington, DC Retrieved from: 2010 US Census Briefs.
- Forrest JI, Stevenson B, Rich A, Michelow W, Pai J, Jollimore J, ... Roth EA. (2014). Community mapping and respondent-driven sampling of gay and bisexual men's communities in Vancouver, Canada. *Culture, Health and sexuality*. doi: 10.1080/13691058.2014.881551
- Gandhi AD (2012). Working Group Summit of the Study Comparison of Respondent-Driven Sampling (RDS) and Time-Location Sampling (TLS) Methodologies to Recruit Men Who Have Sex with Men in Guatemala City: Summary Report.
- Gill H (2012). *Latinos in North Carolina : A Growing Part of the State's Economic and Social Landscape*. Washington, DC Retrieved from: <https://www.americanimmigrationcouncil.org/research/latinos-north-carolina-growing-part-states-economic-and-social-landscape>.
- Gittelsohn J, Dyckman W, Tan ML, Boggs MK, Frick KD, Alfred J, ... Palafox NA. (2006). Development and implementation of a food store-based intervention to improve diet in the Republic of the Marshall Islands. *Health Promotion Practice*, 7(4), 396–405. doi: 10.1177/1524839905278620. [PubMed: 16885512]
- Gordon I, & Raja T (2012). 164 Anti-Immigration Laws Passed Since 2010? A MoJo Analysis. Retrieved from <http://www.motherjones.com/politics/2012/03/anti-immigration-law-database>
- Granovetter M (1973). The Strength of Weak Ties. *American Journal of Socio*, 78, 1360–1380
- Group I. S. S., Lundgren JD, Babiker AG, Gordin F, Emery S, Grund B, ... Neaton JD. (2015). Initiation of Antiretroviral Therapy in Early Asymptomatic HIV Infection. *The New England Journal of Medicine*, 373, 795–807. doi: 10.1056/NEJMoa1506816 [PubMed: 26192873]
- Heath S, Fuller A, & Johnston B (2009). Chasing shadows: defining network boundaries in qualitative social network analysis. *Qualitative Research*, 9, 645–661. doi: 10.1177/1468794109343631
- Hirsch JS (2014). Labor migration, externalities and ethics: theorizing the meso-level determinants of HIV vulnerability. *Social Science and Medicine*, 100, 38–45. doi: 10.1016/j.socscimed.2013.10.021. [PubMed: 24444837]
- Hurt CB, & Powers KA (2014). Self-testing for HIV and its impact on public health. *Sexually Transmitted Diseases*, 41, 10–12. doi: 10.1097/OLQ.0000000000000076 [PubMed: 24326576]
- Kochhar R, Suro R, & Tafoya S (2005). *The new Latino South: The context and consequences of rapid population growth*.
- Lin N (1999). Building a network theory of social capital. *Connections*, 22, 28–51.
- Ma M, & Malcolm LR (2016). Cultural influences on HIV testing among Latino youth. *Culture, Health and Sexuality*, 18, 470–480. doi: 10.1080/13691058.2015.1084650
- Massey DS, Arango J, Hugo G, Kouaouci A, Pellegrino A, & Taylor JE (1993). Theories of International Migration: A Review and Appraisal. *Population and Development Review*, 19, 431–466. doi: 10.2307/2938462
- Maxwell JA, & Miller BA (2008). Categorizing and connecting strategies in qualitative data analysis In *Handbook of emergent methods*, 461–477. New York: Guilford Press.
- McCreesh N, Johnston LG, Copas A, Sonnenberg P, Seeley J, Hayes RJ, ... White RG. (2011). Evaluation of the role of location and distance in recruitment in respondent-driven sampling. *International journal of Health Geographics*, 10, 56. doi: 10.1186/1476-072X-10-56 [PubMed: 22008416]
- Menjívar C (1997). Immigrant kinship networks: Vietnamese, Salvadoreans and Mexicans in comparative perspective. *Journal of Comparative Family Studies*, 1–24.
- Menjívar C (2000). *Fragmented Ties: Salvadoran Immigrant Networks in America*. Berkeley, CA: University of California Press.

- Munoz-Laboy M, Leau CJY, Sriram V, Weinstein HJ, del Aquila EV, & Parker R (2009). Bisexual desire and familism: Latino/a bisexual young men and women in New York City. *Culture, Health and Sexuality*, 11, 331–344. doi: 10.1080/13691050802710634
- Nguyen MT, & Gill HE (2010). *The 287 (g) program: The costs and consequences of local immigration enforcement in North Carolina communities*. Chapel Hill, NC: The University of North Carolina at Chapel Hill.
- North Carolina Division of Public Health, C. D. B. (2012). *North Carolina Epidemiologic Profile for HIV/STD Prevention & Care Planning*. Raleigh, North Carolina.
- Passel JS, & Cohn DV (2014). Unauthorized Immigrant Totals Rise in 7 States, Fall in 14.
- Parker R, & Aggleton P (2003). HIV and AIDS-related stigma and discrimination: a conceptual framework and implications for action. *Social Science and Medicine*, 57, 13–24. [PubMed: 12753813]
- Ramirez-Valles J, Garcia D, Campbell RT, Diaz RM, & Heckathorn DD (2008). HIV infection, sexual risk behavior, and substance use among Latino gay and bisexual men and transgender persons. *American journal of public health*, 98, 1036–1042. doi: 10.2105/AJPH.2006.102624 [PubMed: 18445807]
- Rhodes SD, Leichter JS, Sun CJ, & Bloom FR (2016). The HoMBReS and HoMBReS Por un Cambio Interventions to Reduce HIV Disparities Among Immigrant Hispanic/Latino Men. *MMWR-Morbidity and Mortality Weekly Report*, 65, 51–56. [PubMed: 26820056]
- Rhodes SD, Foley KL, Zometa CS, & Bloom FR (2007). Lay health advisor interventions among Hispanics/Latinos: a qualitative systematic review. *American Journal of Preventive Medicine*, 33, 418–427. doi: 10.1016/j.amepre.2007.07.023 [PubMed: 17950408]
- Rhodes SD, Hergenrather KC, Bloom FR, Leichter JS, & Montañó J (2009). Outcomes from a community-based, participatory lay health adviser HIV/STD prevention intervention for recently arrived immigrant Latino men in rural North Carolina. *AIDS Education and Prevention*, 21, 103–108. doi: 10.1521/aeap.2009.21.5_suppl.103 [PubMed: 19824838]
- Rhodes SD, McCoy TP, Hergenrather KC, Vissman AT, Wolfson M, Alonzo J, ... Eng E. (2012). Prevalence estimates of health risk behaviors of immigrant latino men who have sex with men. *The Journal of Rural Health*, 28, 73–83. doi: 10.1111/j.1748-0361.2011.00373. [PubMed: 22236317]
- Rhodes SD, McCoy TP, Vissman AT, DiClemente RJ, Duck S, Hergenrather KC, ... Eng E. (2011). A randomized controlled trial of a culturally congruent intervention to increase condom use and HIV testing among heterosexually active immigrant Latino men. *AIDS and Behavior*, 15, 1764–1775. doi: 10.1007/s10461-011-9903-4 [PubMed: 21301948]
- Rodriguez M, Young M, & Wallace S (2015). *Creating conditions to support healthy people: State policies that affect the health of undocumented immigrants and their families*. Los Angeles, CA Retrieved from: <http://healthpolicy.ucla.edu/publications/search/pages/detail.aspx?PubID=1373>.
- Sandelowski M (1995). Qualitative analysis: what it is and how to begin. *Research in Nursing and Health*, 18, 371–375. [PubMed: 7624531]
- Santiago L, & Burns M (2015). McCrory signs bill outlawing sanctuary cities in NC :: [WRAL.com](http://www.wral.com/mccrory-signs-bill-outlawing-sanctuary-cities-in-nc/15035244/), Retrieved from <http://www.wral.com/mccrory-signs-bill-outlawing-sanctuary-cities-in-nc/15035244/>
- Seña AC, Hammer JP, Wilson K, Zeveloff A, & Gamble J (2010). Feasibility and acceptability of door-to-door rapid HIV testing among latino immigrants and their HIV risk factors in North Carolina. *AIDS Patient Care and STDs*, 24, 165–173. doi: 10.1089/apc.2009.0135 [PubMed: 20214484]
- Sheehan DM, Trepka MJ, Fennie KP, Prado G, Cano MÁ, & Maddox LM (2015). Black-White Latino Racial Disparities in HIV Survival, Florida, 2000–2011. *International Journal of Environmental Research and Public Health*, 13. doi: 10.3390/ijerph13010009
- Solorio R, Norton-Shelpuk P, Forehand M, Montañó D, Stern J, Aguirre J, & Martinez M (2016). Tu Amigo Pepe: Evaluation of a Multi-media Marketing Campaign that Targets Young Latino Immigrant MSM with HIV Testing Messages. *AIDS and Behavior*. doi: 10.1007/s10461-015-1277-6
- Sun CJ, García M, Mann L, Alonzo J, Eng E, & Rhodes SD (2015). Latino sexual and gender identity minorities promoting sexual health within their social networks: process evaluation findings from a

lay health advisor intervention. *Health Promotion and Practice*, 16, 329–337. doi: 10.1177/1524839914559777

- Sun CJ, Mann L, Eng E, Downs M, & Rhodes SD (2015). Once a Navegante, Always a Navegante: Latino Men Sustain Their Roles as Lay Health Advisors to Promote General and Sexual Health to Their Social Network. *AIDS Education and Prevention*, 27(5), 465–473 [PubMed: 26485235]
- Toledo L, Codeço CT, Bertoni N, Albuquerque E, Malta M, Bastos FI, & Misuse B. M. S. G. o. D. (2011). Putting respondent-driven sampling on the map: insights from Rio de Janeiro, Brazil. *Journal of Acquired Immune Deficiency Syndromes* (1999), 57 Suppl 3, S136–143. doi: 10.1097/QAI.0b013e31821e9981 [PubMed: 21857309]
- Tucker C, Arandi CG, Bolaños JH, Paz-Bailey G, & Barrington C (2014). Understanding social and sexual networks of sexual minority men and transgender women in Guatemala city to improve HIV prevention efforts. *Journal of Health Care for the Poor and Underserved*, 25, 1698–1717. doi: 10.1353/hpu.2014.0163 [PubMed: 25418236]
- Villa-Torres L, Fleming PJ, & Barrington C (2015). Engaging men as promotores de salud: perceptions of community health workers among Latino men in North Carolina. *Journal of Community Health*, 40, 167–174. doi: 10.1007/s10900-014-9915-x [PubMed: 24989349]
- Viruell-Fuentes EA (2007). Beyond acculturation: immigration, discrimination, and health research among Mexicans in the United States. *Social Science and Medicine* (1982), 65, 1524–1535. doi: 10.1016/j.socscimed.2007.05.010 [PubMed: 17602812]
- Viruell-Fuentes EA, & Schulz AJ (2009). Toward a dynamic conceptualization of social ties and context: implications for understanding immigrant and Latino health. *American Journal of Public Health*, 99, 2167–2175. doi: 10.2105/AJPH.2008.158956 [PubMed: 19833986]
- Wiewel EW, Torian LV, Hanna DB, Bocour A, & Shepard CW (2015). Foreign-Born Persons Diagnosed with HIV: Where are They From and Where Were They Infected? *AIDS and Behavior*, 19, 890–898. doi: 10.1007/s10461-014-0954-1 [PubMed: 25524308]
- Young SD, Cumberland WG, Lee S-J, Jaganath D, & Szekeres G (2013). Social Networking Technologies as an Emerging Tool for HIV Prevention: A Cluster Randomized Trial. *Annals of Internal Medicine*, 159, 318–24. doi: 10.7326/0003-4819-159-5-201309030-00005. [PubMed: 24026317]

Table 1.

Personal network data from qualitative social network inventories (n=17)

Gender identity (sexual orientation/ practices)	Age	Personal Network		
		Size	Composition	Location
Transgender woman (Sex with men)	32	1	Mother	Country of origin
Male (Heterosexual)	34	4	Wife, Father, Brother, Friend,	Local and country of origin
Male (Heterosexual)	30	5	Mother, Brother, 3 Friends	Local and country of origin
Transgender woman (Sex with men)	47	3	Partner, Mother, Father	Local and country of origin
Male (Gay)	22	8	Sex Partner, Mother, Step-father, 2 Friends, 2 family friends, Co-worker	All local
Transgender woman (sex with men)	34	4	Ex-partner, Sister, Brother-in-law, Friend	Local and other US states
Male (Heterosexual/sex with men)	30	6	Mother, Sister, 4 Friends	Local and country of origin
Male (Gay)	32	4	Mother, Other relatives, Friend	Local and country of origin
Male (Heterosexual)	28	2	Brother, Friend	Local and other US states
Male (Heterosexual)	57	6	3 Sisters, Brother-in-law, Nephew, Pastor	All local
Male (Gay)	35	6	Uncle, Brother-in-law, 3 Friends, Co-worker	All local
Male (Heterosexual)	26	4	Girlfriend, Mother, Brother, Cousin	All local
Male (Heterosexual)	41	3	Mother, Father, Daughter	All country of origin
Male (No response)	18	4	Mother, Brother, 2 Friends	All local
Male (sex with men and women)	31	5	2 friends, 1 friend/sex partner, 2 sex partners	All local
Male (gay)	45	4	2 friend, 1 acquaintance, 1 brother	Local and other US states
Transgender woman (sex with men)	35	4	2 friends, 1 acquaintance, 1 sex partner	All local