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## Correlates of HIV and STI testing among Latino men who have sex with men in New York City

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### Abstract

We assessed the extent to which sociodemographic, personal, and behavioral factors are associated with human immunodeficiency virus/sexually transmitted infection (HIV/STI) testing among a diverse group of Latino men who have sex with men (MSM) in New York City. The triangulation approach was used to synthesize data from 176 MSM who completed an in-person or phone questionnaire about substance use, alcohol consumption, sexual behaviors and HIV/STI testing history and 40 participants who participated in focus groups. Correlates of testing significant in univariable analyses ( $p < 0.05$ ) were entered into multivariable logistic regression models. Over half (57.9%) of study subjects tested for HIV in the previous 12 months and 60.2% tested for STIs

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#### Contributors

Conception or design of the work; or the acquisition, analysis or interpretation of data for the work: JTS, OM, EL, BD, MML, MIF. Drafting the work or revising it critically for important intellectual content: JTS, OM, EL, BD, MML, MIF.

#### Disclosure statement

The authors have no competing interests to declare.

#### Ethics approval

New York State Psychiatric Institute Institutional Review Board (# 6878).

in the previous 12 months. Age and education were positively correlated with HIV testing in multivariable analysis. No significant correlates of STI testing were identified. Spanish-speaking only subjects were less likely to get tested for HIV and STI, however this association was not significant. Our study demonstrates the need for further study of predictors of STI testing as well as the potential role of language barriers and education in routine testing for HIV. Social and behavioral factors may intensify these obstacles. Future research and interventions should address the role of language barriers and perceived issues of immigration status in the decision to get tested.

## Keywords

HIV; STI; testing; Latino; MSM

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Sexual health screening remains a critical component of efforts to control epidemics of human immunodeficiency virus (HIV) and other sexually transmitted infections (STI), providing a necessary gateway to timely antiretroviral treatment and a unique platform for prevention (Adam, de Wit, Bourne, Knox, & Purchas, 2014). Routine HIV/STI testing is of particular importance for men who have sex with men and transgender women (henceforth: MSM), who continue to be disproportionately affected by HIV and STI epidemics globally (Beyrer et al., 2012).

Previous research illustrates that HIV and STI testing among MSM is affected by a multitude of individual, social and institutional factors (Adam et al., 2014; Fortenberry et al., 2002). Several unique factors have also been associated with HIV and STI testing among Latino MSM, including low levels of acculturation to U.S. culture, perceived impediments from the healthcare system, and low socioeconomic status (Joseph et al., 2014; Oster et al., 2013). The purpose of this study was to further explore sociodemographic, personal, and behavioral factors associated with HIV/STI testing among a demographically diverse group of Latino MSM living in New York City.

## Methods

### Recruitment and Procedures

We employed a cross-sectional study design. Participants were invited to complete a phone or in-person questionnaire. A cohort of Latino MSM in New York City was recruited to participate in *Conectando Latinos en Pareja*, an HIV prevention intervention study. Recruitment occurred via direct contact, participants' referral, social media networks such as Facebook, and community-based organizations. Social media served as an especially powerful recruitment tool (Martinez et al., 2014). Participants completed an in-person or phone questionnaire about substance use, alcohol consumption, sexual behaviors and HIV/STI testing history. Purposive stratified sampling was used to diversify the sample in terms of country of origin, race/ethnicity, HIV status, HIV/STI testing history, and previous involvement in HIV research. The study was approved by the institutional review board of the principal investigator's primary affiliation.

## Quantitative and Qualitative Measures

Demographic characteristics included age, country of origin, sexual identity, primary language, time in the United States, employment status, education, health insurance and recruitment venue.

Clinically significant depressive symptoms were measured using the short 10-item Center for Epidemiological Studies Depression (CES-D 10) scale. As recommended, we used the cut-off point of 10 (Andersen et al., 1994).

Sexual behavior was assessed by asking participants to report the number of male sexual partners in the past 3 months. Several follow-up questions addressed the number of anal intercourse episodes in this period, as well as the frequency of condom use. Subjects were categorized as exhibiting risky sexual behavior if they reported any condomless anal intercourse (CAI).

Relationship characteristics were assessed by inquiring about relationship status (whether participants considered themselves to be in a relationship with another man) and, if applicable, relationship duration (dichotomized as 1–12 months or more than 12 months).

Participants were also asked about overall quality of health, HIV status, sexual activity before age 17, and whether any sexual activity before age 17 was coercive or forced.

These quantitative items were supplemented with a series of open-ended questions from focus groups that prompted participants to describe their overall experiences and concerns regarding access to testing. Sample questions included, *“Where do you currently go for HIV and STI testing services? Are you able to talk to your health care providers (doctor, nurse, etc.) about having sex with men and having a same-sex partner and getting an HIV or STI test?”* and *“Tell me about any recent experiences in which you think your immigration status has limited or prevented you from accessing and utilizing health services or other resources in the community, including HIV and STI Testing?”* All quotations were translated from Spanish to English.

## Data Analyses

Means and ranges were calculated for continuous variables. Frequencies and percentages were calculated for categorical and dichotomous variables, with percentages proportionate to the entire sample (n=176). HIV positive subjects were excluded from analyses of HIV testing, but retained for analyses of STI testing.

Possible predictors were examined using univariable logistic regression; outcome variables included HIV and STI testing within the previous 12 months. Variables independently significantly associated with HIV or STI testing were included in multivariable models, one for HIV testing and one for STI testing. All analyses were conducted using SAS 9.2 (SAS Institute, Cary, N.C.).

Two facilitators conducted the focus groups, while five note-takers observed and recorded participants comments pertaining to HIV and STI testing. Content related to HIV and STI testing was extracted and analyzed.

## Triangulating Quantitative and Qualitative Data

Methodological triangulation involves using multiple methods to study a phenomenon. It has been found beneficial for providing confirmation of findings, more comprehensive data, increased validity and enhanced understandings of phenomena (Bekhet, A.K. & Zauszniewski, J., 2012). For this study, themes from focus groups served to clarify and enrich data from quantitative analyses.

## Results

The mean age of our questionnaire study sample was 33.4 years (n=176, range=18–60). The majority (83.5%, n=147) identified as gay, and a small minority identified as transgender or transsexual (2.3%, n=4). Our sample included 66 (37.5%) subjects who spoke only Spanish. The ethnic makeup of our sample was varied, including Central Americans (22.7%, n=40), South Americans (20.5%, n=36), Dominicans (16.5%, n=29), Puerto Ricans (15.9%, n=28), Cubans (2.8%, n=5), and others. A majority (71%, n=125) were born outside the United States. Educational attainment varied greatly, ranging from less than a High School diploma to graduate and professional degrees. Approximately half of participants (54%, n=95) were unemployed. About 41% (n=72) lacked health insurance.

Questionnaire participants reported an average of approximately 8 sexual partners in the past three months (range=0–120); two-thirds (67%, n=118) were in same-sex relationships. Just over half of participants reported engaging in CAI during the past three months (55%, n=97). Most participants described their overall health as good, very good, or excellent (75%, n=132). However, approximately two-thirds exhibited signs of clinical depression (68%, n=120). A considerable majority had previously been tested for HIV and STIs (93%, n=163; 79%, n=139, respectively); a smaller majority had received such testing within the past 12 months (58%, n=102; 60%, n=106). One-third reported testing positive for HIV (34%, n=60), and approximately 28% (n=50) had previously tested positive for STIs. More than half of participants were recruited through internet-based means, including social media (55%, n=97).

Variables significantly associated with HIV testing in univariable analysis included age (OR: 1.19), Spanish-speaking only (OR: 0.23), graduating high school (OR: 6.0) and having health insurance (OR: 9.42). No variables were significantly associated with STI testing. In a multivariable logistic regression model, age and graduating high school were significantly associated with HIV testing (see Table 1).

Qualitative data pointed to the detrimental effects of language barriers, immigration concerns, and discrimination. One participant noted that *“some service providers are very discriminatory against immigrant male and gay. Language barriers affect access to services.”* Another participant, who identified as transgender, commented that *“the risk of being made fun of”* exacerbated such obstacles. A young Latino MSM commented, *“Many people won't go and seek out services because they are afraid it will affect their immigration status, for fear of being found out as undocumented individuals, they don't seek help.”*

## Discussion

Our findings are consistent with national and multi-site epidemiological data regarding the testing behaviors of Latino MSM. In a CDC study of HIV risk and prevention among MSM of all races/ethnicities, 62% of Latino participants reported receiving an HIV test within the previous year, and 39% reported syphilis testing in this period (Finlayson et al., 2011). The CDC study further assessed testing patterns in regards to such covariates as age and education; however, investigators limited analyses to descriptive data, and did not analyze the impact of covariates specifically among Latino MSM. The present study provides more comprehensive information regarding the joint effects of multiple covariates on HIV/STI testing among Latino MSM. Triangulation of data from the survey and focus groups reinforced the need for greater attention to HIV/STI risk in this population, particularly younger and/or Spanish-speaking individuals, who are less likely to get tested in spite of being disproportionately affected by the HIV epidemic in major urban centers. Predictors of STI testing that approached significance in this study might reach significance in subsequent research with larger samples (Joseph et al., 2014).

Quantitative and qualitative data from this study suggest that Latino MSM may be particularly at risk of “falling off” early within the HIV/AIDS Continuum of Care. Since it was first published in 2011, the Continuum of Care has become an important standard for gauging progress in ameliorating the HIV epidemic in the U.S (Gardner, McLees, Steiner, Del Rio, & Burman, 2011; Grant et al., 2014). Latino MSM, particularly those who are further marginalized by age and other barriers such as language and immigration concerns, face considerable obstacles to testing and treatment. Social and behavioral factors may intensify these obstacles. Future research and interventions should address the role of language barriers, stigma, and immigration concerns in the decision to get tested.

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**Table 1**

Univariable and multivariable models for HIV and STI testing. Predictor variables found to be independently statistically significantly associated with HIV testing ( $p < 0.05$ ) were included in the multivariable logistic regression model.

Predictor	Outcome: Has tested for HIV		Outcome: Has tested for STIs	
	<i>Univariable</i>	<i>Multivariable</i>	<i>Univariable</i>	<i>Multivariable</i>
<sup>*/†</sup> Age (Continuous)	<b>P=0.01, OR: 1.19 (1.04, 1.36)</b>	<b>P=0.0095, AOR: 1.25 (1.06, 1.49)</b>	P=0.92, 1.00 (0.97, 1.04)	
<sup>*</sup> Primary Language:				
(Only Spanish vs Else)	<b>P=0.02, OR: 0.23 (0.07, 0.84)</b>	P=0.06, AOR: 0.23 (0.05, 1.10)	P=0.13, OR: 0.62 (0.33, 1.16)	
<sup>*/†</sup> Education Level:				
<b>(H.S. Grad+ vs H.S. dropout)</b>	<b>P=0.01, OR: 6.00 (1.44, 24.99)</b>	<b>P=0.03, AOR: 8.15 (1.19, 55.69)</b>	P=0.053, OR: 2.38 (0.99, 5.70)	
Employment Status: (Employed vs Unemployed)	P=0.77, OR: 1.19 (0.35, 4.07)		P=0.58, OR: 1.19 (0.65, 2.17)	
Country of Birth: (USA vs Other)	P=0.11, OR: 5.41(0.67, 43.88)		P=1.00, OR: 1.00 (0.51, 1.95)	
<sup>*</sup> Health Insurance: (Insured vs Uninsured)	<b>P=0.03, OR: 9.42 (1.17, 76.05)</b>	P=0.21, AOR: 4.27 (0.44,41.85)	P=0.91, OR: 1.04 (0.56, 1.91)	
In a Relationship (Yes=1)	P=0.07, OR: 3.20 (0.89, 11.42)		P=0.86, OR: 1.06 (0.56, 2.02)	
Above cut-off CES-D level for major depression	P=0.22, OR: 0.37 (0.08, 1.82)		P=0.08, OR: 0.55 (0.28, 1.09)	
Self-reported Health:				
(Poor/Fair vs. Else)	P=0.14, OR: 0.39 (0.11, 1.38)		P=0.46, OR: 0.77 (0.38, 1.55)	
# of Partners in past 3 months				
(2 or more vs. 1 or zero)	P=0.06, OR:3.60 (0.91, 14.19)		P=0.54, OR: 0.82 (0.44, 1.53)	
Unprotected sex in past 3 months (Yes=1)	P=0.71, OR: 0.80 (0.24, 2.70)		P=0.29, OR: 0.72 (0.39, 1.33)	

<sup>\*</sup>  $p < 0.05$  for HIV testing in univariable model

<sup>†</sup>  $p < 0.05$  for HIV testing in multivariable model