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Acceptability of Rapid HIV Testing Among Latinos in Washington Heights, New York City, New York, USA

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Abstract

In the United States, human immunodeficiency virus (HIV) has a disproportionately large impact on Latino Americans. This study assessed the acceptability of rapid HIV testing among a sample of Latinos from New York City. A cross-sectional study was conducted with 192 participants from The Washington Heights/Inwood Informatics Infrastructure for Community-Centered Comparative Effectiveness Research (WICER) study. Participants were interviewed and offered rapid HIV testing and post-test counseling. Seventy-five percent ($n = 143$) accepted rapid HIV testing when offered. More religious participants were less likely than less religious participants to undergo testing ($RR = 0.73$; 95% CI 0.54–0.99). Participants tested for HIV within the past year were less likely than those who had not been tested within the past year to agree to undergo testing ($RR = 0.27$; 95% CI 0.11–0.66). Community-based rapid HIV testing is feasible among Latinos in urban environments. Outreach efforts to engage religious individuals and encouraging routine testing should be reinforced.

Keywords

HIV testing; Ethnic; Latinos; Prevention

Background

In the United States (U.S.), human immunodeficiency virus (HIV) continues to have a disproportionately large impact on minority populations [1, 2]. Latino Americans are over-represented among HIV-infected individuals in the U.S. Even though they comprise 17% of the U.S. population, Latino Americans comprise 21% of all HIV cases [3].

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Conflict of interest The authors have no conflicts of interest to report.

Compliance with ethical standards

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the Columbia University Medical Center Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants in the study.

The Centers for Disease Control and Prevention (CDC) has endorsed a “seek, test, and treat” (STT) strategy to reduce HIV transmission and AIDS-related morbidity and mortality. Essentially, this strategy entails actively seeking high-risk individuals, testing them for HIV, and providing comprehensive care to those who are HIV-positive or have AIDS. There is strong empirical evidence that this strategy slows the spread of HIV among vulnerable populations [4, 5], and increases life expectancy of HIV-infected individuals [6].

Early diagnosis of individuals at risk for HIV infection is critical to having a sustainable impact on the epidemic [7, 8]. However, accessing vulnerable populations and providing them with the opportunity to undergo HIV testing is challenging [9]. Latinos, specifically, may be more likely than their White and Black counterparts to delay testing [10, 11] and receive an HIV diagnosis during the later stages of the disease when it is more difficult to treat [11, 12], increasing HIV-associated morbidity and mortality among this population [13]. Although Latinos are disproportionately affected by HIV, research suggests that Latinos may be less comfortable receiving rapid HIV testing results [14], instead showing a preference for conventional HIV testing, which can take up to 1 week to produce test results [15].

HIV-infected individuals unaware of their status are responsible for more than 55% of new HIV cases [16]. Hence, engaging vulnerable populations in routine HIV testing is crucial to stemming the spread of the epidemic. Although targeted approaches that promote HIV testing have shown exceptional promise [5, 6], identifying and improving access to high-risk populations who may have minimal contact with the health care system, and are willing to engage in HIV testing, remains a significant challenge [17, 18]. Research suggests that making rapid HIV testing more accessible to populations at an elevated risk for HIV infection substantially increases the number of people who receive their test results, engages individuals who may not regularly utilize these services, and improves linkage to care for HIV-infected individuals [19–21]. Rapid HIV testing is especially recommended for vulnerable populations due to the following: (1) it enables HIV-infected individuals to quickly learn of their status [22]; (2) such services can be offered at convenient locations, which is particularly useful for those who rarely access medical services [21, 23], and (3) testing can easily be bundled with other health services, which has reportedly improved testing among Latinos [24]. This study assesses the acceptability of community-based rapid HIV testing and post-test risk reduction counseling among a sample largely comprised of Latinos from an urban setting who previously identified HIV/AIDS as one of their top three health concerns.

Methods

Participants

We conducted a cross-sectional study with participants recruited from The Washington Heights/Inwood Informatics Infrastructure for Community-Centered Comparative Effectiveness Research (WICER) study. The overall goal of the WICER study is to understand the health needs of the community of the Washington Heights and Inwood neighborhoods of New York City (NYC), New York. The information collected through WICER can be used to improve the prevention, diagnosis and treatment of illness, and the

promotion of health in Washington Heights/Inwood. More specific information about the WICER study is available elsewhere [25, 26].

WICER participants were selected and recruited from community settings including homes, businesses, clinics, health centers, and the Ambulatory Care Network of New York Presbyterian Hospital in Washington Heights. Research staff approached potential participants while they were in waiting rooms and other public areas. Individuals were eligible for the WICER study if they were above the age of 18 years old, a resident of Washington Heights, NYC, and English or Spanish speaking. WICER participants were interviewed in their homes, and in private rooms located in community-based sites. Participants were also asked to refer other individuals who met the study's inclusion criteria.

WICER data were collected by bilingual community health workers and individuals received \$25 for their participation. To date, WICER has enrolled over 5,800 participants; they are largely Latino (95%), female (74%), on Medicaid or Medicare (77%), and foreign-born (86%). When asked to list their top three health concerns, approximately 18% of WICER participants listed HIV/AIDS. Our sample was drawn from these individuals.

Recruitment and Procedures

We recruited WICER participants who met the following inclusion criteria: (1) WICER participant who agreed to be contacted for research studies and (2) listed HIV/AIDS as one of their top three health concerns. From 5800 WICER participants, approximately 1250 met this study's inclusion criteria. The PROC SURVEYSELECT procedure in SAS 9.1 (SAS Institute Inc., 2002) was used to generate a randomized list of the 1250 WICER participants that met the study's inclusion criteria. Participants were then selected from this list. To get an estimate of the minimal sample size required for this study, a power analysis was conducted using G-Power 3.1 [27]. This analysis indicated that approximately 200 participants would be needed to achieve a medium effect size with 80% power and a significance level of 0.05, assuming about 75% of the participants would accept the test.

Potential participants were contacted by phone and asked to schedule an interview with a bilingual research assistant. Interested individuals were consented and interviewed privately at a community-based site in Washington Heights. Ninety-one percent of the interviews were conducted in Spanish. All participants received \$25 for participating in this study. Approximately 93% of the 206 randomly selected individuals who were contacted agreed to enroll in the study resulting in a sample size of 192 participants, or 15% of the eligible WICER participants. Similarly-sized samples have been used in other studies examining HIV testing acceptance [28] and HIV risk behaviors among Latinos [29]. On average, interviews took 38 minutes to complete.

After being interviewed about their previous HIV testing experience, HIV risk behaviors and exposure to HIV prevention messages, participants were offered rapid HIV testing using an OraQuick Advance HIV1/2 Antibody Test (OraSure Technologies, Inc., Bethlehem, PA) and post-test counseling. The CDC guidelines for rapid HIV testing were followed for quality assurance. The testing occurred in the same room after the interview was completed. For the rapid testing procedure, participants were asked to take a cotton swab and rub it between

their teeth and upper and lower gums one time. The swab was then entered into a test tube to be analyzed. This technology provides results in approximately 15 min. During the waiting period all participants who accepted rapid testing underwent post-test counseling. Test results were immediately reported back to participants when they became available. All test kits were immediately discarded after the interview. The study's procedures were approved by the Columbia University Medical Center Institutional Review Board.

Measures

Socio-Demographic Characteristics—Data on socio-demographic characteristics (e.g., age, gender, education, monthly income, sexual orientation, and relationship status and cohabitation) were collected using the study survey. The following question, “How religious do you think you are?” measured religiosity. Response categories ranged from not religious at all (1) to very religious (4). Data on characteristics including number of years lived in the United States, birth country, and number of household members were retrieved from the WICER dataset.

Exposure to HIV/AIDS programming (on television, billboards, public transportation) was assessed using the following questions: Have you seen public service announcements about HIV/AIDS on television? Have you seen public service announcements about HIV/AIDS on bus or subway displays? Have you seen public service announcements about HIV/AIDS on street signs or bill-board? All responses were yes/no.

HIV KQ-18—The HIV Knowledge Questionnaire-18 (HIV KQ-18), an 18-item questionnaire, was used to assess HIV transmission knowledge [30]. The HIV KQ-18 has good internal consistency ($\alpha = 0.75\text{--}0.89$) and test-retest stability ($r_s = 0.76\text{--}0.94$). Scores range from 0–100% based on the number of questions answered correctly. Two categories were created to represent a “low” (below the mean score) or “high” (above the mean score) level of HIV knowledge.

HIV Risk Behaviors—The study survey consisted of items measuring illicit drug use and unprotected sexual behavior. Participants were asked whether they had a history of illicit drug use. Risky sexual behavior was assessed by asking participants whether they engaged in unprotected sex over the past year, number of sexual partners, and knowledge of sexual partner concurrency during the same period. History of HIV testing was also collected (e.g., ever tested for HIV, tested in the past year, and results of most recent test).

Acceptability of Rapid HIV Testing and Post-test Counseling—All participants were offered the opportunity to undergo rapid HIV testing and post-testing counseling. Participant responses were dichotomized as yes if they agreed to receive testing and/or counseling or no if they declined. Participants who declined testing and/or counseling were asked to provide a reason for their refusal.

Data Analysis

Descriptive statistics were used to examine the distribution of the sample. The primary outcome was acceptability of rapid HIV testing. Cox regression with constant time variable

was used to calculate the risk ratios and to measure associations between participant characteristics and testing acceptance [31, 32]. At the univariate level, each predictor was entered into the Cox regression model as the single predictor to calculate its risk ratio. Variables statistically significant at the 0.10 level during univariate analyses were entered into a multivariable Cox regression model to examine its conditional risk ratio associated with rapid HIV testing acceptance, where $\alpha = 0.05$ was used to suggest statistical significance. Data were analyzed using R statistical computing software.

Results

A total of 192 WICER participants were interviewed. The majority of participants were female (71%), Hispanic/Latino (99%), identified as heterosexual (99%), and unmarried (53%). Forty-nine percent were reportedly insured through Medicaid. On average, participants were 48 years old ($SD = 15$; range = 19–85) and had a monthly mean income of approximately \$853. Seventy-seven percent of participants were born in a country other than the U.S.; 47% have reportedly been living in the U.S. for more than 20 years. The highest proportion of foreign-born participants were born in the Dominican Republic (77%), followed by individuals born in South (2%) or Central America (2%). Twenty-two percent of our participants reportedly had less than a high school education.

Seventy-five percent ($n = 143$) of the participants accepted rapid HIV testing and post-test counseling when offered. All of the participants who declined HIV testing also declined counseling ($n = 49$). Table 1 compares the characteristics of participants who agreed to undergo rapid HIV testing versus. Those who declined HIV testing. None of the participants tested positive for HIV. Approximately 60% ($n = 113$) of the participants possessed a “low” level of HIV knowledge. Although 88% ($n = 169$) of the participants reported a history of HIV testing, only 14% ($n = 27$) were reportedly tested within the past year. The most common reason cited for rapid HIV testing refusal was due to low perceived risk ($n = 26$, 53%). Others indicated that they had a recent negative test ($n = 2$); we did not receive a response from 21 participants.

Sixty-five percent ($n = 125$) of the participants reportedly engaged in unprotected sex over the past year; 59% ($n = 74$) of these individuals were married. Seven percent ($n = 6$) of the married participants reported more than one current sexual partner compared to 16% of unmarried participants ($n = 16$). However, sexual partner concurrency among the married and unmarried groups was not statistically significant ($RR = 0.40$; 95% CI 0.16–1.01). Six percent ($n = 12$) of all participants reported sexual partner concurrency during their last relationship.

Univariate analyses demonstrated that age, time in the United States, education, income, religious level, exposure to HIV/AIDS information on billboards, HIV testing within the past year and living with partners were significant at 0.10 level. Among them, income, exposure to HIV/AIDS information on billboards, HIV testing within the past year, living with partners and religious level were significant at 0.05 level.

Specifically, individuals with a higher average income were more likely than those with a lower income to accept the HIV testing offer (\$914 vs. \$673; RR = 1; 95% CI 1–1.001). Participants who were reportedly exposed to HIV/AIDS information on billboards were more likely to accept HIV testing (90 vs. 76%; RR = 1.84; 95% CI 1.06–3.19). Participants who tested for HIV within the past year were less likely than those who did not test within the past year to accept the HIV testing offer (33 vs. 8%; R = 0.35; 95% CI 0.19–0.64). Individuals with live-in partners were more likely than those without live-in partners to accept HIV testing (55 vs. 37%; RR = 1.4; 95% CI 1.00–1.94). More religious participants were more likely to refuse HIV testing compared to those who identified themselves as “not at all” or “not very” religious (RR = 0.51; 95% CI 0.36–0.73).

After controlling for variables significant at 0.10 level in univariate analysis, our multivariable regression analysis results (Table 2) demonstrate that participants who were reportedly somewhat or very religious were less likely than those who were less religious to undergo rapid HIV testing (RR = 0.73; 95% CI 0.54–0.99). Participants who were reportedly tested for HIV within the past year were also less likely than those who had not been tested within the past year to accept the HIV testing offer (RR = 0.27; 95% CI 0.11–0.66).

Discussion

In summary, our findings demonstrate that rapid HIV testing is feasible among Latinos. The vast majority (75%) of participants in this study agreed to undergo rapid HIV testing and post-test counseling, which is comparable to what other investigators have reported in similar community-based settings [19]. Although the majority of participants reported a history of HIV testing, only 15% underwent testing over the past year, as recommended by the CDC, even though they were reportedly engaging in unprotected sexual behavior during the same period. Since participants who were tested for HIV within the past year were less likely to be tested again, it is important that these individuals are encouraged to continue testing for HIV on a regular basis. At the univariate level, participants who were younger, more educated, had higher incomes, and who had lived in the country longer were also significantly more likely to undergo HIV testing ($\alpha = 0.1$). Although they did not persist at the multivariable level, these relationships provide some evidence that such information deserves further consideration when developing strategies to engage Latinos in HIV testing efforts. For instance, outreach to older, less educated, and newly arriving immigrants may be warranted.

From the multivariable regression analysis, participants who were reportedly more religious were also less likely than participants who were less religious to accept the HIV testing offer. Given these findings, faith-based environments and venues should be considered when developing outreach efforts [33, 34]. Information on HIV prevention should also be presented in a manner that does not conflict with or appear to compromise their religious values.

Even though none of the participants in our study tested positive for HIV, the high proportion of participants engaging in unprotected sexual behavior, and not annually accessing testing services, in alignment with CDC recommendations for individuals at an

elevated risk for infection, suggests that they may be at risk for infection. Among participants who declined rapid HIV testing, low perceived risk was the most commonly reported reason, which is acknowledged in previous research on HIV transmission among Latinos [35, 36]. Since low risk perception reportedly hinders testing acceptance [37–40], testing opportunities should be accompanied by information explaining the benefits of knowing one's HIV status and information on HIV transmission modes [41, 42].

Although our findings offer additional information regarding factors associated with HIV testing acceptance among Latinos, they are subject to several limitations that should be acknowledged. First, our relatively small sample size prevented us from conducting more rigorous analyses, which could bias the results. Second, the vast majority of the data collected were through self-report, so underreporting may have affected the results. Additionally, because our study only engaged individuals who expressed concern for HIV, we are unable to determine whether individuals who did not express an HIV-related health concern would be less prone to rapid testing. Finally, although response rates were high, this is a self-selected population who may engage in less risky behaviors than those who opted out, so these findings are not generalizable to other Latinos. Despite these limitations, the data gathered provide more information on factors to consider when promoting community-based HIV testing among Latinos in urban environments.

Conclusions

Our findings provide evidence that community-based rapid HIV testing and post-test counseling may be feasible for Latinos living in urban environments. Although the vast majority of our participants accepted our testing offer, participants who had tested within the past year and more religious participants were more likely to refuse testing. Because our findings indicated that previous testers were less likely to accept our testing offer, the importance of regular testing should be emphasized during each HIV testing opportunity. Greater awareness of the health benefits associated with HIV testing may encourage participation among religious individuals.

Ongoing efforts to promote routine HIV testing among Latinos is crucial to reducing the risk of HIV transmission among this vulnerable population. Strengthening efforts to engage those who are more religious should be especially reinforced. Prevention interventions in the Latino community should involve routine rapid testing and education about modes of HIV transmission. These programs should be offered to individuals regardless of their HIV testing history, relationship status, or religious affiliation. Prevention programs should be tailored to meet the needs of this population, and should involve a variety of community-based settings, including religious institutions and venues.

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Table 1

Descriptive statistics and univariate Cox regression results for predictors of HIV testing acceptance

Participant characteristics	Total N%	Univariate analysis		
		Accepted test (N = 143) N%	Refused test (N = 49) N%	Risk ratio (95% CI)
Age ^c (M, SD)	(48, 15)	(47, 15)	(52, 15)	0.99 (0.98, 1.00)
Age above mean ^c (ref: no)	103 (53.65)	71 (49.65)	32 (65.31)	0.75 (0.54, 1.03)
Female	136 (70.83)	100 (69.93)	36 (73.47)	0.92 (0.65, 1.32)
At least H.S. education ^c (ref: less than high school)	149 (77.60)	116 (81.12)	33 (67.35)	1.46 (0.96, 2.21)
Income over last 30 days ^b (M, SD)	(853, 629)	(914, 649)	(673, 535)	1.00 (1.00, 1.00)
Medicaid-insured	94 (48.96)	74 (51.75)	20 (40.82)	1.23 (0.88, 1.70)
Unmarried	101 (52.60)	72 (50.35)	29 (59.18)	1.18 (0.85, 1.64)
Living w/partner ^b (ref: w/o partner)	96 (50)	78 (54.55)	18 (36.73)	1.40 (1.00, 1.94)
Foreign-born	147 (76.56)	114 (79.72)	33 (67.35)	1.22 (0.72, 2.06)
Time in the U.S. ^c >20 years (ref: ≤20 years)	90 (46.88)	65 (45.45)	25 (51.02)	0.72 (0.49, 1.05)
Religious ^a				
Somewhat/absolutely (ref: not at all/not very)	141 (73.44)	95 (66.43)	46 (93.88)	0.51 (0.36, 0.73)
HIV KQ-18 (high for > median = 0.72)				0.96 (0.69, 1.34)
Low (0)	113 (58.85)	85 (59.44)	28 (57.14)	
High (1)	79 (41.15)	58 (40.56)	21 (42.86)	
Unprotected sex	125 (65.10)	97 (67.83)	28 (57.14)	1.25 (0.88, 1.77)
Number of sexual partners				1.22 (0.75, 2.01)
1	170 (88.54)	125 (87.41)	45 (91.84)	
>1	22(11.46)	18 (12.59)	4 (8.16)	
HIV/AIDS information on TV	163 (84.90)	120 (83.92)	43 (87.76)	0.87 (0.56, 1.36)
HIV/AIDS info on bus/sub	153 (79.69)	118 (82.52)	35 (71.43)	1.42 (0.91, 2.20)
HIV/AIDS info on billboard ^b (ref: no)	165 (85.94)	128 (89.51)	37 (75.51)	1.84 (1.06, 3.19)
HIV testing ever ^c (ref: no)	169 (88.02)	130 (90.91)	39 (79.59)	1.68 (0.95, 2.97)
HIV test last year ^a (ref: no)	27 (14.06)	11 (7.69)	16 (32.65)	0.35 (0.19, 0.64)

^a
p < .01^b
p < .05^c
p < .10

Table 2

Multivariable analysis with Cox regression

Participant characteristics	Risk ratio (RR)	95% CI
Age above mean (ref: no)	0.84	0.61, 1.15
At least H.S. education (ref: less than H.S.)	1.04	0.67, 1.63
Income over past 30 days	1.00	0.99, 1.00
Living w/o partner (ref: living w/o partner)	1.12	0.81, 1.54
Time in the U.S. >20 years (ref: 20 years)	0.75	0.55, 1.03
Somewhat/absolutely religious (ref: not at all/not very religious)	0.73	0.54, 0.99
HIV/AIDS info on billboard	1.36	0.70, 2.64
HIV testing ever	1.24	0.66, 2.33
HIV test last year	0.27	0.11, 0.66

Statistically significant associations are in bold