THE IMPACT OF ACCULTURATION ON LATINOS' PERCEIVED BARRIERS TO HIV PRIMARY CARE

Serena Rajabiun, MA, MPH; Maureen H. Rumptz, PhD; Jesus Felizzola, MD; Alison Frye, MPH; Michael Relf, PhD, RN; Gary Yu, MPH; William E. Cunningham, MD, MPH

US Latino adults are disproportionately affected by the HIV epidemic and experience disparities in access to HIV care. However, relatively little is known about how acculturation affects perceived barriers to engagement in care among Latinos. This article examines factors that may be associated with engaging HIV-infected persons in primary care by using interview data from 651 Latino and non-Latino adults presenting for services at five agencies that participated in a multisite demonstration project. Latinos ($n=219$) were more likely than non-Latino Whites ($n=117$) to be male, recently diagnosed with HIV, less educated, without health insurance, not on Medicaid, taking HIV medications, and in better physical health. In addition, Latinos were more likely to report facing numerous structural barriers, stigma-related worries/concerns, and belief barriers than were non-Latino Whites. Upon closer examination of the Latino subsample, acculturation (based on language) was associated with reported structural barriers, worry/concern barriers, and belief barriers. In the final multivariate model that controlled for site, Spanish language was significantly associated with experiencing stigma-related worries/concerns that impact HIV status. (*Ethn Dis*. 2008;18:403–408)

Key Words: Latino, HIV, Stigma, Barriers, Acculturation

From Boston University School of Public Health (SR), Boston, Mass.; Multnomah County Health Department/Oregon Public Health Division (MHR), Portland, Ore.; the Miami AIDS Project (JF), Miami, Fla.; the Cascade AIDS Project (AF), Portland, Ore.; Duke University School of Nursing (MR), Durham, North Carolina; Mailman School of Public Health, Columbia University (GY), New York, New York; School of Medicine and the Department of Health Services, UCLA (WEC), Los Angeles, Calif.

Address correspondence and reprint requests to: Serena Rajabiun; Health and Disability Working Group, Boston University School of Public Health; 374 Congress St, Ste 502; Boston, MA 02210; 617-426-4447; rajabiun@bu.edu

INTRODUCTION

Latinos, the fastest growing minority group in the United States, have been disproportionately affected by the HIV epidemic. Latinos make up 13% of the US population yet account for 20% of persons living with AIDS.[1,2] In addition, the rate of HIV infection among Latinos (25.6 per 100,000) is more than three times the rate for non-Hispanic Whites (7.6 per 100.000).[1] Furthermore, when diagnosed, Latinos are typically in later stages of the infection and face greater challenges in accessing proper HIV care.[3–6]

Disparities in access to care experienced by Latinos have complex causes and may be influenced by structural barriers and differences in cultural beliefs about HIV disease. Language barriers and cultural beliefs, coupled with HIV-related stigma, may decrease access to and utilization of care, adherence, and response to therapy among HIV-infected Latinos.[3,4,6,7] Compared to Whites, Latinos have poorer knowledge of HIV and treatment, are more likely to hold conspiracy beliefs about HIV, perceive discrimination by healthcare providers, and experience HIV-related stigma.[7–12]

However, Latinos are a diverse group, and some subgroups of Latinos may have more problems with barriers than other subgroups.[13] For example, evidence shows that lack of English proficiency is as great a barrier to health care as lack of insurance, especially for foreign-born Latinos.[14–16] In 2000, >28 million adults in the United States spoke Spanish as a first language, and ≈14% speak only Spanish at home.[17]

…monolingual Spanish-speaking Latinos may be at higher risk than their bilingual peers for poor health outcomes because of problems associated with language and cultural barriers.

Limited English proficiency affects a person's ability to fill out health insurance applications and other forms as well as the ability to discuss medical problems with a healthcare provider. Therefore, monolingual Spanish-speaking Latinos may be at higher risk than their bilingual peers for poorer health outcomes because of problems associated with language and cultural barriers. Moreover, compared with English-speaking Latinos, monolingual Spanish-speaking Latinos are less likely to disclose their HIV status, know less about HIV, and perceive HIV disease as less serious.[18–21]

While studies in HIV-uninfected populations have shown that Spanish-speaking Latinos may have more problems accessing services than do English-speaking Latinos, less is known about Latinos with HIV and whether certain barriers affect Spanish speakers more than English speakers. In addition, little is known about the particular types of barriers Latinos face. This study was designed to address these gaps in the literature by examining structural barri-

ers, cultural beliefs, and HIV-related worries and concerns between Spanish- and English-speaking HIV-infected Latinos in the United States.

METHODS

Design

This study is part of a larger multisite investigation of engagement and retention in care for under-served and hard-to-reach HIV-infected populations.[22] Participants were recruited from five US predominantly urban community- or clinic-based outreach and advocacy programs whose population was at least 10% Latino. All five programs targeted persons living with HIV who were aware of their HIV status but were not fully engaged in HIV primary care and considered hard-to-reach by the healthcare system. In addition, the programs focused their interventions to communities of color, primarily Latino and African American, in which disparities in access to HIV care have been documented. Before data collection, the institutional review board of the coordinating center and at each program site approved the study protocol. This analysis reports on cross-sectional interview data and medical record review data collected on each participant.

Participants

All participants (n=651) were HIV infected and were enrolled in the study if they were not fully engaged in HIV primary care or were engaged in HIV primary care but at risk for falling out of care. This included people who had missed at least two HIV primary care visits in the past six months, people who had not seen a doctor in at least six months, people with no health insurance, or people with histories of homelessness, active substance abuse, mental illness, and recent incarceration. Roughly one-third of the participants (n=219) identified as Latino. Of those, 55% (n=120) identified their primary language as Spanish.

Measures

Data were collected from October 2003 through June 2005 in face-to-face interviews conducted by trained interviewers. Latino participants were interviewed by bilingual/bicultural staff in Spanish or English depending on the participant's preference. Data are presented from structured segments of the survey instrument including sociodemographics, health status and utilization, and factors thought to be associated with access to HIV primary care.

Demographic variables included ethnicity (White, Latino), birthplace, years in the United States, sex, sexual orientation, age, education, health insurance, monthly income, and current housing status. On the basis of previous research, primary language (English, Spanish) was used to create the independent variable of acculturation in this study.[23] Participants identified primary language as ''the language spoken most often at home and with family and friends.'' In this study, participant language was significantly associated with birthplace and residence in the United States. The majority of Spanish-speaking Latino participants were born outside the United States or Puerto Rico (81%) compared with English-speaking Latino participants who were more likely to be born in the United States or Puerto Rico (82%). Among those who identified their country of origin (n=96), 70% were from Mexico, 24% were from Central America and 6% were from South America or the Caribbean. Spanish-speaking Latino participants also resided in the United States significantly fewer years than English-speaking Latino participants (14.7 vs 25.5 mean years, $P<.001$).

Health status and utilization variables included length of time since HIV diagnosis, the number of self-reported HIV medical visits in the past six months, physical and mental health-related quality of life (from the SF-12v2), and mental health outpatient care during the past six months (''Did you go to see a counselor, social worker, psychologist, psychiatric nurse or psychiatrist to talk about the way you were feeling or about problems in your life?'' or ''Have you taken any psychotropic medications in the past 6 months?''). In addition, CD4 T-cell counts from medical record review or physician report (n=216) were collected to assess and control for disease status. Staff collected exact laboratory values from each test performed according to medical chart review or physician report. CD4 T-cell counts were recoded based on clinical guidelines (<50, 50–349, 350–499, and ≥500). Any illicit drug use (excluding marijuana) or binge drinking during the past 30 days was collected by using the Addiction Severity Index.[24]

The dependent variables of interest in this study were the barriers associated with access to HIV primary care. Standardized instruments were not available to measure structural/practical barriers, stigma-related worries and concerns, or health beliefs associated with access to care, so multisite study investigators collaborated to develop new, conceptually sound scales to measure these domains. The structured interviews asked if these barriers made it difficult to get HIV medical care in the past six months with a yes/no response category. These included HIV-related structural/practical barriers (6 items), HIV stigma-related worries and concerns (8 items), and HIV-related belief barriers to care (8 items). A ''yes'' response to an item was scored as a barrier to care. In addition to the individual barrier items, new variables (any stigma-related, any practical, or any belief barriers) were constructed to examine if at least one item was reported (''yes'' response) for each barrier category and any differences across the three language groups.

Statistical Methods

Bivariate analyses were conducted to examine sociodemographic characteristics of the sample comparing English-

speaking Latinos, Spanish-speaking Latinos, and non-Latino Whites by using Pearson chi-square and Fisher exact test for dichotomous variables and one-way analysis of variance for continuous variables. Next, differences in barriers to care (ie, structural/practical barriers, stigma-related worry barriers, or beliefs barriers) across these three groups were conducted by using bivariate analyses. Finally, logistic regression analyses were performed to determine which sociodemographic characteristics and risk factors were uniquely associated with any structural/practical barriers, stigma-related worry barriers, or belief barriers. Sociodemographic variables with a *P* value <.15 were entered into the equation controlling for disease status (CD4 T-cell count). A Wald χ^2 test and corresponding *P* values were computed, and a Bonferroni correction was applied to examine the significance of within-group differences across Latinos and non-Latino Whites associated with barriers to care. Given the possible within-site clustering of the outcome of interest (structural/practical barriers, worry barriers, or belief barriers), the final model was re-estimated by using generalized estimating equations with a bias correction for the small number of sites ($n=5$) estimated in the study.[25] All data were analyzed with SPSS version 11.0 (SPSS Inc, Chicago, Ill) and SAS version 9.2 (SAS Institute, Inc, Cary, NC).

Table 1. Sociodemographic and health care and utilization characteristics of study participants by ethnicity

Characteristic	Spanish-speaking Latino (*n*=120)	English-speaking Latino (*n*=99)	Non-Latino White (*n*=117)	*P* value
Sex (%)				
Male	87.5	74.0	78.3	.035
Female	12.5	26.0	21.7	
Sexual orientation (%)				
Heterosexual	52.9	60.4	47.0	.149
Homosexual/Bisexual	47.1	39.6	53.0	
Mean age (years)	39.4	40.0	41.2	.265
Housing status (%)				
Own home	47.5	22.2	33.3	<.001
Someone else's home	28.3	18.2	17.1	
Temporary	24.2	59.6	49.6	
Time since tested positive (%)				
0–6 months	11.7	7.1	9.4	
6–24 months	21.0	6.1	8.5	.003
>2 years	67.2	86.8	82.1	
Education (%)				
Less than high school	52.9	45.5	22.2	<.001
High school or equivalent	47.1	54.5	77.8	
Health insurance (%)				<.001
No Insurance	45.1	22.7	26.5	
Public (Medicaid/Medicare)	47.8	73.2	71.7	
Private	7.1	4.1	1.8	
Mean monthly income (US $)	606	651	567	.563
Drug use/binge drinking past 30 days (%)	35.8	57.6	58.1	.001
Mental health outpatient care (%)	50.0	57.6	67.5	.023
Drug use/binge drinking ever (%)	76.7	97.0	98.3	<.001
HIV medical care in past 6 months (%)				
No care	7.0	12.0	9.7	.148
≥1 visit, ≥2 missed appointments	25.0	31.5	38.8	
≥2 visits, ≤1 missed appointments	68.0	56.5	51.5	
CD4 T-cell count at baseline (most proximal imputed) (%)				
<50	5.0	4.0	4.0	.145
50–349	46.7	52.5	43.6	
350–499	27.5	13.1	21.4	
≥500+	20.8	30.3	31.6	
Taking HIV medications (%)	72.3	62.6	55.7	.030
Quality of life score (SF-12)				
Physical health, mean (SD)	47.5 (11.0)	46.0 (11.2)	43.3 (11.4)	.018
Mental health, mean (SD)	43.7 (12.0)	41.4 (11.9)	41.0 (11.8)	.162

SD, standard deviation.

RESULTS

A larger proportion of Spanish-speaking Latinos were male, had stable housing, had been diagnosed with HIV in the past two years, and were uninsured than among English-speaking Latinos and non-Latino Whites (Table 1). A larger proportion of Spanish-speakers were taking medication and reported better physical health than non-Latino Whites. A smaller proportion of Spanish-speaking Latinos had a high school education, reported using drugs or binge drinking in the past 30 days, or used mental health outpatient care in the past 6 months than non-Latino Whites.

More Spanish-speaking Latinos than English-speaking Latinos or non-Latino Whites experienced any structural/practical barrier, any stigma-related worry, and any belief barrier (Table 2). Specifically, more Spanish speakers experienced structural barriers related to paying for care and finding a provider who could speak their language. Regarding specific stigma-related worries and concerns, Spanish speakers experienced barriers to disclosing their HIV status and sexual orientation and perceived stigma from their community. They expressed greater worries about their families or partners being upset or angry or having their children taken away from them. In addition they were worried about answering questions from their healthcare providers. With regard to health beliefs, Spanish-speaking Latinos overwhelm-

Table 2. Barriers to care by ethnicity

Barrier	Spanish-Speaking Latino (*n*-120)	English-Speaking Latino (*n*=99)	Non-Latino White (*n*=117)	*P* value
Any practical/structural barriers (%)	55.0	36.4	51.3	<.016
Finding care	11.7	6.1	11.2	.219
Paying for medical care	42.5	21.2	31.0	.003
Problems making appointment	8.3	14.1	17.9	.091
Calls not answered	8.3	11.1	12.9	.517
Getting convenient appointment	10.1	12.1	17.1	.264
Provider who speaks language	20.8	3.0	.9	<.001
Any stigma-related worries/concerns barriers (%)	54.2	35.4	41.0	.015
Afraid people find about HIV status	40.8	21.2	19.7	<.001
Worried about disclosing sexual orientation	27.5	17.2	13.7	.021
Worried about upsetting family or partner	29.2	5.1	6.8	<.001
Afraid children would be taken away	8.4	4.0	2.6	.109
Concerned healthcare provider would ask questions	20.0	8.1	10.3	.018
Worried healthcare provider would ask about sexual practices	19.2	8.1	6.0	.003
Worried healthcare provider would ask about drug use	6.7	10.1	17.1	.036
Worried healthcare provider would ask if taking HIV medications	9.2	9.1	8.5	.984
Belief barriers (%)	74.2	44.4	59.8	<.001
Not sick enough	16.8	14.3	21.4	.382
Spiritual beliefs	60.5	26.5	26.3	<.001
No cure	5.1	6.1	7.7	.708
Side effects are worse than the disease	21.7	16.8	22.9	.539
Prefer alternative/holistic treatments	9.3	15.3	14.4	.353
Lack of trust in the medical system	12.7	7.2	10.3	.418
HIV does not exist	8.3	2.0	4.3	.094
Basic needs are more important	31.1	11.3	24.3	.003

ingly reported that their spiritual beliefs would help with HIV and that their basic needs were more important than HIV.

Adjusted logistic regression analysis found that minority status and insurance status were significant predictors for having a barrier to care (Table 3). Being a Spanish speaker was the strongest predictor of experiencing a stigma-related worry barrier along with being uninsured and a sexual minority. The odds of experiencing stigma-related worry barriers were twice as high for Spanish speakers as non-Latino Whites. Spanish speakers also had greater odds of holding a belief or experiencing a structural barrier that made it difficult to access care, but these results were not significant.

DISCUSSION

We found that Spanish-speaking Latinos were more likely to experience any stigma, belief, or structural barriers than are English-speaking Latinos and non-Latino Whites, but stigma-related worries and concerns most distinguish Spanish-speaking Latinos from English-speaking Latinos and non-Latino Whites. Consistent with previous research, this study found that compared with other ethnic groups, Latinos were more likely to report stigma related to disclosure of HIV status and sexual orientation. Other studies have documented that stigma associated with HIV infection emanates to a large degree from the social construction of HIV/AIDS as an equivalent to homosexuality.[26,27]

Table 3. Associations between participant characteristics and barriers to care among non-Latino Whites, English-speaking Latinos, and Spanish-speaking Latinos

Factor	Any Stigma Related Barrier		Any Belief Barrier		Any Practical Barrier	
	Adjusted OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value	Adjusted OR (95% CI)	*P* value
Ethnicity						
ESL vs NLW	0.92 (.4–2.0)	.83	0.62 (.3–1.2)	.15	0.79 (.4–1.5)	.45
SSL vs NLS	1.97 (1.0–3.7)	.04	1.64 (.6–4.8)	.37	1.38 (1.0–2.0)	.08
SSL vs ESL	2.14 (.9–5.0)	.07	2.67 (.9–8.0)	.08	1.75 (1.0–3.1)	.06
No insurance	1.70 (1.0–2.8)	.03	1.46 (1.1–2.0)	.01	2.00 (1.6–2.4)	<.001
Female sex	1.62 (.9–2.9)	.10	1.42 (.9–2.1)	.10	1.21 (.8–1.8)	.31
Sexual minority	1.94 (1.3–3.0)	.05	1.08 (.6–2.0)	.82	0.84 (.5–1.4)	.50
Drug use in the past 30 days	1.06 (.9–1.3)	.54	1.18 (.7–1.9)	.49	1.05 (.9–1.2)	.48
High school education	0.84 (.7–1.0)	.11	0.84 (.5–1.4)	.50	1.19 (.8–1.8)	.40
CD4 T-cell count						
<50	1.36 (.4–4.5)	.62	2.31 (.6–9.3)	.24	1.97 (.4–9.2)	.39
50–349	1.25 (.8–2.0)	.36	0.89 (.6–1.4)	.63	1.22 (.6–2.6)	.60
350–499	1.13 (.7–1.9)	.66	0.84 (.4–1.7)	.62	1.11 (.6–2.1)	.77

OR, odds ratio; CI, confidence interval; ESL, English-speaking Latino; NLW, non-Latino White; SSL, Spanish-speaking Latino.

…this study found that compared with other ethnic groups, Latinos are more likely to report stigma related to disclosure of HIV status and sexual orientation.

Traditionally, Latino culture has viewed homosexuality negatively, thus decreasing the likelihood of disclosure of information that would imply gay orientation or behavior. Our findings support studies that indicate that Latino men disclose their positive serostatus less frequently than do Anglo men[21] and provides further evidence that within Latino groups, monolingual Spanish speakers are more likely to have issues with HIV disclosure than are English speakers.

Similar to other studies, this study also found that paying for medical care, availability of interpreters, and lack of insurance were barriers to accessing health services for Spanish-speaking, HIV-infected persons. In addition, the findings highlight the importance of personal beliefs and attitudes toward living with HIV, especially for Spanish-speaking Latinos. Many Spanish speakers reported believing other basic needs, such as food and shelter, to be of greater priority than addressing their HIV healthcare needs and relying on spiritual beliefs as reasons for not seeking HIV care when needed. These attitudes and beliefs reflect the concept of *fatalismo*, an acceptance of fate that plays a role in medication use and affects healthcare-seeking behavior.[28]

These findings have implications for programs that work with HIV-infected Latino populations. HIV infected, Spanish-speaking Latinos require culturally and linguistically relevant interventions that address more personalized HIV knowledge, attitudes, and practices. Dispelling myths about HIV, providing assurance about confidentiality, building skills around disclosing status to family and partners, learning how to communicate effectively with healthcare providers, and recognizing the importance of managing HIV are all critical to ensure the retention of HIV-infected Spanish speakers in medical care.

In addition, program interventions need to understand the social and cultural experience of Latino participants in seeking health care. Many HIV-infected Latinos may come from histories of poverty and living under repressive governments with limited access to healthcare services or education. Therefore, Latinos, especially recent immigrants, may not be accustomed to demanding services from healthcare providers and may not recognize the importance of addressing HIV and health care.[29] Program interventions that can help connect HIV-infected Latinos with healthcare providers who speak their language and address other basic needs such as food, clothing, shelter, and employment are steps to retaining HIV-infected Latinos in care.

This study highlights several potential strategies for developing more culturally based interventions to address the barriers to care and engage HIV-infected, Spanish speaking Latinos in medical care. Peers or "*promotoras*" have been used to educate and engage Latinos around other chronic diseases.[30] Recruiting HIV-infected Latinos from the community to work as staff who can serve as role models for living healthy and productive lives and as support networks may be effective in addressing the stigma and belief barriers and promote retention in medical care.[31]

This study had several limitations. Other acculturation factors, such as country of origin and years in the United States, could not be analyzed because not all sites were able to collect this data and ensure its confidentiality. The study sample was limited to five urban centers that specifically recruited HIV-infected Latinos from community-based organizations and therefore may not be generalizable to the Latino population. Despite this limitation, the study highlights several barriers for healthcare providers and other service providers to address when working with HIV-infected Latinos.

ACKNOWLEDGMENTS

The authors thank Maria Elena Ramos for her technical review and comments. This research was supported by grant number H97HA00191-05-07 from the Health Resources and Services Administration through the HIV/AIDS Bureau's Special Projects of National Significance. Dr Cunningham received partial support from NIH grants P20MD000182 and #2P30AG021684.

REFERENCES

1. Centers for Disease Control and Prevention. HIV/AIDS surveillance report, 2005. Atlanta, Ga, 2007.
2. US Census Bureau. Census 2000. Summary file 3 (SF3)—sample data; 2000.
3. Campo R, Alvarez D, Santos G, Latorre J. Antiretroviral treatment considerations in latino patients. *AIDS Patient Care STDS*. 2005;19(6):366–374.
4. Shapiro MF, Morton SC, McCaffrey DF, et al. Variations in the care of HIV-infected adults in the United States: results from the HIV Cost and Services Utilization Study. *JAMA*. 1999;281(24):2305–2315.
5. Cunningham WE, Andersen RM, Katz MH, et al. The impact of competing subsistence needs and barriers on access to medical care for persons with human immunodeficiency virus receiving care in the United States. *Med Care*. 1999;37(12):1270–1281.
6. Turner BJ, Cunningham WE, Duan N, et al. Delayed medical care after diagnosis in a US national probability sample of persons infected with human immunodeficiency virus. *Arch Intern Med*. 2000;160(17):2614–2622.
7. Relf MV, Mallinson K, Pawlowski L, et al. HIV-related stigma among person attending an urban HIV clinic. *The Journal of Multicultural Nursing & Health*. 2005;11(1):14–22.
8. Ross MW, Essien EJ, Torres I. Conspiracy beliefs about the origin of HIV/AIDS in Four racial/ethnic groups. *J Acquir Immune Defic Syndr*. 2006;41(3):342–344.
9. Butcher RO, Hood RG, Jordan WC. Optimizing treatment for African Americans and

Latinos with HIV/AIDS. *J Natl Med Assoc*. 2005;97(8):1093–1100.
10. Schuster MA, Collins R, Cunningham WE, et al. Perceived discrimination in clinical care in a nationally representative sample of HIV-infected adults receiving health care. *J Gen Intern Med*. 2005;20(9):807–813.
11. Ebrahim SH, Anderson JE, Weidle P, et al. Race/ethnic disparities in HIV testing and knowledge about treatment for HIV/AIDS: United States, 2001. *AIDS Patient Care STDS*. 2004;18(1):27–33.
12. Multiple barriers prevent minorities' early treatment. AIDS stigma, lack of transportation top list. *AIDS Alert*. 2003;18(11):137–138, 143.
13. Morales LS, Cunningham WE, Galvan FH, et al. Sociodemographic differences in access to care among Hispanic patients who are HIV infected in the United States. *Am J Public Health*. 2004;94(7):1119–1121.
14. Smedley B, Stith A, Nelson A, eds. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academies Press; 2002.
15. Brown ER, Ojeda V, Wyn R, et al. *Racial and Ethnic Disparities in Access to Health Insurance and Health Care*. Los Angeles, Calif: UCLA Center for Health Policy Research and Henry J. Kaiser Foundation; 2000.
16. Quinn K. *Working Without Benefits: the Health Insurance Crisis Facing Hispanic Americans*. Cambridge, Mass: ABT Associates; 2000.
17. US Census Bureau. Language use and english-speaking ability: 2000. In: Census Brief 2000; 2003.
18. Zea MC, Reisen CA, Diaz RM. Methodological issues in research on sexual behavior with Latino gay and bisexual men. *Am J Community Psychol*. 2003;31(3):281–291.
19. Mason HR, Marks G, Simoni JM, et al. Culturally sanctioned secrets? Latino men's nondisclosure of HIV infection to family, friends, and lovers. *Health Psychol*. 1995; 14(1):4–5.
20. Miller JE, Guarnaccia PJ, Fasina A. AIDS knowledge among Latinos: the roles of language, culture, and socioeconomic status. *J Immigr Health*. 2002;4(2):63–72.
21. Zea MC, Reisen CA, Poppen PJ, et al. Disclosure of HIV-positive status to Latino gay men's social networks. *Am J Community Psychol*. 2004;33(1/2):107–116.
22. Rajabiun S, Cabral H, Tobias C, et al. Program design and evaluation strategies for the SPNS Outreach Initiative. *AIDS Patient Care STDS*. 2007;21(Suppl 1):9–19.
23. Perez-Stable EJ, Ramirez A, Villareal R, et al. Cigarette smoking behavior among US Latino men and women from different countries of origin. *Am J Public Health*. 2001;91(9): 1424–1431.
24. Leonhard C, Mulvey K, Gastfriend DR, et al. The Addiction Severity Index: a field study of internal consistency and validity. *J Subst Abuse Treat*. 2000;18(2):129–135.
25. Mancl LA, DeRouen TA. A covariance estimator for GEE with improved small-sample properties. *Biometrics*. 2001;57: 126–134.
26. Takahashi LM. Stigmatization, HIV/AIDS, and communities of color: exploring response to human service facilities. *Health Place*. 1997;3(3):187–199.
27. Kalichman SC, Simbayi LC. HIV testing attitudes, AIDS stigma, and voluntary HIV counseling and testing in a Black township in Cape Town, South Africa. *Sex Transm Infect*. 2003;79(6):442–447.
28. Murphy DA, Roberts KJ, Hoffman D, et al. Barriers and successful strategies to antiretroviral adherence among HIV-infected monolingual Spanish-speaking patients. *AIDS Care*. 2003;15(2):217–230.
29. Shedlin MG, Shulman L. Qualitative needs assessment of HIV services among Dominican, Mexican and Central American immigrant populations living in the New York City area. *AIDS Care*. May 2004;16(4):434–445.
30. Vargas RB, Cunningham WE. Evolving trends in medical care coordination for patients with HIV and AIDS. *Curr HIV/AIDS Rep*. 2006;3(4):149–153.
31. Rajabiun S, Mallinson RK, McCoy K, et al. Getting me back on track: the role of outreach interventions in engaging and retaining people living with HIV/AIDS in medical care. *AIDS Patient Care STDS*. 2007;21(Suppl 1):20–29.

AUTHOR CONTRIBUTIONS

Design concept of study: Rajabiun, Rumptz, Felizzola, Frye, Relf, Cunningham
Acquisition of data: Rajabiun, Rumptz, Frye, Relf, Cunningham
Data analysis and interpretation: Rajabiun, Rumptz, Felizzola, Relf, Yu, Cunningham
Manuscript draft: Rajabiun, Rumptz, Felizzola, Relf, Yu, Cunningham
Statistical expertise: Rajabiun, Rumptz, Yu
Acquisition of funding: Rajabiun, Rumptz, Frye
Administrative, technical, or material assistance: Rajabiun, Felizzola, Relf
Supervision: Rajabiun