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Binational Care-Seeking Behavior and Health-Related Quality of Life Among HIV-Infected Latinos in the U.S.-Mexico Border Region

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Abstract

Although binational health care seeking is common among HIV-infected Latinos living near the U.S.-Mexico border, information is lacking on whether regional indicators of health access are associated with Health-Related Quality of Life (HRQL). This study examined health care seeking behaviors across 4 HRQL domains (Emotional Well-Being, Cognitive Functioning, Physical Functioning, and Pain) using linear regression. HIV-infected Latinos ($n = 239$) were recruited from U.S. community clinics situated near California's border with Mexico. The Spanish-language (81%) and male (84%) dominant population had generally positive indicators of HRQL. AIDS diagnosis predicted poorer HRQL (Cognitive Functioning, Physical Functioning, and Pain), as did receipt of traditional medications/herbs in Mexico (Physical Functioning and Pain). Staying 1 or more months in Mexico in the previous year was associated with higher Cognitive Functioning and less pain. Border-related factors were inconsistently implicated in HRQL

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measures. Improved understanding of complementary and alternative medicine use by HIV-infected Latinos is warranted.

Keywords

access to care; AIDS; HIV; quality of life; U.S.-Mexico border

Among persons living with HIV infection, health-related quality of life (HRQL) indicators can be used to understand relationships between treatment and health outcomes, overall health and well-being, and survival (Bajunirwe et al., 2009; Protopopescu et al., 2007; Rao, Hahne, Cella, & Hernandez, 2007). Important studies have been published on HRQL among U.S. Latinos, who bear a disproportionate burden of HIV infection. Rao and colleagues (2007) focused on HRQL of persons living with HIV/AIDS from the continental United States and Puerto Rico and found that being male, non-Hispanic White, Spanish-speaking, having lower CD4+ T cell counts, and living with others were significantly associated with better physical health, functional health, and emotional or social well-being. Van Servellen, Chang, and Lombardi (2002) conducted a study with Latino populations living with HIV in Los Angeles County and found that neither acculturation nor socioeconomic vulnerability mediated the relationship between health status and HRQL. However, monolingual Spanish-speaking Latinos had poorer HRQL.

Use of complementary and alternative medicines (CAM) may also be associated with HRQL, although factors related to quality of life and choices surrounding CAM use in the U.S.-Mexico border region have been largely unexplored in the context of patients living with HIV. CAM utilization is common among U.S. Latinos (Lopez, 2005), and although some CAM traditions are widespread across Latino ethnicities (e.g., use of chamomile tea), many practices are deeply rooted in Mexican or other cultural practices that may be as diverse as Latino populations themselves (Hsiao et al., 2006; Rivera et al., 2005). In a study of CAM use among HIV-infected Latinos, 72% reported using Asian-related CAM (e.g., acupuncture, tai chi); 42% reported using plant-based CAM (herbs, home remedies); and 13.5% reported use of ethnomedicine/folk healing (e.g., *sobadores*, *curanderos*; Jernewall, Zea, Reisen, & Poppen, 2005). This study further revealed that ethnomedicine CAM was significantly associated with not going to medical appointments at prescribed intervals and non-adherence to Western medical regimens (Jernewall et al., 2005). Exploration of the potential role of CAM in health-related quality of life, therefore, is important and potentially significant to improve care provision and health outcomes for Latinos living with HIV.

There is a paucity of information available on correlates of HRQL for HIV-infected Latinos in the U.S.-Mexico border region. Improved understanding of factors associated with HRQL in Latino populations living with HIV is important given increasing HIV prevalence among Latinos on both sides of the California-Baja California, U.S.-Mexico border (Brouwer et al., 2006; County of San Diego Health and Human Services Agency, 2009; Iñiguez-Stevens et al., 2009; Pan American Health Organization, 2007). Regional cross-border mobility contributes to the public health and clinical relevance of understanding binational health. More than 60 million north- and south-bound yearly border crossings occur in the San Diego County and Baja California region alone (San Diego Association of Governments [SANDAG] and California Department of Transportation District 11 [SANDAG], 2006), including Latinos living with HIV who report seeking health care services on both sides of the border (Zúñiga, Brennan, Scolari, & Strathdee, 2008).

Our recent work in the San Diego and Tijuana U.S.-Mexico border region found that Latinos of Mexican-origin who made five or more round-trip border crossings in the previous year

reported significantly fewer barriers to HIV care than persons who had made fewer than five crossings in the previous year (Zúñiga et al., 2008). This finding merits further research given that persons who are able to make more round-trip border crossings may also have more health care options and thus improved quality of life indicators. In our study, we hypothesized that persons who (a) reported more frequent border crossing, and (b) have accessed health care in Mexico, would report a higher quality of life. Understanding binational health care utilization and HRQL among border residents may lead to opportunities for improved clinical care of this growing population and improved coordination of care between providers on both sides of the border who serve binational patients living with HIV.

Methods

Participants and Settings

The data examined in this cross-sectional study were collected as part of a broader, multi-site demonstration project to assess access to care in HIV-infected persons in the U.S.-Mexico border region. The parent study was an observational study whose methods (e.g., data collection procedures and measures) are detailed in Zúñiga et al. (2008). Participants (≥ 18 years of age) living with HIV and receiving HIV-related services from one of four community clinics located in San Diego and Imperial Counties were recruited from July 2001-September 2004. These clinics serve a predominantly low-income population of Mexican origin. The current study was restricted to 239 persons of Mexican origin (comprising $> 80\%$ of enrolled participants) who had completed a Quality of Life survey measure as part of the parent study. Detailed information on recruitment and consenting procedures has been reported elsewhere (Zúñiga et al., 2008). This study was reviewed and approved by the Human Research Protection Program at the University of California, San Diego.

Measures

Measures used in the current study were developed by a team of researchers with expertise in U.S.-border populations (Center for Applied Social Research, 2005). The current study examined: Quality of Life, Demographics, and Lifestyle and Culture (described below).

Quality of life—The 22-item Quality of Life module was derived from standardized HRQL measures including HIV Patient Assessed Report of Status and Experience (HIV-PARSE) and Medical Outcomes Study-HIV (MOS-HIV; Rand Health, 2007); and the AIDS Clinical Trials Group-Short Form 21 (ACTG SF-21; Crystal, Fleishman, Hays, Bozzette, & Shapiro, 2000). The measure includes eight domains: Current Perceived Health, Role Functioning, Social Functioning, Physical Functioning, Energy-Fatigue, Pain, Cognitive Functioning, and Emotional Well-Being. Based on findings from other studies of HRQL among Latinos living with HIV, Emotional Well-Being, Cognitive Functioning, Physical Functioning, and Pain were chosen as dependent variables for our study (Mier et al., 2008; Rao et al., 2007; Van Servellen et al., 2002;). Scoring for each domain was derived from linear transformations of Likert scale score (Center for Applied Social Research, 2005). Measures included Emotional Well-Being (3 items, Cronbach's $\alpha = .81$), Cognitive Functioning (3 items, Cronbach's $\alpha = .82$), Physical Functioning (4 items, Cronbach's $\alpha = .85$), and Pain (2 items, Cronbach's $\alpha = .79$).

Demographics—The 30-item Demographics module was used to determine personal and social factors. It included questions on age, gender, sexual orientation, highest level of education completed, household size, insurance status, primary health care source, employment status, HIV/AIDS status and years since receiving the HIV diagnosis.

Lifestyle and culture—The 23-item Lifestyle and Culture module included additional socio-economic indicators (e.g., housing status, marital status), questions specific to the U.S.-Mexico border (e.g., ties to Mexico, round-trip border crossing frequency in the previous year, number of months living or visiting in Mexico in the previous year, health insurance in Mexico, use of a traditional healer), and language preference. Some indicator variables, such as housing status, were re-coded into new variables based on the HRQL literature. For example, current housing status was dichotomized into two groups: persons who reported living in their own house or apartment were considered to have stable housing; all others (e.g., persons who lived in someone else's home, transitional housing, or homeless) were considered to have unstable housing (Aidala, Lee, Abramson, Messeri, & Siegler, 2007).

Statistical Analyses

Outcome variables included four HRQL indicators: (a) Emotional Well-Being, (b) Cognitive Functioning, (c) Physical Functioning, and (d) Pain. Each outcome variable was scored on a scale of 0 (worst HRQL score) to 100 (best HRQL score). Independent variables were selected based on our study hypothesis (≥ 5 round-trip border crossings in the previous year) and measures of binational health care utilization (e.g., received prescription medication in Mexico) as well as indicators of HRQL derived from the literature. Univariate statistics (*t*-tests, ANOVA, and regression) were generated for independent variables for each of four HRQL domains. Independent variables significant at the $p \leq 0.10$ level in univariate analyses were entered into a multivariate linear regression model specific to that domain. Models used for hypothesis testing were built using multiple regression through general linear models and Type III sum of squares. A manual backward elimination procedure was used to fit the best model to predict HRQL outcomes, with only variables with $p \leq 0.05$ remaining in final models.

Results

Sample Characteristics

A convenience sample of 239 HIV-infected Latinos consented to participate. The study population was of Mexican origin, male (84%), Spanish-language dominant (81%), and had a mean age of 37 years ($SD = 9.80$). Time since HIV diagnosis was an average of 2.7 years ($SD = 4$) at time of study enrollment and 29% reported an AIDS diagnosis. Two thirds of participants (65%) had lived or visited in Mexico for 1 month or more in the prior year. Most participants (73%) reported having made five or more round-trip border crossings from the United States to Mexico in the previous year. About one third reported utilization of non-HIV medical care in the United States (30%) and 47% reported non-HIV medical care in Mexico. More than half (55%) reported receipt of prescription medications in Mexico in the previous year. Detailed demographic and regional characteristics are provided in Table 1. Univariate associations across HRQL domains are presented in Table 2. Our primary study hypothesis, number of round-trip border crossings (≥ 5 vs. < 5) in previous year, was not significantly associated with any of the four HRQL outcomes at the univariate level.

HRQL and multivariate analysis—Mean HRQL indicators for Emotional Well-Being, Cognitive Functioning, Physical Functioning and Pain were in the second highest quartile range towards better health, between 58 and 70 (score range 0–100). These scores reflected that, at the time of the survey, participants reported generally good levels of quality of life across the four indicators.

Emotional well-being—Mean Emotional Well-Being score was 57.9 ($SD = 23.2$), indicating that on average, participants reported occasionally feeling anxious, blue, and unhappy in the previous 4 weeks. The final model for Emotional Well-Being explained 18% of the variation in the Emotional Well-Being score. Adjusting for all other variables in the model, being male and married, younger age, having at least a high school education, and having stable housing were associated with better Emotional Well-Being. Predictors of worse Emotional Well-Being (e.g., frequently or always felt anxious, blue, and unhappy) included persons who were raised exclusively in the United States and had received non-HIV medical care in the United States in the previous year.

Cognitive functioning—The average score for Cognitive Functioning was 69.4 ($SD = 25.2$), indicating that on average, participants reported that sometimes in the previous 4 weeks they were unable to remember, focus, and solve problems. The final model for Cognitive Functioning explained 18% of the variation in the Cognitive Functioning score. Male gender, younger age, stable housing, and persons who had spent at least 1 month living or visiting in Mexico in the previous year were associated with better Cognitive Functioning. Predictors of worse Cognitive Functioning (e.g., frequently or always unable to remember, focus, and solve problems) included having an AIDS diagnosis.

Physical functioning—On average, respondents reported good ability to be active or perform activities of daily living (ADL) as indicated by the mean Physical Functioning score ($M = 67.1$, $SD = 31.1$). The final model for Physical Functioning explained 27% of the variation in the Physical Functioning score. Higher Physical Functioning was associated with at least a high school education and reported wages/salary. Persons with an AIDS diagnosis and those who had received traditional medications or herbs in Mexico in the previous year had significantly worse Physical Functioning.

Pain—The mean Pain score for participants was 63.7 ($SD = 29.0$), indicating that slight pain somewhat interfered with normal work activities in the previous 4 weeks. The final model for Pain explained 19% of the variation in physical pain. Multivariate analysis revealed that persons who had stable housing, reported wages/salary, and who had spent at least 1 month in Mexico in the previous year reported experiencing less pain. Bodily pain interfered more frequently with normal activities for persons who had an AIDS diagnosis, had received non-HIV medical care in the United States or Mexico, and had received traditional medications or herbs in Mexico.

Discussion

This study advances our understanding of HRQL in a population of HIV-infected Latinos who reported considerable time spent in Mexico and who engaged in binational health care seeking behavior. We observed that mean scores of Emotional Well-Being, Cognitive Functioning, Physical Functioning, and Pain for our sample of Mexican-origin Latinos are consistently in the range of generally good health (e.g., good ability to be active or to perform ADL).

Although border crossing was not associated with HRQL, our analyses indicated a more complex picture of how border-related life experiences may be related to HRQL indicators. We observed, for example, that persons who lived or visited 1 month or more in Mexico in the previous year reported better cognitive functioning and less pain, and that receiving traditional medications or herbs in Mexico indicated poorer HRQL as measured by Physical Functioning and Pain. The implications of these findings for improved HIV clinical nursing care for HIV-infected Latino patients in a U.S.-Mexico border context are further discussed below.

Our first hypothesis that frequent border crossings would be associated with higher HRQL score was not supported by the data. Lack of significance may indicate that border crossing alone is not a sufficient proxy of access to care in Mexico because, among other considerations, it does not indicate the nature or amount of time the person spent in Mexico, nor the ability or disposition to access medical services while in Mexico. Future studies should explore reasons for extended visits or stays in Mexico. This information may improve coordination of HIV and other clinical care delivery between U.S. and Mexican providers.

Our hypothesis that HIV-infected Latinos in San Diego who reported accessing health care in Mexico in the previous year would have higher HRQL indicators was also not supported by the data. On the contrary, participants accessing non-HIV medical care in Mexico reported worse Pain; those who received traditional medications or herbs in Mexico reported worse Pain and Physical Functioning. It is likely that patients who seek care outside of routine HIV clinical care, regardless of country, may be sicker and thus have lower HRQL. Our findings appear to be in contrast with those of Wallace, Mendez-Luck, and Castañeda (2009), who found that among Mexican immigrants in California, poor self-reported health reduced the odds of obtaining medical care or prescription drugs in Mexico. Our findings suggest that future work in this area should include qualitative research to assess type of care or medication sought, where services were accessed, and reasons for accessing care in Mexico. Additionally, understanding how complementary and alternative medicine (CAM) use in this population may be related to HRQL and other health outcomes would be important given the potential for certain types of herbal therapies to interfere with antiretroviral efficacy and uptake (Jernewall et al., 2005), and that use of CAM may be associated with HIV care utilization behavior (Turner et al., 2000). CAM use among binational populations living with HIV is an understudied area and merits further research.

No consistent pattern of predictors of HRQL emerged across the four domains; however, some of our findings were consistent across HRQL studies. For example, older age, female gender, lower educational attainment, not being married/no partner, and not living in one's own home have been previously related to lower HRQL (Bajunirwe et al., 2009; Mier et al., 2008; Protopopescu et al., 2007; Rao et al., 2007). Similarly, Protopopescu and colleagues (2007) found that higher educational attainment and comfortable housing conditions were associated with better mental and physical HRQL. Among existing studies with Latino populations living with HIV, Rao et al. (2007) found that men had better HRQL than women, which was consistent with our study's findings. Rao et al.'s (2007) study also found that participants who were Spanish speakers, who had lower CD4+ T cell counts and who lived with others had better HRQL indicators.

Age and gender were not independent predictors of Physical Functioning and Pain in our study. In a study of 317 HIV-infected persons in San Francisco, Aouizerat and colleagues (2010) also found no gender or age differences in predictors of pain. Across studies, the variations in findings are likely influenced by issues such as differences in how the constructs were measured, general illness, or level of well-being of a given study population, and factors that may not be measured but that influence how the individual feels about her/his health.

Limitations

There are important limitations in the current study, most notably the cross-sectional nature of the data. This limits our understanding of causality or directionality of influence on HRQL outcomes. For example, we are unable to determine whether low Emotional Well-Being predicted utilization of health services or whether persons who accessed traditional medications in Mexico had lower HRQL prior to going to Mexico to access this care.

Additionally, we lacked the ability to discern more detailed inference of stable/unstable housing due to limited response options; for example, we do not know if persons who reported not living in their own home/apartment lived with family or friends in a stable arrangement. In this case, we may have inadvertently overestimated the number of individuals with unstable housing.

A further limitation in our study was the attempt to oversimplify a complex health condition and a dynamic environment of care access and delivery in the U.S.-Mexico border region. There are many other factors that may influence health care behavior that we did not examine. For instance, loss of employment may have influenced binational care seeking and this should be explored further in future studies. As well, familiarity with life in Mexico and the United States may not be associated with improved health care access for persons who are undocumented in the United States or for HIV-infected persons who are deported. To this effect, Brouwer and colleagues (2009) found that injection drug users in Mexico who had been deported from the United States were less likely to have received treatment for drug abuse, recent medical care, or HIV testing than persons who had not been deported.

It is likely that the limited number of indicators available for Physical Functioning and Pain proved insufficient to gauge such complex constructs. As well, greater depth in measurement of Emotional Well-Being would include an assessment of symptoms of depression among study participants, as measured in a recent pain study by Aouizerat and colleagues (2010), who found that increased pain was associated with lower immune status (CD4+ T cell count), race, and sleep disturbance. Improved measures of clinical health indicators in this population will lead to better understanding of the whole health of patients living with HIV in the U.S.-Mexico border region, as persons living with HIV have poorer HRQL when compared with the general population, and the degree of illness and co-morbid conditions have been shown to impact quality of life among HIV-infected patients (Rajagopalan, Laitinen, & Dietz, 2008).

Conclusions and Future Directions

Because HIV care providers in the border region serve a large number of binational Latino patients with familial and socio-economic ties in Mexico (Zúñiga, Blanco, Martinez, Strathdee, & Gifford, 2007; Zúñiga et al., 2008), it can be anticipated that U.S. Latino patients will continue to interact with health care services on both sides of the border. From a methodological standpoint, our study underscored the need for improved conceptualization and measurement of binational care seeking behavior among U.S.-Mexico border residents. Researchers working in the field of border health have made important contributions to understanding the health of populations living in the border region; however, the scope of research with binational populations tends to be largely focused on the United States. The potential for a health care continuum in Mexico and the United States among border residents is infrequently contextualized with the nature and duration of cross-border activity. As such, border health-seeking behavior has been largely focused on purchase and importation of prescription drugs from Mexico (de Guzman et al., 2007). A notable exception to earlier research was work conducted by Bastida, Brown, and Pagán (2008) who contextualized disparities among U.S. border residents by considering the changing environment of health care access and delivery in the U.S.-Mexico border region. Future research that addresses the dynamic nature of binational residency and mobility will strengthen our understanding of health care consumer choices as a critical piece of understanding health care utilization and outcomes, including HRQL.

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References

- Aidala A, Lee G, Abramson D, Messeri P, Siegler A. Housing need, housing assistance, and connection to medical care. *AIDS & Behavior*. 2007; 11(6 Suppl 2):S101–S115.10.1007/s10461-007-9276-x
- Aouizerat BE, Miaskowski CA, Gay C, Portillo CJ, Coggins T, Davis H, Lee KA. Risk factors and symptoms associated with pain in HIV-infected adults. *Journal of the Association of Nurses in AIDS Care*. 2010; 21:125–133.10.1016/j.jana.2009.10.003 [PubMed: 20116299]
- Bajunirwe F, Tisch DJ, King CH, Arts EJ, Debanne SM, Sethi AK. Quality of life and social support among patients receiving antiretroviral therapy in Western Uganda. *AIDS Care*. 2009; 21:271–279.10.1080/09540120802241863 [PubMed: 19280404]
- Bastida E, Brown S, Pagán JA. Persistent disparities in the use of health care along the U.S.-Mexico border: An ecological perspective. *American Journal of Public Health*. 2008; 98:1987–1995.10.2105/AJPH.2007.114447 [PubMed: 18799782]
- Brouwer CK, Lozada R, Cornelius WA, Cruz MF, Magis-Rodriguez, Firestone Cruz MF, Strathdee SA. Deportation along the U.S.-Mexico border: Its relation to drug use Patterns and accessing care. *Journal of Immigration Minority Health*. 2009; 11:1–6.10.1007/s10903-008-9119-5
- Brouwer KC, Strathdee SA, Magis-Rodríguez C, Bravo-García E, Gayet C, Patterson TL, Hogg RS. Estimated numbers of men and women infected with HIV/AIDS in Tijuana, Mexico. *Journal of Urban Health: Bulletin of the New York Academy of Medicine*. 2006; 83:299–307.10.1007/s11524-005-9027-0 [PubMed: 16736378]
- Center for Applied Social Research. A description of demographics, lifestyles and culture, risk factors, quality of life, and barriers reported by HIV positive clients living in the US-Mexico border region. Norman, OK: University of Oklahoma; 2005. Retrieved from: http://casr.ou.edu/pubs/HIV_AIDS_Along_The_US-Mexico_Border.pdf
- County of San Diego Health and Human Services Agency. HIV/AIDS epidemiology report 2009. 2009. Retrieved from http://www.sdcountry.ca.gov/hhsa/programs/phs/documents/HAEU_AnnualReport2009.p
- Crystal S, Fleishman J, Hays RD, Bozzette SA, Shapiro MF. Physical and role functioning among persons with HIV: Results from a nationally representative survey. *Medical Care*. 2000; 38:1210–1223. [PubMed: 11186300]
- de Guzman GC, Khaleghi M, Riffenberg RH, Clark RF. A survey of the use of foreign-purchased medications in a border community emergency department patient population. *Journal of Emergency Medicine*. 2007; 33(2):213–21. [PubMed: 17692779]
- Hsiao A, Wong MD, Goldstein MS, Yu HJ, Andersen RM, Brown ER, Wenger NS. Variation in complementary and alternative medicine (CAM) use across racial/ethnic groups and development of ethnic-specific measures of CAM use. *Journal of Alternative and Complementary Medicine*. 2006; 12(3):281–290.

- Íñiguez-Stevens E, Brouwer KC, Hogg RS, Patterson TL, Lozada R, Magis-Rodriguez C, Strathdee SA. Estimaciones de prevalencia del VIH por género y grupo de riesgo en Tijuana, México: 2006. *Gaceta Médica de México*. 2009; 145:189–195.
- Jernewall N, Zea MC, Reisen CA, Poppen PJ. Complementary and alternative medicine and adherence to care among HIV-positive Latino gay and bisexual men. *AIDS Care*. 2005; 17(5):601–609.10.1080/09540120512331314295 [PubMed: 16036246]
- Lopez RA. Use of alternative folk medicine by Mexican American women. *Journal of Immigrant Health*. 2005; 7(1):23–31.10.1007/s10903-005-1387-8 [PubMed: 15744474]
- Mier N, Ory MG, Zhan D, Conkling M, Sharkey JR, Burdine JN. Health-related quality of life among Mexican Americans living in colonias at the Texas-Mexico border. *Social Science & Medicine*. 2008; 66:1760–1771. [PubMed: 18261832]
- Pan American Health Organization. Health in the Americas. Volume II-countries. 2007. Retrieved from, <http://www.paho.org/HIA/archivosvol2/paisesing/United%20States%20Mexico%20Border%20Area%20English.pdf>
- Protopopescu C, Marcellin F, Spire B, Préau M, Verdon R, Peyramond D, Carrieri MP. Health-related quality of life in HIV-1-infected patients on HAART: A five-years longitudinal analysis accounting for dropout in the APROCO-COPILOTE cohort (ANRS CO-8). *Quality of Life Research*. 2007; 16:577–591. [PubMed: 17268929]
- Rand Health. HIV patient-assessed report of status and experience (HIV-PARSE). 2007. Accessed from, http://rand.org/health/surveys_tools/hivparse/index.html
- Rao D, Hahne A, Cella D, Hernandez L. The health related quality of life outcomes of English and Spanish speaking persons living with HIV/AIDS from the continental United States and Puerto Rico. *AIDS Patient Care and STDs*. 2007; 21:339–346. [PubMed: 17518526]
- Rajagopalan R, Laitinen D, Dietz B. Impact of lipoatrophy on quality of life in HIV patients receiving anti-retroviral therapy. *AIDS Care*. 2008; 20:1197–1201.10.1080/09540120801926993 [PubMed: 18608076]
- Rivera JO, Gonzalez-Stuart A, Ortiz M, Rodriguez JC, Anaya JP, Meza A. Herbal product use in non-HIV and HIV-positive Hispanic patients. *Journal of the National Medical Association*. 2005; 97(12):1686–1691. [PubMed: 16396061]
- San Diego Association of Governments and California Department of Transportation District 11. Economic impacts of wait times at the San Diego–Baja California border final report, January 19, 2006 executive summary. 2006. Retrieved from http://www.sandag.org/programs/borders/binational/projects/2006_border_wait_impacts_execsum.pdf
- Turner BJ, Cunningham WE, Duan N, Andersen RM, Shapiro MF, Bozzette SA, Zierler S. Delayed medical care after diagnosis in a U.S. probability sample of persons infected with the human immunodeficiency virus. *Archives of Internal Medicine*. 2000; 160:2614–2622. [PubMed: 10999975]
- Van Servellen G, Chang B, Lombardi E. Acculturation, socioeconomic vulnerability, and quality of life in Spanish-speaking and bilingual Latino HIV-infected men and women. *Western Journal of Nursing Research*. 2002; 24:246–263. [PubMed: 11911378]
- Wallace SP, Mendez-Luck CA, Castañeda X. Heading south: Why Mexican immigrants in California seek health services in Mexico. *Medical Care*. 2009; 47:662–669. [PubMed: 19434002]
- Zúñiga ML, Blanco E, Martínez P, Strathdee SA, Gifford AL. Perceptions of barriers and facilitators to clinical trials participation in HIV-positive Latinas: A pilot study. *Journal of Women's Health*. 2007; 16:1322–1330.
- Zúñiga ML, Brennan J, Scolari R, Strathdee SA. Barriers to HIV care in the context of cross-border health care utilization among HIV-positive persons living in the California/Baja California US-Mexico border region. *Journal of Immigrant and Minority Health*. 2008; 10:219–227. [PubMed: 17653865]

Table 1**Participant Demographic and Health Care Characteristics**

Characteristic	Total N = 239
Age in years	
Mean (<i>SD</i>)	36.9 (9.80)
Range	19–73
Gender	
Male/transgender	84%
Female	16%
Sexual Orientation	
Heterosexual	37%
Bisexual	13%
Gay/lesbian	50%
Education	
< high school	47%
≥ high school	53%
Language Preference	
Spanish only/mostly Spanish, some English	81%
Spanish and English equally	14%
English only/mostly English, some Spanish	5%
Where raised before age 16 years	
Mexico only	84%
Mostly Mexico, some in United States	5%
Equally in Mexico and United States	2%
Mostly in the United States, some in Mexico	3%
United States only	7%
Stayed at least one month in Mexico in last year	
Yes	65%
No	35%
Five or more border crossings in last year	
Yes	73%
No	27%
Marital/Partner status	
Not married/no partner	69%
Married/co-habiting	31%
Stable Housing	
Yes	35%
No	65%
Source of income is from wages or salary	
Yes	39%
No	61%
Time since HIV diagnosis, years to date of enrollment	

Characteristic	Total N = 239
Mean (SD)	2.67 (3.89)
Range	0 – 19
AIDS Diagnosis (CDC defined, < 200 CD4+ T cells/mm ³)	
Yes	29%
No (or status unknown)	71%
Primary source of health care	
Outpatient clinic or doctor	51%
Emergency room	4%
None	40%
Unknown	5%
Medical insurance in United States	
Yes	19%
No	81%
Medical insurance in Mexico	
Yes	23%
No	77%
Received non-HIV medical care in the United States	
Yes	30%
No	70%
Received non-HIV medical care in Mexico	
Yes	47%
No	54%
Received HIV medical care in Mexico	
Yes	35%
No	65%
Received prescription medication in Mexico	
Yes	55%
No	45%
Received traditional medication or herbs in Mexico	
Yes	18%
No	82%

Note: SD = standard deviation

Table 2

Univariate Associations for Participant HRQL Domains (n = 239)

Variable	Emotional Well-Being			Cognitive Functioning			Physical Functioning			Pain		
	N	Mean (SD)	p value	N	Mean (SD)	p value	N	Mean (SD)	p value	N	Mean (SD)	p value
Gender												
Female	35	46.5 (23.6)	.001	35	57.5 (26.7)	.002	34	58.0 (31.1)	.064	36	56.0 (28.0)	.083
Male	191	60.0 (22.6)		193	71.6 (24.4)		191	68.7 (30.9)		194	65.1 (29.0)	
Education												
< high school	100	53.0 (24.3)	.004	101	66.4 (28.2)	.083	101	58.9 (34.2)	< .001	102	58.8 (32.1)	.016
≥ high school	120	62.1 (21.6)		121	72.3 (22.7)		119	74.3 (26.9)		122	68.2 (25.8)	
Marital/partner status												
Not married/no partner	157	55.2 (23.1)	.008	156	67.4 (25.4)	.080	153	65.1 (30.2)	.160	157	62.9 (29.4)	.554
Married/co-habiting	69	64.1 (22.5)		72	73.8 (24.5)		72	71.3 (32.8)		73	65.3 (28.2)	
Raised in United States only												
Yes	15	40.0 (28.0)	.002	15	53.9 (30.2)	.013	14	60.1 (39.4)	.385	15	53.7 (35.5)	.168
No	211	59.2 (22.4)		213	70.5 (24.6)		211	67.6 (30.6)		215	64.3 (28.4)	
Stable housing												
Yes	81	62.2 (22.6)	.036	82	75.8 (23.5)	.004	82	73.7 (28.1)	.016	82	69.2 (26.7)	.030
No	145	55.5 (23.3)		146	65.8 (25.6)		143	63.3 (32.2)		148	60.6 (29.8)	
AIDS diagnosed (CDC defined)												
Yes	63	53.2 (21.6)	.058	66	58.8 (25.4)	< .001	64	47.3 (32.8)	< .001	66	52.4 (29.8)	< .001
No	163	59.7 (23.6)		162	73.8 (23.9)		161	75.0 (26.7)		164	68.2 (27.4)	
Five or more round-trip border crossings in previous year (United States to Mexico and back)												
Yes	166	59.6 (22.7)	.069	170	70.4 (25.1)	.314	168	68.6 (29.7)	.215	171	65.2 (28.5)	.178
No	60	53.2 (24.1)		58	66.6 (25.7)		57	62.7 (35.1)		59	59.3 (30.2)	
Stayed at least one month in Mexico												
Yes	146	61.4 (22.4)	.002	150	72.4 (23.8)	.015	150	68.3 (30.9)	.413	151	66.4 (28.3)	.046
No	80	51.5 (23.4)		78	63.8 (27.1)		75	64.7 (31.7)		79	58.4 (29.7)	
Non-HIV medical care in Mexico												
Yes	105	58.9 (23.3)	.579	108	70.0 (26.1)	.815	106	64.1 (31.3)	.160	109	60.1 (28.1)	.087
No	120	57.1 (23.3)		119	69.2 (24.5)		118	70.0 (30.9)		120	66.7 (29.5)	

Variable	Emotional Well-Being			Cognitive Functioning			Physical Functioning			Pain		
	N	Mean (SD)	p value	N	Mean (SD)	p value	N	Mean (SD)	p value	N	Mean (SD)	p value
Non-HIV medical care in United States												
Yes	64	49.4 (25.1)	< .001	64	62.1 (25.8)	.006	63	59.9 (32.8)	.028	65	54.9 (30.5)	.004
No	161	61.2 (21.7)		163	72.4 (24.6)		161	70.1 (30.1)		164	67.2 (27.7)	
Received prescription medication in Mexico												
Yes	125	60.5 (22.7)	.060	128	71.6 (25.2)	.142	125	65.9 (31.1)	.522	129	63.3 (28.7)	.854
No	101	54.7 (23.6)		100	66.7 (25.2)		100	68.6 (31.2)		101	64.0 (29.4)	
Received traditional medication or herbs in Mexico												
Yes	41	53.3 (23.2)	.164	43	63.0 (23.9)	.063	41	57.6 (30.1)	.030	43	55.9 (28.3)	.051
No	185	58.9 (23.2)		185	70.9 (25.4)		184	69.2 (31.0)		187	65.4 (28.9)	
Wages or salary												
Yes	92	60.5 (23.5)	.171	92	76.6 (23.0)	< .001	91	78.2 (24.3)	< .001	93	72.3 (25.1)	< .001
No	134	56.2 (22.9)		136	64.6 (25.6)		134	59.5 (33.0)		137	57.8 (30.0)	
Health insurance in Mexico												
Yes	53	63.5 (19.6)	.044	55	74.9 (22.9)	.065	55	69.1 (28.0)	.584	55	69.7 (26.6)	.074
No	173	56.2 (24.0)		173	67.7 (25.8)		170	66.4 (32.1)		175	61.7 (29.5)	

Note: CDC = Centers for Disease Control and Prevention; SD = standard deviation

Table 3Multivariate Model of Factors Independently Associated with Quality of Life Indicators[†]

	Estimated Coefficient	Standard Error	p-value
Emotional Well-Being (adjusted R ² = 0.18)			
Female	-12.14	4.00	.003
Age	-.33	0.15	.031
High school education	8.44	2.90	.004
Raised in United States only	-14.10	5.98	.019
Married/co-habiting	8.02	3.11	.011
Stable housing	7.67	2.99	.011
Received non-HIV medical care in United States	-8.46	3.27	.010
Cognitive Functioning (adjusted R ² = 0.18)			
Female	-14.69	4.23	<.001
Age	-.32	0.16	.044
AIDS diagnosis	-13.59	3.39	<.001
Stable housing	10.96	3.19	<.001
Spent at least one month in Mexico in last year	8.02	3.23	.014
Physical Functioning (adjusted R ² = 0.27)			
AIDS diagnosis	-25.38	4.09	<.001
Wages or salary	13.15	3.77	<.001
High school education	10.36	3.70	.006
Received traditional herbs or medications in Mexico	-15.09	4.72	.002
Pain (adjusted R ² = 0.19)			
AIDS diagnosis	-15.59	3.95	<.001
Wages or salary	9.57	3.70	.010
Stable housing	8.18	3.70	.028
Spent at least one month in Mexico in last year	9.64	4.17	.022
Received non-HIV medical care in United States	-9.83	4.19	.020
Received non-HIV medical care in Mexico	-13.29	3.78	<.001

	Estimated Coefficient	Standard Error	p-value
Received traditional herbs or medications in Mexico	−10.38	4.60	.025

[†] Predictors significant at the $p \leq .10$ level in univariate analyses were entered into the model