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HIV stigma and its associations with longitudinal health outcomes among persons living with HIV with a history of unhealthy alcohol use

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Abstract

This study examined the demographic and clinical correlates of HIV stigma and evaluated how HIV stigma was associated with physical and mental health outcomes one year later in a primary-care based cohort of persons living with HIV (PLHIV; N=584). HIV stigma was measured using a modified Berger HIV stigma scale, which includes four subscales: 1) personalized stigma; 2) disclosure concerns; 3) negative self-image; and 4) concerns around public attitudes towards PLHIV. Physical and mental health were assessed using the 12-item short form survey (SF-12). Compared to whites, African Americans were more likely to have higher personalized stigma scores (adjusted prevalence ratio [aPR] 1.54 [95% confidence interval 1.10–2.15]), disclosure concerns (aPR 1.40 [1.03–1.92]), and concerns with public attitudes about PLHIV (aPR 1.61 [1.11–2.34]). Hispanic/Latinx participants were more likely to have concerns around public

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attitudes towards PLHIV (aPR 1.50 [1.11–2.02]) than whites. Compared to men, women were more likely to have higher negative self-image scores (aPR 1.50 [1.08–2.08]). Higher stigma scores were associated with poorer subsequent self-reported physical and mental health functional status. Our findings highlight the substantial need for addressing HIV stigma, particularly among minority subgroups.

RESUMEN

El objetivo de este estudio era examinar la correlación del estigma del VIH con aspectos demográficos y clínicos. Se buscaba evaluar la asociación del estigma del VIH con los efectos de la salud física y mental luego de un año en un cohorte de personas viviendo con VIH (PVV; N=584) provenientes de una clínica de servicios primarios. El estigma del VIH se midió utilizando la escala modificada de estigma del VIH de Berger que incluye cuatro sub-escalas: 1) estigma personalizado; 2) preocupaciones por revelación de diagnóstico; 3) auto-imagen negativa; y 4) preocupaciones acerca de actitudes hacia PVV. La salud física y mental fue evaluada utilizando una encuesta corta de 12 ítems. En comparación con las personas blancas, entre las personas Afroamericanas había más probabilidad de obtener una mayor puntuación en las escalas de estigma personalizado (razón de prevalencia ajustada [aRP] 1.54 [95% intervalo de confianza 1.10–2.15]), preocupaciones por revelación de diagnóstico (aRP 1.40 [1.03–1.92]), y preocupacionespor actitudes negativas hacia PVV (aRP 1.61 [1.11–2.34]). Participantes Hispanos/Latinos tenían más probabilidad de tener preocupaciones por las actitudes negativas hacia PVV (aRP 1.50 [1.11–2.02]) en comparación con personas blancas. En comparación con los hombres, las mujeres tenían mayor probabilidad de tener un resultado más alto en la escala de auto-imagen negativa (aRP 1.50 [1.08–2.08]). Resultados mayores estuvieron asociados a estatus más pobres de funcionalidad de salud física y mental. Nuestros resultados destacan la necesidad substancial de atender asuntos de estigma por el VIH, particularmente en grupos minoritarios.

Keywords

Persons living with HIV; HIV stigma; Fast-Track Cities; Health outcomes; SF-12

INTRODUCTION

Despite the advent of highly effective interventions such as pre-exposure prophylaxis and antiretroviral treatment as prevention, HIV stigma continues to pose a substantial barrier to ending the HIV epidemic in the United States (US) and elsewhere. Stigma, defined as negative judgments based on an attribute (e.g., HIV status, alcohol and drug use, race, ethnicity) that links individuals to undesirable stereotypes, is an important social determinant of health (1,2). HIV stigma is a well-recognized barrier to effective HIV prevention and treatment, as well as a contributor to poor health outcomes among persons living with HIV (PLHIV). Previous studies have found that HIV stigma is significantly associated with delays in HIV testing (3,4) and, among PLHIV, poor medication adherence and retention in care (5,6) and lower physical and mental health (7). In a meta-analysis, Rueda et al. (7) found that PLHIV who experienced HIV stigma were 32% less likely to adhere to antiretroviral treatment and 21% less likely to use health and social services. HIV stigma has also been associated with transmission risk behaviors, including substance use and condomless sex (8,9). In a qualitative study of men who have sex with men (MSM) living with HIV, participants reported using alcohol, drugs, and sex as means for coping with feelings of stigma and isolation (9).

Stigma occurs as a result of several intersecting social processes, including labeling, stereotyping, separation, status loss, and discrimination, in the context of power differences (2). The stigmatization process produces unequal outcomes, including differences in influence and esteem, social and occupational opportunities, access to civil rights, and health (1). HIV stigma is a construct that explains negative social attitudes toward PLHIV as well as internalization of negative feelings and beliefs experienced by PLHIV. HIV stigma can co-occur with other forms of stigma based on race, ethnicity, substance use, and sexual identity, creating an intersection of multiple stigmas and exacerbating the experience of marginalization (10).

There is growing recognition that ending the HIV epidemic will require effective strategies to address stigma (11). In 2014, the Paris Declaration on Fast-Track Cities was signed with the goal of ending the AIDS epidemic and eliminating HIV stigma (12). Coordinated efforts in Fast-Track Cities, such as San Francisco, California, have helped reduce new infection rates and morbidity in PLHIV (13). Between 2012 and 2018, the overall number of new infections in San Francisco decreased dramatically, from 457 to 197. Among those diagnosed in 2018, 94% were aware of their status, 91% were linked to care within one month, and 78% achieved virologic suppression within the first year (13). However, these successes were not consistent across all demographic subgroups. While incident diagnoses decreased overall, new diagnoses among African American and Latinx individuals increased, and rates of virologic suppression were lowest among African Americans, women, and transgender individuals (13). HIV stigma may be an important factor driving these disparities.

Although HIV stigma has been well-characterized, especially in the global literature (6,7), to our knowledge, recent data on PLHIV from Fast-Track Cities, such as San Francisco, are limited. Existing studies from these settings have generally used broad indicators of stigma (14) or have focused specifically on HIV outcomes, such as virologic suppression and retention in care (15). Little is known about how HIV stigma may continue to affect overall longitudinal health outcomes among PLHIV despite extensive efforts to improve healthcare access and HIV treatment services in Fast-Track Cities (13). Unhealthy alcohol use, which includes behaviors that range from drinking above national recommended limits to meeting diagnostic criteria for alcohol use disorders (16,17), is prevalent among PLHIV (18) and presents an overlapping vulnerability for this population. For example, previous analysis from our group and others have found that even among PLHIV engaged in care, alcohol use was an independent predictor of viremia (19,20). Thus, it is particularly important to examine the effects of stigma among PLHIV who use alcohol and other substances.

Therefore, the objective of this study was to examine HIV stigma and its demographic and clinical correlates in a San Francisco, California, primary care-based cohort of PLHIV enrolled in an intervention study for unhealthy alcohol use. We specifically evaluated differences in self-reported HIV stigma across subgroups and examined how HIV stigma was associated with self-reported physical and mental health status one year later. We hypothesized that racial/ethnic and gender minorities would report higher stigma scores and that HIV stigma would be negatively associated with health outcomes despite having well-managed HIV and access to care.

METHODS

Study Setting and Participants

This study was designed as a secondary analysis of data collected for the Health and Motivation study, a randomized clinical trial of behavioral interventions aimed at reducing unhealthy alcohol use in PLHIV (ClinicalTrials.gov Identifier: NCT01671501). Details of the parent study have been described previously (21,22). Briefly, the study was conducted in the Kaiser Permanente Northern California (KPNC) San Francisco Medical Center. KPNC is a not-for-profit, integrated healthcare delivery system with over 4 million members. This system provides comprehensive outpatient and inpatient care, including addiction treatment, psychiatry, pharmacy, and laboratory services.

Study participants were age 18 or older, HIV-positive, received care at the medical center's HIV primary care clinic, and self-reported at least one episode of unhealthy alcohol use in the prior year. Unhealthy alcohol use was defined in the parent study as one or more days of consuming ≥3 drinks in a day for women and ≥4 drinks in a day for men (21). The parent trial enrolled 614 participants between April 2013 and May 2015. Participants were randomized to either motivational interviewing, electronic feedback on alcohol use risks, or usual care. Follow-up telephone interviews were conducted at 6, 12, and 24 months. The parent study found an overall decrease in unhealthy alcohol use over time but there were no statistically significant differences in unhealthy alcohol use across study arms at 12 months (21). The present analysis used data collected at the 12 and 24-month follow-up. All participants provided informed consent and the study protocol was approved by institutional review boards at KPNC and the University of California, San Francisco.

Measures

HIV stigma was assessed at the 12-month follow-up telephone interview using an abbreviated 10-item Berger HIV stigma scale (23,24). We used four subscales from the measure: 1) personalized stigma, 2) disclosure concerns, 3) negative self-image, and 4) concerns around public attitudes towards PLHIV. Personalized stigma (scores range 3–12) reflects negative consequences of having HIV (e.g., "I have been hurt by how people reacted to learning I have HIV"). Disclosure concerns (scores range 2–8) are related to worries around disclosing HIV status (e.g., "I worry that people who know I have HIV will tell others"). Negative self-image (scores range 3–12) relates to feeling lesser than others because of being HIV-positive (e.g., "I feel that I am not as good a person as others because I have HIV"). Concerns regarding public attitudes towards PLHIV (scores range 2–8) capture anxieties around discrimination (e.g., "Most people think that a person with HIV is disgusting"). HIV stigma scores did not statistically differ across the three intervention arms of the parent study (p-values > 0.05) and thus intervention arm was not included as a covariate.

Physical and mental health status at the 24-month follow-up were assessed using the 12-item short form (SF-12) health survey. The instrument has been previously validated in PLHIV (25,26). Responses to the SF-12 were weighted to calculate physical (PCS) and mental health component summary (MCS) scores (27). Norm-based PCS and MCS scores were computed using recommended algorithms (28). PCS and MCS scores range from 0–100, with higher scores indicating better physical or mental health. Standardized scores have a mean of 50 and a standard deviation of 10 in the general US population (28).

At the 12-month follow-up interview, participants were asked about drug and alcohol use. Drug use in the last 30 days included stimulants (cocaine, amphetamines, misuse of prescription stimulants), opioids (heroin, misuse of prescription opioids), cannabis, and other substances (hallucinogens, MDMA). Alcohol use was measured using the Alcohol Use Identification Test (AUDIT), a validated instrument used to screen for problematic alcohol use in the prior 12 months. AUDIT scores range from 0–40 with scores of 8 or greater indicating hazardous use (29).

Depression and anxiety at the 12-month follow-up were measured using the Patient Health Questionnaire-9 (PHQ-9) and the General Anxiety Disorder 7-item scale (GAD-7), respectively. The PHQ-9 and GAD-7 are validated diagnostic instruments that measure the frequency of symptoms in the past two weeks. Responses to both scales were summed and dichotomized with scores of 10 or greater indicating clinically significant depression or anxiety (30,31).

Viral load closest to the 12-month follow-up interview and years since HIV diagnosis were abstracted from the KPNC HIV registry. The registry maintains up-to-date lists of all HIV patients, HIV transmission risk factors, dates of known HIV infection, and complete HIV-related lab and pharmacy data. The lower limit of detection of HIV RNA changed during the study period. Thus, for analyses, we defined HIV virologic suppression as less than 75 copies/mL (i.e., the least sensitive cutoff during the study period). Healthcare utilization was measured by the number of primary care and psychiatry visits, including primary care and psychiatry nurse visits and group mental health visits, documented in the electronic health record between the 12-and 24-month follow-up.

Analysis

Participant characteristics at the time of the 12-month interview (demographics, alcohol and drug use, anxiety and depression symptoms, virologic suppression) were summarized using descriptive statistics. Median scores for each stigma subscale (i.e., personalized stigma, disclosure concerns, negative self-image, public attitudes) were calculated. To describe perceptions or experiences of HIV stigma in our cohort, we calculated the frequencies of participants who agreed or strongly agreed to each question on the Berger scale. To evaluate the correlates of each stigma subscale, we estimated prevalence ratios (PR) using Poisson regression models fitted with robust variance estimators. For ease of interpretation, HIV stigma scores were analyzed as binary variables dichotomized at the sample median. Participants with stigma scores higher than the sample median were defined as having higher stigma. Covariates were selected *a priori*. All variables in the unadjusted models were used in the final adjusted model.

We then assessed how HIV stigma measured at 12 months was associated with physical and mental health status at the 24-month follow-up. Overall mean PCS and MCS scores were calculated and summarized. Mean PCS and MCS scores across the four stigma subscales and their associated 95% confidence intervals were then estimated using linear regression models. Mean scores were adjusted for relevant covariates, including age, gender, depression, hazardous drinking (AUDIT ≥ 8), drug use, anxiety, years since HIV diagnosis, and healthcare utilization. To evaluate if the associations between HIV stigma and health outcomes continue to persist even among individuals whose HIV was optimally managed, we repeated our analysis limited to only participants who had achieved virologic suppression. In all models, transgender patients were categorized based on their gender identity as the size of this subgroup was not sufficient to evaluate separately. Analyses were completed using Stata 14 (College Station, TX).

RESULTS

A total of 584 participants completed the 12-month follow-up clinical trial interview and were included in this analysis. Participant demographic and clinical characteristics are summarized in Table 1. At the time of the 12-month interview, median age was 50.5 years (interquartile range [IQR] 43–58). Most participants were white (63%), male (97%), MSM (95%), college educated (74%), employed (73%), and had stable housing (98%). Three (<1%) participants were transgender, of whom two were transwomen and one was a transman. Twenty-five percent had AUDIT scores indicative of hazardous drinking, 13% reported clinically significant depressive symptoms, and 12% reported clinically significant anxiety. Median time since HIV diagnosis was 15 years (IQR 7–23). Approximately 78% of all participants had at least one primary care or psychiatry visit during the study period and 94% were virologically suppressed.

Responses to the Berger HIV stigma scale are summarized in Table 2. Nearly two-thirds (74%) of participants noted that they were very careful about who they disclosed their HIV status to; 35% were hurt by how others reacted to learning their HIV status; 28% felt that most PLHIV are rejected when others find out about their HIV status; and 23% agreed or strongly agreed that most people think that a person with HIV is disgusting. In adjusted analyses (Table 3), African Americans were more likely to report higher personalized stigma scores (aPR 1.54 [95% confidence interval 1.10–2.15]), disclosure concerns (aPR 1.40 [1.03–1.92]), and concerns with public attitudes about PLHIV (aPR 1.61 [1.11–2.34]) than whites. Hispanic/Latinx participants were also more likely to have concerns around public attitudes towards PLHIV (aPR 1.50 [1.112.02]) than whites. Compared to men, women were more likely to have higher negative self-image scores (aPR 1.50 [1.08–2.08]). Anxiety was independently associated with higher scores across all four stigma subscales. Persons with clinically significant anxiety were 1.88 [1.36–2.59]) times as likely to have higher personalized stigma scores, 1.57 [1.18–2.10] times as likely to score higher on disclosure concerns, 1.51 [1.18–1.94] times as likely to have higher negative self-image scores, and 1.89 [1.36–2.63] times as likely to have greater concerns around public attitudes about PLHIV as those with without clinically meaningful anxiety symptoms.

Overall mean PCS and MCS scores at the 24-month follow-up were 49.13 (SD=9.80) and 45.66 (SD=10.46), respectively. In adjusted analyses (Figure 1), mean PCS scores were lower among participants with higher negative self-image scores (48.15 [46.98–49.32] vs 50.08 [48.99–51.17]; p=0.02). Adjusted mean MCS scores were lower among those who had higher personalized stigma scores (43.33 [41.83–44.84] vs 46.77 [45.76–47.79]; p<0.001) and public attitudes scores 44.37 [42.82–45.91] vs 46.26 [45.24–47.27]; p=0.05). When we limited our analysis to only those who were virologically suppressed, differences in adjusted mean PCS and MCS scores remained similar (data not shown).

DISCUSSION

This study expands existing literature on HIV stigma by examining its prevalence, correlates, and longitudinal health effects among PLHIV in a Fast-Track City in the U.S. While San Francisco has made dramatic progress towards achieving the primary goals of the Fast-Track Cities initiative (12,13), we found that HIV stigma remained prevalent among PLHIV with a history of unhealthy drinking. HIV stigma had an adverse effect on physical and mental health despite access to care and optimal viral control. Our findings highlight the ongoing need for comprehensive interventions to address HIV stigma, particularly among persons at risk for experiencing multiple stigmas.

In our study, African Americans, Hispanic/Latinx, and women were more likely to report higher HIV stigma scores. The higher prevalence of HIV stigma in these groups are consistent with how PLHIV belonging to racial and gender minorities are more likely to experience discrimination and social exclusion based on racism, classism, and heterosexism (32,33). The co-occurrence of unhealthy drinking compounds the negative behavioral effects of stigma as both are independently associated with sexual risk taking (18,34,35). Previous studies have documented significant adverse associations between HIV stigma and alcohol use severity (36,37), perhaps reflecting how individuals use alcohol as a means of coping with stigma and marginalization (38,39). For example, in a study of PLHIV in Russia, alcohol dependence was significantly associated with greater HIV stigma scores (37). In another study, experiences of HIV-related discrimination were directly associated with increased stress and self-shame, which in turn resulted in worse alcohol use outcomes (36).

Clinically, HIV stigma is often left unaddressed despite its known adverse health effects in PLHIV (7). We found that even with high levels of engagement in care (as demonstrated by high levels of virologic suppression), PLHIV with higher negative self-image scores were at greater risk for subsequent poorer physical health. Differences were even more pronounced in mental health status, particularly among participants with higher personalized stigma scores. Our results corroborate previous research from other settings demonstrating that HIV stigma is associated with poor self-reported health outcomes (8,40,41). In a Canadian cohort of women living with HIV, Logie et al. (41) found that HIV stigma had direct effects on mental health quality of life outcomes and an indirect association with physical health-related quality of life. Others have suggested that HIV stigma can undermine the health of individuals by compromising their ability to adhere to treatment (7). However, when we limited our analysis to only individuals who were virologically suppressed, differences in adjusted mean PCS and MCS scores remained consistent. These findings suggest that HIV stigma may affect physical and mental health outcomes independent of treatment adherence. A study of unstably housed PLHIV in the US found similar results (8). While HIV stigma was independently associated with lower self-reported health status, it did not have a significant association with healthcare utilization or poor HIV treatment outcomes. To inform future efforts, further research is needed to better understand the mechanisms by which HIV stigma continues to affect health outcomes in PLHIV who are optimally engaged in care but have multiple intersecting identities.

Although our analysis measured HIV stigma at the individual level, stigma is a social process driven by differences between individuals and groups in social, economic, and political power (2). Intersectionality offers a framework for addressing HIV stigma by acknowledging its interdependence with other multiple co-occurring stigmas and the role of structural inequalities in driving health disparities among minority groups (32,42,43). Structural changes in policies and legislation around funding priorities, housing, employment, and education have been identified as potential avenues to mitigate the inequalities that fuel HIV stigma in marginalized subgroups (44). Individual and community-level interventions have also shown promising findings (45–47). Results from one study demonstrated the potential for using culturally-tailored messages delivered through mass media to reduce HIV stigma in African American youth (48). Incorporating these strategies as part of the Fast-Track Cities Initiative may help mitigate the negative health consquences of HIV stigma.

The strengths of our analysis include the use of longitudinal interview data along with clinical data from the electronic health record. However, the study also has limitations. Although we found differences in stigma by sex and race/ethnicity, we were limited by sample size to evaluate correlates of HIV stigma within these subgroups. Relatedly, because women and transgender individuals comprised a small proportion of our sample, differences in HIV stigma by gender warrant further investigation. We were also unable to examine how different forms of stigma (e.g., racial stigma, alcohol and drug use stigma) and structural factors (e.g., housing) might interact with HIV stigma in influencing health. Future research priorities should include efforts to identify social and structural factors that promote stigma and stigmatization. It is also important to acknowledge that participants had a history of at least one episode of unhealthy alcohol use in the prior year. However, problematic drinking in PLHIV is prevalent (18) so it is important to asses HIV stigma in this population. Lastly, this is an insured cohort of participants with largely well-controlled HIV disease. Although our sample may reflect the characteristics and experiences of PLHIV in Fast-Track Cities with access to care and resources, findings may not be generalizable to other populations, such as minorities where HIV and stigmas are more likely to be prevalent.

In summary, our findings build upon the existing literature by highlighting the ongoing need to prioritize HIV stigma reduction, including in locations identified in the U.S. Fast-Track Cities initiative. In our cohort of PLHIV, who were well-integrated into care and also residing in a Fast-Track City that has made dramatic improvements in HIV outcomes, HIV stigma remained prevalent. We found that although many had optimal viral control, HIV stigma was associated with lower physical and mental health. Fast-Track Cities such as San Francisco need to address HIV stigma alongside biomedical and sociobehavioral HIV prevention and treatment efforts, particularly among minority groups who are already disproportionately affected by the epidemic.

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REFERENCES

1. Hatzenbuehler ML, Phelan JC, Link BG. Stigma as a fundamental cause of population health inequalities. Am J Public Health. 2013 5;103(5):813–21. doi: 10.2105/AJPH.2012.301069 [PubMed: 23488505]
2. Link BG, Phelan JC. Conceptualizing Stigma. Ann Rev Sociol. 2001 8;27:363–385. doi 10.1146/annurev.soc.27.1.363
3. Golub SA, Gamarel KE. The impact of anticipated HIV stigma on delays in HIV testing behaviors: Findings from a community-based sample of men who have sex with men and transgender women in New York City. AIDS Patient Care STDS. 2013 11;27(11):621–7. [PubMed: 24138486]
4. Gamarel KE, Nelson KM, Stephenson R, Santiago Rivera OJ, Chiaramonte D, Miller RL, et al. Anticipated HIV stigma and delays in regular HIV testing behaviors among sexually-active young gay, bisexual, and other men who have sex with men and transgender women. AIDS Behav. 2018 2;22(2):522–30. doi: 10.1007/s10461-017-2005-1. [PubMed: 29214408]
5. Naar-King S, Bradford J, Coleman S, Green-Jones M, Cabral H, Tobias C. Retention in care of persons newly diagnosed with HIV: Outcomes of the Outreach Initiative. AIDS Patient Care STDS. 2007;21 Suppl 1(s1):S40–8. [PubMed: 17563289]
6. Katz IT, Ryu AE, Onuegbu AG, Psaros C, Weiser SD, Bangsberg DR, et al. Impact of HIV-related stigma on treatment adherence: Systematic review and meta-synthesis. J Int AIDS Soc. 2013 11 13;16(3 Suppl 2):18640. doi: 10.7448/IAS.16.3.18640. [PubMed: 24242258]
7. Rueda S, Mitra S, Chen S, Gogolishvili D, Globerman J, Chambers L, et al. Examining the associations between HIV-related stigma and health outcomes in people living with HIV/AIDS: A series of meta-analyses. BMJ open. 2016 7 13;6(7):e011453. doi: 10.1136/bmjopen-2016-011453.
8. Wolitski RJ, Pals SL, Kidder DP, Courtenay-Quirk C, Holtgrave DR. The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons living with HIV. AIDS Behav. 2009 12;13(6):1222–32. [PubMed: 18770023]
9. Edelman EJ, Cole CA, Richardson W, Boshnack N, Jenkins H, Rosenthal MS. Stigma, substance use and sexual risk behaviors among HIV-infected men who have sex with men: A qualitative study. Prev Med Rep. 2016 6;3:296–302. doi: 10.1016/j.pmedr.2016.03.012. [PubMed: 27556006]
10. Stuber J, Meyer I, Link B. Stigma, prejudice, discrimination and health. Soc Sci Med. 2008 8 1;67(3):351–357. doi: 10.1016/j.socscimed.2008.03.023 [PubMed: 18440687]
11. Grossman CI, Stangl AL. Editorial: Global action to reduce HIV stigma and discrimination. J Int AIDS Soc. 2013 11 13;16(3 Suppl 2):18881. doi: 10.7448/IAS.16.3.18881 [PubMed: 24242269]
12. International Association of Providers of AIDS Care [Internet]. Fast track Cities Available from: http://www.fast-trackcities.org/
13. San Francisco Department of Public Health. HIV epidemiology annual report 2018 [Internet]. 2019 Sep. Available from: https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/HIV-Epidemiology-Annual-Report-2018.pdf
14. Beltran S, Chen Y-H, Miller D, Ick T, Lin J, Packer T, et al. Will we get to zero HIV stigma in San Francisco? AIDS Behav. 2019 4 5;6(7):1–3.
15. Christopoulos KA, Neilands TB, Hartogensis W, Geng EH, Sauceda J, Mugavero MJ, et al. Internalized HIV stigma is associated with concurrent viremia and poor retention in a cohort of US patients in HIV care. J Acquir Immune Defic Syndr. 2019 10 1;82(2):116–23. [PubMed: 31513551]

16. Saitz R Clinical practice. Unhealthy alcohol use. N Engl J Med. 2005 2 10;352(6):596–607. [PubMed: 15703424]
17. Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, Davidson KW, et al. Screening and behavioral counseling interventions to reduce unhealthy alcohol use in adolescents and adults: US Preventive Services Task Force recommendation statement. JAMA. 2018 11 13;320(18):1899–909. [PubMed: 30422199]
18. Williams EC, Hahn JA, Saitz R, Bryant K, Lira MC, Samet JH. Alcohol use and human immunodeficiency virus (HIV) infection: Current knowledge, implications, and future directions. Alcohol Clin Exp Res. 2016 10 1;40(10):2056–72. doi: 10.1111/acer.13204. [PubMed: 27696523]
19. Williams EC, McGinnis KA, Bobb JF, Rubinsky AD, Lapham GT, Skanderson M, et al. Changes in alcohol use associated with changes in HIV disease severity over time: A national longitudinal study in the Veterans Aging Cohort. Drug Alcohol Depend. 2018 8 1;189:21–9. [PubMed: 29859388]
20. Satre DD, Sarovar V, Leyden W, Hare CB, Catz SL, Bryant KJ, et al. Changes in days of unhealthy alcohol use and antiretroviral therapy adherence, HIV RNA levels, and condomless sex: A secondary analysis of clinical trial data. AIDS Behav. 2019 11 26. doi: 10.1007/s10461-019-02742-y.
21. Satre DD, Leibowitz AS, Leyden W, Catz SL, Hare CB, Jang HJ, et al. Interventions to reduce unhealthy alcohol use among primary care patients with HIV: The Health and Motivation randomized clinical trial. J Gen Intern Med. 2019 6 11; 34: 2054–2061. doi: 10.1007/s11606-019-05065-9. [PubMed: 31187344]
22. Silverberg MJ, Leyden WA, Leibowitz A, Hare CB, Jang HJ, Sterling S, et al. Factors associated with hazardous alcohol use and motivation to reduce drinking among HIV primary care patients: Baseline findings from the Health & Motivation study. Addict Behav. 2018 9;84:110–117. doi: 10.1016/j.addbeh.2018.03.033. [PubMed: 29660593]
23. Berger BE, Ferrans CE, Lashley FR. Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale. Res Nurs Health. 2001 12;24(6):518–29. [PubMed: 11746080]
24. Wright K, Naar-King S, Lam P, Templin T, Frey M. Stigma scale revised: Reliability and validity of a brief measure of stigma for HIV+ youth. J Adolesc Health. 2007 1;40(1):96–98. [PubMed: 17185215]
25. Delate T, Coons SJ. The discriminative ability of the 12-item short form health survey (SF-12) in a sample of persons infected with HIV. Clin Ther. 2000 9;22(9):1112–20. [PubMed: 11048908]
26. Aden B, Dunning A, Nosyk B, Wittenberg E, Bray JW, Schackman BR. Impact of illicit drug use on health-related quality of life in opioid-dependent patients undergoing HIV treatment. J Acquir Immune Defic Syndr. 2015 11 1;70(3):304–10. doi: 10.1097/QAI.0000000000000768. [PubMed: 26218410]
27. Ware J, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey: Construction of scales and preliminary tests of reliability and validity. Med Care. 1996 3;34(3):220–233. [PubMed: 8628042]
28. Ware JEJ, Kosinski MA, Keller SD. SF-12: How to Score the SF-12 Physical and Mental Health Summary Scales. 2nd ed The Health Institute, New England Medical Center; 1995 12 1 Available from: https://www.researchgate.net/publication/242636950_SF-12_How_to_Score_the_SF-12_Physical_and_Mental_Health_Summary_Scales.
29. World Health Organization. AUDIT: The Alcohol Use Disorders Identification Test guidelines for use in primary health care. Geneva: World Health Organization; 2001 Available from: https://apps.who.int/iris/handle/10665/67205.
30. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. J Gen Intern Med. 2001 9;16(9):606–613. [PubMed: 11556941]
31. Spitzer RL, Kroenke K, Williams JBW, Lowe B. A brief measure for assessing generalized anxiety disorder: The GAD-7. Arch Intern Med. 2006 5 22;166(10):1092–1097. [PubMed: 16717171]
32. Earnshaw VA, Bogart LM, Dovidio JF, Williams DR. Stigma and racial/ethnic HIV disparities: Moving toward resilience. Am Psychol. 2013 5;68(4):225–36. doi: 10.1037/a0032705. [PubMed: 23688090]

33. Bogart LM, Wagner GJ, Galvan FH, Klein DJ. Longitudinal relationships between antiretroviral treatment adherence and discrimination due to HIV-serostatus, race, and sexual orientation among African-American men with HIV. Ann Behav Med. 2010 10 1;40(2):184–90. doi: 10.1007/s12160-010-9200-x/. [PubMed: 20552416]
34. Rendina HJ, Golub SA, Grov C, Parsons JT. Stigma and sexual compulsivity in a community-based sample of HIV-positive gay and bisexual men. AIDS Behav. 2012 4;16(3):741–50. [PubMed: 21964977]
35. Hatzenbuehler ML, O'Cleirigh C, Mayer KH, Mimiaga MJ, Safren SA. Prospective associations between HIV-related stigma, transmission risk behaviors, and adverse mental health outcomes in men who have sex with men. Ann Behav Med. 2011 10;42(2):227–34. [PubMed: 21533623]
36. Crockett KB, Kalichman SC, Kalichman MO, Cruess DG, Katner HP. Experiences of HIV-related discrimination and consequences for internalised stigma, depression and alcohol use. Psychol Health. 2019 7;34(7):796–810. [PubMed: 30773914]
37. Lunze K, Lioznov D, Cheng DM, Nikitin RV, Coleman SM, Bridden C, et al. HIV Stigma and unhealthy alcohol use among people living with HIV in Russia. AIDS Behav. 2017 9;21(9):2609–17. [PubMed: 28600603]
38. Wray TB, Pantalone DW, Kahler CW, Monti PM, Mayer KH. The role of discrimination in alcohol-related problems in samples of heavy drinking HIV-negative and positive men who have sex with men (MSM). Drug Alcohol Depend. 2016 9 1;166:226–34. [PubMed: 27481457]
39. Wardell JD, Shuper PA, Rourke SB, Hendershot CS. Stigma, coping, and alcohol use severity among people living with HIV: A prospective analysis of bidirectional and mediated associations. Ann Behav Med. 8 16;52(9):762–72. [PubMed: 30124756]
40. Degroote S, Vogelaers D, Vandijck DM. What determines health-related quality of life among people living with HIV: An updated review of the literature. Arch Public Health. BioMed Central; 2014;72(1):40–10.
41. Logie CH, Wang Y, Lacombe-Duncan A, Wagner AC, Kaida A, Conway T, et al. HIV-related stigma, racial discrimination, and gender discrimination: Pathways to physical and mental health-related quality of life among a national cohort of women living with HIV. Prev Med. 2018 2;107:36–44. [PubMed: 29277410]
42. Jackson-Best F, Edwards N. Stigma and intersectionality: A systematic review of systematic reviews across HIV/AIDS, mental illness, and physical disability. BMC Public Health. 2018 7 27;18(1):919. doi: 10.1186/s12889-018-5861-3. [PubMed: 30049270]
43. Cole ER. Intersectionality and research in psychology. Am Psychol. 2009 4;64(3):170–80. [PubMed: 19348518]
44. Sipe TA, Barham TL, Johnson WD, Joseph HA, Tungol-Ashmon ML, O'Leary A. structural interventions in HIV prevention: A taxonomy and descriptive systematic review. AIDS Behav. 2017 12;21(12):3366–430. doi: 10.1007/s10461-017-1965-5. [PubMed: 29159594]
45. Ma PHX, Chan ZCY, Loke AY. Self-stigma reduction interventions for people living with HIV/AIDS and their families: A systematic review. AIDS Behav. 2019 3;23(3):707–41. doi: 10.1007/s10461-018-2304-1 [PubMed: 30298241]
46. Kerrigan D, Kennedy CE, Morgan-Thomas R, Reza-Paul S, Mwangi P, Win KT, et al. A community empowerment approach to the HIV response among sex workers: Effectiveness, challenges, and considerations for implementation and scale-up. Lancet. 2015 1 10;385(9963):172–85. doi: 10.1016/S0140-6736(14)60973-9. [PubMed: 25059938]
47. Clement S, Lassman F, Barley E, Evans-Lacko S, Williams P, Yamaguchi S, et al. Mass media interventions for reducing mental health-related stigma. Cochrane Databases Syst Rev. 2013 7 23;46(7):CD009453. doi: 10.1002/14651858.CD009453.pub2.
48. Kerr JC, Valois RF, DiClemente RJ, Carey MP, Stanton B, Romer D, et al. The effects of a mass media HIV-risk reduction strategy on HIV-related stigma and knowledge among African American adolescents. AIDS Patient Care STDS. 2015 3;29(3):150–6. doi: 10.1089/apc.2014.0207. [PubMed: 25738952]

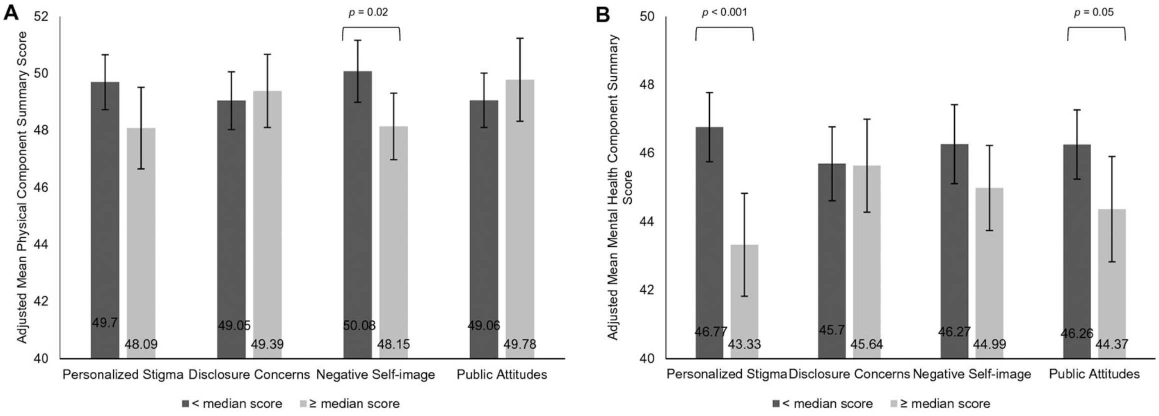

Figure 1.

Adjusted mean A) physical component (PCS) and B) mental health component summary (MCS) scores across four stigma subscales. Results are adjusted for age, gender, depression, alcohol and drug use, anxiety, years since HIV diagnosis, and number of primary care and psychiatry visits. Vertical lines at the top of the columns represent 95% confidence intervals for the respective mean PCS and MCS scores. Stigma subscales were dichotomized at the sample median.

Table 1.

Participant characteristics at the 12-month follow-up visit (N=581)

		N	(%)
Age	< 40	98	(17)
	40–59	365	(63)
	≥ 60	118	(20)
Race/ethnicity	White	366	(63)
	Hispanic/Latinx	83	(14)
	African-American	53	(9)
	Asian/Pacific Islander	18	(3)
	Other	61	(11)
Gender	Male	565	(97)
	Female	16	(3)
MSM		553	(95)
Education	High school/GED or less	150	(26)
	Associate/College/Graduate degree	431	(74)
Employed		422	(73)
Living situation	Housed	569	(98)
	Marginally housed or homeless	12	(2)
HIV stigma	Personalized stigma > 6	193	(33)
	Disclosure concerns > 5	220	(38)
	Negative self-image > 5	273	(47)
	Public attitudes > 4	180	(31)
Drug use in past 30 days	Stimulants	73	(13)
	Opioids	26	(5)
	Cannabis	251	(43)
	Other	24	(4)
AUDIT ≥ 8		144	(25)
PHQ-9 ≥ 10		75	(13)
GAD-7 ≥ 10		70	(12)
Years since HIV diagnosis	< 5 years	97	(17)
	5–9 years	94	(17)
	≥ 10 years	390	(67)
Number of primary care or psychiatry visits	0	88	(15)
	1–3	265	(46)
	≥ 4	189	(33)
Most recent viral load < 75 copies/mL		547	(94)

MSM = men who have sex with men.

HIV stigma was measured using an abbreviated Berger HIV stigma scale and scores were dichotomized at the median.

Stimulants = cocaine, amphetamines, misuse of prescription stimulants; Opioids = misuse of prescription opioids or heroin use; Other = MDMA and hallucinogens; cannabis = includes medically prescribed cannabis. Alcohol use was assessed using the Alcohol Use Disorder Identification Test (AUDIT). Depression assessed using the Patient Health Questionnaire 9 (PHQ-9) and anxiety using the Generalized Anxiety Disorder 7 (GAD-7).

IQR = interquartile range.

[*] Primary care and psychiatry visits, including nursing and group visits, between the 12 and 24-month follow-up period.

Table 2.

Stigma scores measured at the 12-month follow-up among persons living with HIV (N=584)

	Median	(IQR)	Proportion who agreed or strongly agreed (%)
Personalized stigma (possible range 3–12)	6	(4–7)	
I have been hurt by how people reacted to learning I have HIV			35
I have stopped socializing with some people because of their reactions to my having HIV			21
I have lost friends by telling them I have HIV.			16
Disclosure concerns (possible range 2–8)	5	(4–6)	
I am very careful who I tell that I have HIV.			74
I worry that people who know I have HIV will tell others.			35
Negative self-image (possible range 3–12)	5	(3–6)	
I feel that I am not as good a person as others because I have HIV.			15
Having HIV makes me feel unclean.			18
Having HIV makes me feel that I'm a bad person			7
Concerns about public attitudes (possible range 2–8)	4	(3–5)	
Most people think that a person with HIV is disgusting.			23
Most people with HIV are rejected when others find out.			28

HIV stigma was assessed using an abbreviated 10-item Berger HIV stigma scale, which includes four subscales: personalized stigma, disclosure concerns, negative self-image, and concerns about public attitudes towards persons living with HIV.

IQR = interquartile range

Table 3.

Correlates of HIV stigma measured at the 12-month follow-up in a primary care-based cohort of persons living with HIV in an integrated healthcare system

		Personalized Stigma		Disclosure Concerns		Negative Self-Image		Public Attitudes	
		aPR	(95% CI)	aPR	(95% CI)	aPR	(95% CI)	aPR	(95% CI)
Age	< 40	Ref	-	Ref	-	Ref	-	Ref	-
	40–59	0.83	(0.60–1.15)	0.88	(0.65–1.20)	1.10	(0.85–1.42)	0.80	(0.58–1.12)
	≥ 60	0.5	(0.32–0.79)	0.87	(0.57–1.32)	0.99	(0.69–1.42)	0.56	(0.35–0.91)
Race/ethnicity	White	Ref	-	Ref	-			Ref	-
	Hispanic/Latinx	1.10	(0.80–1.52)	1.06	(0.78–1.43)	1.12	(0.89–1.42)	1.50	(1.11–2.02)
	African-American	1.54	(1.10–2.15)	1.40	(1.03–1.92)	1.13	(0.84–1.51)	1.61	(1.11–2.34)
	Asian/Pacific Islander	1.00	(0.54–1.89)	1.31	(0.82–2.09)	1.23	(0.79–1.91)	1.58	(0.89–2.79)
	Other	0.99	(0.66–1.50)	1.01	(0.69–1.48)	1.12	(0.83–1.50)	1.12	(0.70–1.80)
Gender	Male	Ref	-	Ref	-	Ref	-	Ref	-
	Female	0.50	(0.23–1.09)	1.13	(0.67–1.92)	1.50	(1.08–2.08)	1.34	(0.83–2.09)
Education	High school/GED or less	Ref	-	Ref	-	Ref	-	Ref	-
	Associate/college/graduate degree	0.80	(0.62–1.02)	0.96	(0.76–1.22)	0.97	(0.80–1.19)	0.85	(0.64–1.11)
Employed		0.93	(0.70–1.22)	1.25	(0.95–1.64)	1.15	(0.91–1.44)	0.97	(0.72–1.31)
Living situation	Housed	Ref	-	Ref	-	Ref	-	Ref	-
	Marginally housed or homeless	0.81	(0.38–1.71)	0.80	(0.40–1.60)	1.22	(0.76–1.95)	1.33	(0.73–2.45)
Any drug use in past 30 days		1.24	(0.97–1.58)	0.86	(0.69–1.07)	0.98	(0.82–1.17)	1.06	(0.82–1.36)
Hazardous alcohol use (AUDIT ≥ 8)		0.86	(0.66–1.13)	0.95	(0.75–1.21)	0.95	(0.78–1.16)	1.05	(0.80–1.38)
Depression (PHQ-9 ≥ 10)		0.97	(0.67–1.40)	1.27	(0.94–1.73)	1.13	(0.88–1.47)	0.77	(0.52–1.14)
Anxiety (GAD-7 ≥ 10)		1.88	(1.36–2.59)	1.57	(1.18–2.10)	1.51	(1.18–1.94)	1.89	(1.36–2.63)
Years since HIV diagnosis	< 5 years	Ref	-	Ref	-	Ref	-	Ref	-
	5–9 years	0.87	(0.58–1.30)	1.36	(0.96–1.94)	0.90	(0.68–1.20)	1.33	(0.90–1.97)
	≥ 10 years	1.04	(0.74–1.45)	1.04	(0.73–1.50)	0.83	(0.64–1.08)	1.14	(0.76–1.72)

HIV stigma was measured using an abbreviated Berger HIV stigma scale, which includes four subscales: personalized stigma, disclosure concerns, negative self-image, and concerns with public attitudes towards PLHIV.

Personalized stigma, disclosure concerns, negative self-image, and concerns with public attitudes were dichotomized at the sample median.

Three transgender participants were grouped based on their gender identity (one as male and two as female)

AUDIT = Alcohol Use Disorders Identification Test; scores ≥ 8 indicate hazardous use.

PHQ9 = Patient Health Questionnaire-9; scores ≥ 10 indicate clinically significant depression.

GAD7 = Generalized Anxiety Disorder 7-item scale; scores ≥ 10 indicate clinically significant anxiety.