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HIV-Related Stigma among Healthcare Providers in the Deep South

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Abstract

Stigma towards people living with HIV (PLWH) in healthcare settings is a barrier to optimal treatment. However, our understanding of attitudes towards PLWH from healthcare providers' perspective in the United States is limited and out-of-date. We assessed HIV-related stigma among healthcare staff in Alabama and Mississippi, using online questionnaires. Participants included 651 health workers (60% White race; 83% female). Multivariate regression suggests that several factors independently predict stigmatizing attitudes: Protestant compared to other religions (β = 0.129, $p \leq 0.05$), White race compared to other races (β = 0.162, $p \leq 0.001$), type of clinic (HIV/STI clinic: β = 0.112, $p \leq 0.01$), availability of post-exposure prophylaxis (yes: β = −.107, $p \leq 0.05$), and perceptions of policy enforcement (policies not enforced: β = 0.058, p = $p \leq 0.05$). These findings may assist providers wishing to improve the quality care for PLWH. Enforcement of policies prohibiting discrimination may be a useful strategy for reducing HIV-related stigma among healthcare workers.

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INTRODUCTION

Thirty years into the HIV epidemic, people living with HIV (PLWH) still continue to report experiencing HIV-related stigma within the healthcare setting. While advances in treatment have essentially transformed an HIV diagnosis from a near death sentence to a manageable chronic disease, effective HIV treatment requires continuous participation in HIV care.[1] A growing body of research suggests that stigmatizing attitudes and behaviors toward PLWH act as barriers to testing, medication adherence, and retention in care among PLWH,[2-6] as well as adversely affecting quality of life and psychological well-being among both male and female PLWH.[7-10]

In 2010, The U.S. government released the first ever National HIV/AIDS Strategy for the United States[11] with the overall vision that, "The United States will become a place where new HIV infections are rare, and when they do occur, every person, regardless of age, gender, race/ethnicity, sexual orientation, gender identity, or socioeconomic circumstance, will have unfettered access to high quality, life-extending care, free from stigma and discrimination." Since the release of this strategy, numerous programs have worked to move the country toward this vision, including the implementation of the Affordable Care Act, increased access to PrEP (pre-exposure prophylaxis), and increases in funding priorities both for research and for the AIDS Drug Assistance Program (ADAP). While these and other efforts have demonstrated in important gains in reaching the vision of the 2010 National HIV/AIDS Strategy, in July of 2015, the U.S government released an update, noting advancements towards this overall vision and needed steps in order to reach the full realization of this vision by 2020. Specifically, this update notes that despite strides made towards the realization of the 2010 vision, "stigma and discrimination associated with HIV status or receiving HIV-related services, are still rampant, and continue to adversely impact access to care and health outcomes[12]."

In this context, an understanding of current HIV-related attitudes towards PLWH from the perspective of US healthcare workers is missing from the literature. While most research studies focus on the patients' perspectives and experiences regarding HIV-related stigma, our understanding of current attitudes towards PLWH from the healthcare providers' perspective in the US is limited. Sears[13] examined attitudes among medical professionals in Los Angeles between 2003 and 2006 and reported that 56% of skilled nursing staff, 26% of cosmetic surgeons, and 47% of obstetricians refused to provide any services to PLWH regardless of disease state.

From the patients' perspective, PLWH report that HIV-related stigma is still fairly prevalent in the US, with individuals reporting experiences of stigma in their daily lives, as well as from their healthcare providers.[14] More than 25% of US patients report feeling stigmatized within healthcare settings,[15,16] including experiences of patient avoidance[16-19] and differential or extreme precautionary measures (e.g., masks, protective suits, or "double gloving").[15,18,20,21] The most extreme examples of HIV-related stigma within the US healthcare setting include reports of physicians who refuse to touch patients or perform physical examinations,[18,22] lack of concern for patient confidentiality,[22,23] and denial of services or treatment refusal.[3,16,20,24]

HIV-related stigma may be particularly salient in the Deep South (Alabama, Georgia, Louisiana, Mississippi, South Carolina, and Tennessee), a socially conservative region, which accounts for nearly half of new HIV infections in the US.[25] States within the Deep South currently have the highest incidence rates of HIV and highest case fatality rates in the US.[26] In addition, PLWH in the Deep South may face higher levels of stigma from healthcare providers than PLWH in other parts of the US.[27-29] Research conducted in the early years of the epidemic indicated that the majority of healthcare workers in the Southeastern United States believed that they should have the right to refuse services to PLWH and would be unwilling to perform lifesaving procedures to HIV-infected patients.[30] Although quantitative assessments of providers' attitudes are lacking, more recent qualitative work from patients' perspectives indicates that HIV-related stigma is still prevalent in the Deep South.[31,32]

HIV-related stigma in the healthcare setting operates on multiple levels: the individual level (e.g., personal attitudes, beliefs, and behaviors), clinic level (e.g., clinic characteristics, type, and location), and policy level (e.g., institutional policies, support, and training). Because attitudes among healthcare providers related to HIV stigma have not been examined in over a decade in the US context, we turn to international literature to inform possible predictors of stigmatizing attitudes. At the individual level, characteristics of health workers that have been found to be related to higher levels of HIV-related stigma include older age,[33,34] female gender,[35] lower levels of education[33,36,37] and perceived importance of religion.[34,36,38,39] Furthermore, some studies have suggested that the provider's professional category predicts HIV-related stigma, with physicians reporting lower levels of stigma compared to nursing staff,[34,35] and social services staff reporting less stigma than clinical staff.[40]

At the clinic level, previous research suggested that more contact with HIV-infected patients and higher PLWH patient loads are related to less HIV-related stigma and more positive attitudes towards PLWH,[34,36,41] though one study found no relationship with HIV patient load and stigma towards PLWH.[34] Other clinic-level characteristics which may theoretically impact healthcare providers' attitudes towards people living with HIV include rural locality, clinic type, and access to supplies to protect health workers from HIV exposure and drugs for post-exposure prophylaxis (PEP).

Finally, structural or policy factors in healthcare settings may affect HIV-related stigma. Prior research indicates that provision of HIV-related training for healthcare providers and/or education that focuses on HIV-related stigma predicts lower levels of HIV-related stigma.[34,36,40,42] Other forms of institutional support, including the presence and enforcement of policies to protect PLWH, predicted lower HIV-related stigma in a few settings.[33,36]

The purpose of this study is to provide a current understanding of HIV-related stigma from the perspective of healthcare workers in two states in the Deep South. In this study, we used data from an online survey of public health and primary healthcare workers in Alabama and Mississippi to examine levels, variation, and predictors of HIV-related stigma among health workers in these Deep South states. We examined the relationships between stigmatizing

attitudes and individual-level characteristics, clinic-level characteristics, as well as policies that are specific to HIV care implemented in these healthcare settings.

METHODS

We assessed levels of HIV-related stigma and discrimination in staff working in public health departments and other primary healthcare settings in two Southeastern states. We adopted the "Measuring HIV Stigma and Discrimination among Health Facility Staff"[43] questionnaire for online administration, which is publically available through the Health Policy Project website. This survey includes 34 questions on socio-demographic characteristics, work setting, various aspects of HIV-related stigma, and HIV-related policies and protections within facilities. Surveys took approximately 20 minutes to complete.

A link to the survey was sent via email to employees of all categories employed at various healthcare organizations in January 2013, and surveys were completed during the period January through April 2013. Four organizations (two public health departments, a continuing medical education (CME) network, and an umbrella organization for federally qualified health centers) assisted in survey distribution by forwarding emails containing eligibility information, informed consent documentation, and the survey link to their employees/members. Participants were sent a reminder email about two weeks later. Each organization was asked to report on the number of employees who were sent the study email; however, these data were not available from the primary healthcare umbrella organization. Response rates for the remaining organizations were as follows: Public Health Department A: 26.53%, CME Network: 9.85%, and Public Health Department B: 32.39%. A total of 777 healthcare workers responded to the survey.

This study was approved by the Institutional Review Board of the University of Alabama at Birmingham and the participating organizations. To protect confidentiality, type of organization, facility name, and locality have been omitted from this publication.

Measures

Outcomes—The primary outcome in the current analyses was a scale of "stigmatizing attitudes towards people living with HIV." This scale consists of six statements found in Table 2, Section A. All of the statements were scored using a four-point Likert scale (0= strongly agree, 1=agree, 2=disagree, or 3=strongly disagree), which were reversed coded so that higher scores indicate greater levels of stigma. For multivariate analyses, these items were summed to create a continuous scale (Cronbach's alpha= .818; mean=4.76; SD=2.94). Of the 777 completed surveys, 121 (15.6%) had missing data on the primary outcome measure, the stigmatizing attitudes scale, and were thus removed from analyses.

Individual-level measures—Individual level measures included socio-demographic characteristics (age, sex, marital status, religion, perceived importance of religion, race, and highest level of education), work history (years in the healthcare profession, years in current job, and current job category), and anticipated shame (see below). Perceived importance of religion was measured with the following question: "How important is religion to you?"

with the response choices of not important, somewhat important, important, and very important.

Anticipated shame related to HIV was measured with two questions (see Table 2, Section B) that asked participants if they would be ashamed if they (i.e., anticipated self-shame), or someone in their family (i.e., anticipated family shame), were to be infected with HIV (yes or no). These two questions were then summed to create a composite score of anticipated shame (0=no to both questions, 1=yes to one question, and 2=yes to both questions) with good reliability (Cronbach's alpha = .798).

Clinic-level measures—Healthcare facility variables included location (rural or urban/suburban), weekly HIV caseload (fewer than 10 per week or 10 or greater), clinic type (Sexually Transmitted Infection (STI)/HIV clinic or non-STI/HIV clinic), and access to PEP at the facility (yes or no/I don't know).

Policy-level measures—Policy factors included knowledge of policies to protect PLWH from discrimination and the perception that these policies are enforced (yes or no/I don't know) and HIV-related training. Participants were asked if, in the last 12 months, they had received training in the following areas at their facility: cultural competence, HIV care and treatment, infection control and universal precautions, patients' informed consent, privacy and confidentiality, HIV counseling and testing, HIV stigma and discrimination, prevention of mother-to-child transmission of HIV, and prevention of HIV transmission between adults. Multivariate analyses include only training related to discrimination and stigma, due to high correlation among the different types of training, and previous research indicating that stigma training was related to lower levels of HIV-related stigma.

Statistical Analysis

To identify univariate outliers, we examined z scores for the outcome variable. Five outliers (z scores > 2.50) were identified and removed from subsequent analyses. Examination of Mahalanobis distances indicated no multivariate outliers.[44] The data screening process resulted in a final analytic sample size of n=651. Bivariate analyses included Pearson's r correlations for continuous predictors, t-tests for dichotomous predictors, and analysis of variance (ANOVA) for categorical predictors. Three multiple linear regression models were used for multivariate analyses predicting HIV-related stigma: Model 1 included individual-level predictor variables, Model 2 added clinic-related predictor variables, and Model 3 added policy-level predictor variables. Analyses were performed using SPSS 20 for Windows (Version 20, Armonk, NY: IBM Corp).

RESULTS

Characteristics of the Respondents

Table 1 presents demographic and work-related characteristics of the sample. As intended, a wide range of healthcare workers was recruited, with the most highly represented groups being clinicians and clinical support staff (39%), social/community workers (31.2%), and administrative staff (21.7%). The majority of respondents (64.4%) were from urban health

centers. More than 93% worked in clinics with low HIV caseloads (0-9 HIV-positive patients per week), and fewer than 10% worked in HIV or STI specialty clinics. Few participants reported HIV-specific training, including training in HIV care and treatment (12.4%), HIV testing (18.1%), HIV stigma and discrimination (13.1%), prevention of mother to child transmission (3.4%), and prevention and transmission of HIV among adults (14.3%).

Stigma-Related Variables

The majority of respondents endorsed at least one stigmatizing attitude: 93% of social and community workers, 89% of clinical staff and 90% of all other staff. Similarly, our data show that 89% of the respondents at urban/suburban clinics and 91% of those in rural clinics endorsed at least one stigmatizing attitude. Table 2 presents descriptive results regarding attitudes towards PLWH, shame, and facility environment and policies. For descriptive purposes, each question was dichotomized into agree (agree and strongly agree) versus disagree (disagree and strongly disagree). Few participants agreed that HIV is punishment for bad behavior (2.3%), PLWH should be ashamed (1.5%), or that PLWH don't care if they infect others (9.1%). However, there were higher levels of agreement with questions concerning blame. For example, 18.9% of participants agreed or strongly agreed with the statement “Most people living with HIV have had many sexual partners.” About one third of participants agreed with the statement “People living with HIV could have avoided HIV if they had wanted to,” and more than 35.3% percent agreed that “People get infected with HIV because they engage in irresponsible behaviors.” While 98.5% of respondents reported that PLWH should not feel ashamed, 40.7% reported if they themselves were infected with HIV they would feel ashamed, and 17.2% would be ashamed if someone in their family were to be living with HIV. McNemar tests revealed that the difference between the two responses “PLWH should feel ashamed” and “I would be ashamed if I were infected with HIV” (anticipated self-shame) was statistically significant ($X^2 = 244.31$, $p < .001$); the difference between “PLWH should feel ashamed” and “I would be ashamed if someone in my family were infected with HIV” (anticipated family-shame) was significant ($X^2 = 90.09$, $p < .001$); and the difference between anticipated self-stigma and anticipated family-shame was also significant ($X^2 = 139.75$, $p < .001$).

Only 72.4% of respondents reported policies that were in place to protect PLWH from discrimination in their facility. Similar results were found when asking participants if they would get in trouble at work if they did not follow policies to protect PLWH; 18.9% reported that they would not get in trouble or they did not know if they would get in trouble. Only 23.5% of respondents reported having access to PEP in their facility.

Bivariate Results

Several factors independently predicted more stigmatizing attitudes, including religion, race, type of clinic, availability of PEP, anticipated shame, and perceptions of policy enforcement. Table 3 shows the results of bivariate associations between scores on the stigmatizing attitudes scale and selected predictors. With regard to socio-demographic factors, males reported significantly greater levels of stigmatizing attitudes than females. Race and religion were also significant predictors. Tukey's post hoc results indicated that the average stigma

score was significantly higher among Whites compared to all other categories of race and Protestants compared to all other categories of religion.

Those who reported anticipated self-shame had significantly greater levels of stigmatizing attitudes toward PLWH than those who did not, and those who endorsed anticipated family shame also had significantly greater levels of stigma than those who did not. Composite anticipated shame was also a significant predictor. Post hoc tests of the composite anticipated shame variable revealed that those who answered yes to one or both of anticipated shame questions differed significantly from those who responded no to both items. However, those who answered yes to only one of the anticipated shame questions did not differ significantly from those who endorsed both anticipated self and family shame.

Regarding clinic-level predictors, those working in HIV/STI clinics reported higher levels of stigmatizing attitudes than those working in other types of clinics. Those health workers who report not having access, or being unaware of access to PEP reported significantly greater levels of stigma than those with access to PEP. Clinic location and HIV patient load were not significant predictors of stigmatizing attitudes. Concerning policy-level predictors, those working in a facility in which policies regarding HIV stigma are enforced reported lower levels of HIV-related stigmatizing attitudes. Having received stigma-specific training in the last 12 months and working in a facility where there are HIV-stigma policies (regardless of enforcement) were not significant predictors of stigmatizing attitudes.

Multivariate Results

Individual-level—Multivariate regression results are included in Table 4. Model 1 includes individual-level predictor variables that were significant in bivariate analyses, as well as other theoretically important individual-level predictors (age, education, number of years in healthcare, and job category). In the multivariate model, all predictors that were significant in the bivariate analyses remained significant predictors of HIV-related stigmatizing attitudes. White race, male gender, and Protestant religion continued to be significant predictors of higher levels of HIV-related stigmatizing attitudes. Due to high correlations between self-shame and family shame, only composite shame was entered into the multivariate analysis and was a significant predictor of having more stigmatizing attitudes.

Clinic Level—Model 2 added the following clinic-related variables: clinic type, clinic location, and availability of PEP. Model 2 shows that, when controlling for other predictor variables, working in an STI/HIV clinic and not having access to PEP are significant predictors of higher levels of HIV-related stigma. White race, male gender, Protestant religion, and composite anticipated shame remained significant in this model.

Policy Level—Model 3 added policy factors including having been trained in HIV stigma and discrimination in the past 12 months and the perception of enforcement of HIV-stigma related policies. HIV stigma training was not significantly associated with stigmatizing attitudes. However, working in a place where HIV stigma policies are not enforced (or are perceived as not being enforced) was significantly related to higher levels of HIV-related stigma. From the other levels, male gender, White race, Protestant religion, composite

anticipated shame, clinic type, and access to PEP remained significant predictors of higher levels of HIV-related stigma in this model.

DISCUSSION

Key findings from the current study are as follows: 1) Stigma and discrimination around HIV remain prevalent within the Deep South healthcare setting; 2) HIV-related stigma exists at all types of locations and across all types of healthcare workers; 3) Specific individual level, clinic level, and policy level factors have been identified as possible targets for stigma-reduction interventions.

Our multivariate analyses revealed that, with regard to individual-level characteristics, males and White health workers were significantly more likely to hold stigmatizing attitudes towards PLWH. Furthermore, we found that Protestant religion was significantly related to higher levels of HIV stigma, but overall perceived importance of religion was not. These findings are contrary to research done internationally which suggests that females[35] and those who report higher levels of perceived importance of religion [34,36,38,39] report higher levels of HIV-related stigma. This difference may be due to cultural differences in traditional gender roles and majority religion in various settings. In further contrast with earlier research, we found no differences by education, age, or professional category.

Interestingly, even though few participants reported that they believed that PLWH should be ashamed, a much higher proportion of respondents anticipated family or self-shame ("I would be ashamed if I/someone in my family were infected with HIV"). We suspect that the significant difference in the percentage of those reporting that PLWH should be ashamed versus those reporting anticipated shame may be a result of response bias; people may be less willing to report other-directed stigma but more willing to report shame towards one's self. Importantly, those who report anticipated shame also hold more negative attitudes toward PLWH.

We also found that some clinic characteristics were important predictors of stigma toward PLWH. Specifically, healthcare workers in HIV/STI departments had higher levels of HIV stigma compared to those working in non-HIV/STI clinics. This finding is contrary to what we expected based on prior research which suggests that more contact with HIV-infected patients and higher PLWH patient loads are related to less HIV-related stigma. [34,36,41] It is possible that without specific training and support on how to provide non-stigmatizing services, health workers who work daily with large STI and HIV caseloads of clients may become burned out and form negative attitudes about the clients they serve, though prior research does not exist within the U.S. context to fully interpret this finding. Healthcare workers with no access to PEP reported higher levels of HIV stigma, which is in agreement with prior research. Although other studies have reported that policies to protect PLWH from discrimination are related to lower HIV-related stigma, our data suggest that the existence of such policies alone may not be effective enough to reduce HIV-related stigma, but that the perception of the enforcement of such policies may be more important.

Some limitations to this study should be mentioned. First, since this survey was administered only in two southern states, Alabama and Mississippi, these findings should be applied to other contexts with caution. However, our focus in the Deep South, a socially conservative region of the United States where the HIV epidemic currently has the biggest impact, is also a strength, since it may provide an amplified view of the experiences of PLWH across the US. A second limitation concerns the online survey response rate and the unknown response rate for one of the recruiting agencies. It is possible that those workers who completed the online survey may differ significantly from those who did not. Additionally, our findings could have been influenced by relatively low levels of experience and contact with clients living with HIV in our sample; most respondents reported caseloads of 0-9 HIV-positive patients per week. Finally, this study relied on self-reported attitudes and is therefore subject to reporting bias. Despite these limitations, our findings provide important support for the need for HIV-related stigma-reduction interventions in the US healthcare setting.

CONCLUSIONS

As identified in The National HIV/AIDS Strategy Update to 2010, reducing HIV-related stigma remains an important aspect of HIV prevention and care. This study provides the first current analysis of stigma in the healthcare setting from the perspective of healthcare workers in the US Deep South and highlights that HIV-related stigma in healthcare *is associated with multiple factors at individual, clinic and policy levels that may need to be addressed*. Although this study does not allow us to disentangle the complex relationships at these levels, it does provide insight into possible targets for future interventions at each level. In terms of individual level factors, HIV-related stigma exists across the board in all demographics at this level, and there is a need for stigma-reduction interventions for all healthcare workers to provide welcoming and safe environments for PLWH seeking care and treatment. Though interventions may seek to make special efforts to make sure to include certain groups that tend to have more stigmatizing attitudes (in our case White male Protestants), our analyses revealed the existence of stigmatizing attitudes in all types of health workers. Prior research suggests that increasing awareness about stigma and its consequences and addressing fears and misconceptions can effectively reduce stigma towards PLWH in the healthcare setting.[45] In terms of clinic-level factors, it appears that HIV-related stigma reduction interventions may be particularly needed at clinics that provide STI services and HIV testing. Within the physical environment of the clinic, it is important that workers feel that they have the supplies and equipment necessary to prevent occupational HIV transmission. Ensuring that workers have sufficient access to gloves, sharps containers, and PEP helps to reduce the fear of the transmission aspect of HIV-related stigma.[46] Finally, consistent with previous findings, our findings indicate that developing and enforcing policies to protect PLWH can be a successful means of stigma reduction.[46]

Research on providers' attitudes is flourishing at the international level. However, as illustrated in this study, there is a need for continued research focusing on providers' attitudes and practices in the United States to reduce HIV-related stigma and improve engagement in care for PLWH. Many of our findings are different from what has been found in international settings, suggesting that there may be some unique mechanisms operating in

the US context. In order to develop stigma-reduction interventions for US healthcare settings, there is a need for an examination of these contextual differences. Six items from the "Measuring HIV Stigma and Discrimination among Health Facility Staff"[43] tool used in this study are now part of the officially sanctioned UNAIDS Indicator Registry[47], a central repository of indicators to track the HIV/AIDS epidemic and response. This recent advance in stigma measurement among healthcare providers provides an important tool for future assessment of HIV-related stigma among healthcare providers globally. We hope that this tool will also provide a useful resource for US researchers to critically examine the existence and effects of HIV-related stigma in the US context and that the data presented in this study will guide others in assessing HIV-related stigma in healthcare settings across the US.

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Table 1

Demographic and work-Related characteristics of respondents (n=651)

Variable	Freq. (%)		Variable	Freq. (%)	
Race			**Professional Category** [c]		
Caucasian/White	388	(59.6)	Administrative Support	141	(21.7)
African American/Black	213	(32.7)	Clinician and Clinical Support	254	(39.0)
Other	30	(4.6)	Social and Community Workers	203	(31.2)
Unreported	20	(3.1)	Other	50	(7.7)
Age			Unreported	3	(0.5)
Under 30	40	(6.1)	**Health care work experience**		
31-40	95	(14.6)	Less than 10 years	187	(28 .7)
41-49	167	(25.7)	10-19.9	170	(26.1)
50-59	234	(35.9)	20-29.9	192	(29.5)
60+	97	(14.9)	30+ years	101	(15.5)
Unreported	18	(2.8)	Unreported	1	(0.2)
Average Age[a]	48.51	(11.73)	Health Care Work Avg.[a]	17.72	(10.75)
Gender			**Years at current job**		
Male	86	(13.2)	Less than 5 years	177	(27.2)
Female	543	(83.4)	5-9.9	185	(28.4)
Unreported	22	(3.4)	10-29.9	162	(24.9)
Education			20+ years	124	(19.0)
High school or less	61	(9.4)	Unreported	3	(0.5)
College/University	496	(76.2)	Years at Current Job Avg.[a]	10.85[a]	(9.10)
Graduate level or higher	77	(11.8)	**Clinic location**		
Unreported	17	(2.6)	Urban/Suburban	419	(64.4)
Relationship status			Rural/Countryside	224	(34.4)
Married/In a relationship	465	(71.4)	Unreported	8	(1.2)
Formerly Married	96	(14.8)	**Number of HIV patients seen in a typical week**		
Never married/Single	71	(10.9)	0-9	609	(93.50)
Unreported	19	(2.9)	10-29	29	(4.50)
Religion			Unreported	13	(2.00)

Variable	Freq. (%)		Variable	Freq. (%)	
Catholic	80	(12.3)	**Clinic Type** [c]		
Protestant	477	(73.3)	Non-STI/HIV Clinic	583	(89.6)
Other	52	(8.0)	STI/HIV Clinic	61	(9.4)
None	16	(2.5)	Unreported	7	(1.1)
Unreported	26	(4.0)	**Received training in the last 12 months** [b]		
Importance of religion [c]			Cultural competence	153	(23.5)
Not important	19	(2.9)	HIV care & treatment	81	(12.4)
Somewhat important	41	(6.3)	Infection control and universal precautions	305	(46.9)
Important	104	(16.0)	Patients' informed consent, privacy, & confidentiality	350	(53.8)
Very important	467	(71.7)	HIV counseling and testing	118	(18.1)
Unreported	20	(3.1)	HIV stigma and discrimination	85	(13.1)
			Prevention of mother-to-child transmission of HIV	22	(3.4)
			Prevention of HIV transmission between adults	93	(14.3)
			Unreported	85	(13.1)

[a] Mean and (standard deviations) presented for continuous variables

[b] Participants could have received multiple types of training in the previous 12 months

[c] Percentages may not sum to 100 due to rounding error

Table 2

Frequencies and percent for survey measures (n=651)

	Frequency (%)		
Attitudes towards PLHIV[a]	**Agree**	**Disagree**	**Missing**
People living with HIV could have avoided HIV if they had wanted to	196 (30.1)	455 (69.9)	0
HIV is punishment for bad behavior	20 (2.3)	631 (97.7)	0
Most people living with HIV do not care if they infect other people	59 (9.1)	592 (90.9)	0
People living with HIV should feel ashamed of themselves	10 (1.5)	641 (98.5)	0
Most people living with HIV have had many sexual partners	123 (18.9)	528 (81.1)	0
People get infected with HIV because they engage in irresponsible behaviors	230 (35.3)	421 (64.7)	0
Anticipated Shame	**Yes**	**No**	
I would be ashamed if I were infected with HIV	265 (40.7)	380 (58.4)	6 (0.9)
I would be ashamed if someone in my family were infected with HIV	112 (17.2)	532 (81.7)	7 (1.1)
Policy Level Measures[b]	**Yes**	**No/Don't know**	
My facility has policies to protect patients living with HIV from discrimination	471 (72.4)	167 (25.6)	13 (2.0)
I will get in trouble at work if I do not follow the policies to protect patients living with HIV	512 (78.6)	123 (18.9)	16 (2.5)
Do you have access to post-exposure, prophylactic medications in your health facility	153 (23.5)	479 (73.6)	19 (2.9)

[a] Response categories collapsed into agree (agree and strongly agree) and disagree (disagree and strongly disagree)

[b] Response categories results collapsed into yes or no/I don't know

Table 3

Bivariate Predictors of Stigmatizing Attitudes toward PLHIV (N=651).

	Stigma Score			Stigma Score	
	M(SD)	**Statistical test**		**M(SD)**	**Statistical test**
Individual Characteristics					
Age		r = 0.038	Anticipated Self-Shame		t = 6.506***
Race		F =0.132**	Yes	5.26 (2.86)	
Caucasian/White	5.06 (2.94)		No	4.14 (2.85)	
African American/Black	4.21 (2.77)		Anticipated Family Shame		t = 5.676***
Other	4.63 (2.70)		Yes	6.14 (2.85)	
Gender		t = 2.480**	No	4.45 (2.88)	
Male	5.49 (2.96)		Composite Anticipated Shame		F = 25.367***
Female	4.64 (2.94)		0	4.10 (2.84)	
Education		F = 0.314	1	5.32 (2.82)	
High school or less	5.02 (3.04)		2	6.12 (2.86)	
College/University	4.75 (2.99)		**Clinic Characteristics**		
Graduate level or higher	4.62 (2.66)		Clinic Type		t = 2.396*
Relationship status		F = 0.390	Non-STI/HIV	4.66 (2.96)	
Married/In a relationship	4.80 (2.98)		STI/HIV	5.61 (2.64)	
Formerly married	4.51 (3.03)		Clinic location		t = −0.187
Never married/Single	4.80 (2.71)		Rural	4.79 (2.82)	
Religion		F = 2.547*	Urban	4.74 (3.01)	
Catholic	4.00 (2.71)		HIV Patient Load		t = 0.217
Protestant	4.91 (2.94)		0-9	4.78 (2.93)	
Other	4.37 (3.36)		10+	4.66 (3.11)	
None	4.69 (2.82)		Access to PEP		t = 2.006*
Perceived importance of religion		F = 0.296	Yes	4.34 (2.91)	
Not important	4.95 (9.93)		No/don't know	4.89 (2.95)	

	Stigma Score			Stigma Score	
	M(SD)	**Statistical test**		**M(SD)**	**Statistical test**
Somewhat important	4.46 (2.44)		**Policy Characteristics**		
Important	4.61 (2.62)		HIV-related stigma training		t = −0.230
Very important	4.81 (2.95)		Yes	4.75 (3.08)	
Years in Healthcare		r = 0.043	No	4.67 (2.87)	
Years at current job		r = 0.053	Stigma Policies		t = .096
Professional Category		F = 0.635	Yes	4.69 (2.90)	
Administrative Support	4.84 (3.24)		No/don't know	4.98 (3.05)	
Clinician/Clinical Support	4.59 (2.93)		Stigma Policy Enforced		t = 2.842**
Social/Community Workers	4.94 (2.75)		Yes	4.61 (2.88)	
Other	4.56 (2.89)		No/don't know	5.45 (3.12)	

T-test statistics presented for dichotomous variables; Pearson's r presented for continuous variables; Between subjects F-statistics (ANOVA) presented for categorical variables

* p<0.05

** p<0.01

*** p <0.001

Table 4

Multiple regression analyses predicting stigmatizing attitudes toward PLHIV (N=651)

	Model 1		Model 2	
	Standardized Beta (β)	**95% CI**	**Standardized Beta (β)**	**95% CI**
Age	.042	(−0.02, 0.04)	.051	(−0.02, 0.05)
Gender (Ref: Female)				
Male	.120**	(0.28, 1.78)	.114*	(0.23, 1.72)
Race (Ref: Black)				
White	.130**	(0.24, 1.34)	.156***	(0.38, 1.51)
Other	.029	(−0.84, 1.64)	.026	(−0.87, 1.59)
Education (Ref: College Graduate)				
High school education or less	.027	(−0.58, 1.13)	.014	(−0.72, 1.00)
Graduate school or higher	−.061	(−1.35, 0.25)	−.043	(−1.18, 0.41)
Religion (Ref: Catholic)				
Protestant	.123*	(0.09, 1.61)	.125*	(0.11, 1.62)
Other religion	.050	(−0.59, 1.66)	.046	(−0.62, 1.60)
No religion	.040	(−1.14, 2.62)	.045	(−1.03, 2.69)
Importance of Religion	.033	(−0.26, 0.52)	.051	(−0.19, 0.59)
Composite Anticipated Shame	.269***	(0.71, 1.37)	.276***	(0.74, 1.39)
Number of Years in Healthcare	.005	(−0.03, 0.03)	.019	(−0.03, 0.04)
Job Category (Ref: Clinical)				
Administrative	.036	(−0.41, 0.92)	.037	(−0.40, 0.92)
Social or community worker	.053	(−0.26, 0.93)	.052	(−0.26, 0.92)
Other job category	−.012	(−1.12, 0.85)	−.004	(−1.02, 0.93)
Clinic Type (Ref: Non- STI/HIV)				
STI/HIV Clinic			.124**	(−0.39, 2.10)
Location (Ref: Urban/suburban)				
Rural			−.028	(−0.72, 0.37)
Access to PEP (Ref: No)				
Yes			−.101*	(−1.28, −0.11)
Stigma Enforcement Policies (Ref: Yes)				
No				
Stigma Related Training (No)				
Yes				
Model Fit Statistics				
R^2	0.119		.144	
F	4.358***		4.492***	
ΔR^2			.025**	

*p≤0.05

** p≤0.01

*** p≤0.001