1-2016

HIV Stigma in Prisons and Jails: Results from a Staff Survey

Steven Belenko
Temple University

Richard Dembo
University of South Florida, rdembo@usf.edu

Michael Copenhaver
University of Connecticut

Matthew Hiller
Temple University

Holly Swan
University of Delaware

See next page for additional authors

Authors
Steven Belenko, Richard Dembo, Michael Copenhaver, Matthew Hiller, Holly Swan, Carmen A. Garcia, Daniel O'Connell, Carrie Oser, Frank Pearson, and Jennifer Pankow

HHS Public Access

Author manuscript

AIDS Behav. Author manuscript; available in PMC 2017 January 01.

Published in final edited form as:

AIDS Behav. 2016 January ; 20(1): 71–84. doi:10.1007/s10461-015-1098-7.

HIV Stigma in Prisons and Jails: Results from a Staff Survey

Steven Belenko[1], **Richard Dembo**[2], **Michael Copenhaver**[3], **Matthew Hiller**[1], **Holly Swan**[4], **Carmen Albizu Garcia**[5], **Daniel O'Connell**[4], **Carrie Oser**[6], **Frank Pearson**[7], and **Jennifer Pankow**[8]

Steven Belenko: sbelenko@temple.edu

[1]Department of Criminal Justice, Temple University, 1115 Polett Walk, Philadelphia, PA 19122, USA

[2]Department of Criminology, University of South Florida, Tampa, FL, USA

[3]Department of Allied Health Sciences, University of Connecticut, Storrs, CT, USA

[4]Center for Drug and Alcohol Studies, University of Delaware, Newark, DE, USA

[5]School of Public Health, University of Puerto Rico, San Juan, PR, USA

[6]Department of Sociology, University of Kentucky, Lexington, KY, USA

[7]NDRI, New York, NY, USA

[8]Institute for Behavioral Research, Texas Christian University, Fort Worth, TX, USA

Abstract

With numerous HIV service gaps in prisons and jails, there has been little research on HIV stigma attitudes among correctional staff. Such attitudes may undermine HIV services for inmates at risk of or infected with HIV. This HIV stigma attitudes survey among 218 correctional staff in 32 US facilities (1) provides an overview of staff's stigma attitudes, (2) reports psychometric analyses of domains in Earnshaw and Chaudoir's HIV Stigma Framework (HSF), and (3) explores differences in stigma attitudes among different staff types. Overall, correctional and medical staff expressed non stigmatizing attitudes toward people living with HIV/AIDS, but perceived that stigma and discrimination exist in others. Factor analyses revealed a three factor structure capturing two mechanisms of the HSF (prejudice, discrimination). Few factor score differences were found by staff type or setting. Implications for correctional HIV services and future research on HIV stigma attitudes are discussed.

Keywords

HIV stigma; Prisons; Correctional staff; HIV discrimination; Factor analysis

Correspondence to: Steven Belenko, sbelenko@temple.edu.

Introduction

The prevalence of the human immunodeficiency virus (HIV) among state prison and local jail inmates is substantially higher than in the general population.[1] In 2010, 1.5 % of state prison inmates were known to have HIV or acquired immunodeficiency syndrome (AIDS), an estimated four times the prevalence in the general U.S. population [1, 2]. The Centers for Disease Control and Prevention (CDC) estimates that approximately 14 % of people living with HIV pass through the corrections system each year [1]. Yet, many correctional facilities do not adhere to CDC guidelines for HIV testing, prevention, or treatment [3, 4]. If HIV testing is not expanded or targeted to high-risk inmates, many infections will go unreported or undiagnosed [5]. Models of sexually transmitted disease transmission dynamics [6–8] suggest that reducing or preventing infections in core risk groups, such as inmates, can greatly reduce transmission in the community. Undiagnosed HIV infection, inadequate access to antiretroviral therapy (ART), and poor ART adherence are substantial public health problems in the U.S. incarcerated population, raising the importance of increasing testing and treatment. New U.S. guidelines suggest that all confirmed HIV-positive persons should be started on ART as part of a treatment as prevention (TasP) approach [9]. TasP strives to reduce HIV-transmission risk by having any confirmed HIV-positive persons receive ART and immediately attempt to establish viral suppression. Successful viral suppression reduces transmission risk even if the person engages in HIV risk behavior [9]. This is particularly applicable to correctional settings as inmates frequently transition from the correctional setting to the community and back, and may continue to engage in transmission risk behavior. Thus, successful engagement in treatment is critical to the health of the inmate as well as the public.

Stigma can be defined as “exposure to negative attitudes, structural and interpersonal experiences of discrimination or unfair treatment, and violence perpetrated against persons who belong to disadvantaged social groups,” [10], and stigma has been studied with regard to HIV/AIDS [11]. Within the correctional system, stigmatizing attitudes among both inmates and correctional staff may be important factors influencing whether individuals seek services in the HIV services continuum (prevention, testing, and treatment for those identified as infected with HIV). Stigma creates barriers to expanding and improving HIV services [12–14], and can undermine efforts to expand HIV testing, incorporate evidenced-based HIV prevention into routine practice, encourage inmates to self-disclose their HIV status, and increase access and adherence to ART [12–15]. New knowledge about stigma in correctional institutions can help inform training and educational approaches to reduce such stigma and discrimination. Utilizing Earnshaw and Chaudoir’s HIV Stigma Framework (HSF) [12], this paper explores HIV stigma and stigma attitudes among a national sample of correctional staff.

[1]Prisons are operated by state correctional agencies and generally house inmates convicted of felony crimes sentenced to more than one year of incarceration. Jails are operated by county or city agencies and house inmates awaiting trial or those convicted of misdemeanors and sentenced to one year or less of incarceration. In this paper, the terms “correctional facility” or “corrections” are used generically to indicate both prisons and jails.

HIV Services in Correctional Settings

CDC guidelines for HIV testing in correctional settings point to a need to expand and improve HIV testing in prisons and jails, especially opt-out testing [4]. In particular, inmates at high risk for HIV infection, such as those with histories of injection drug use, or those known to have had sex or injected drugs in prison, should be routinely offered annual opt-out testing (where testing is done for all inmates unless the inmate specifically declines the test), and HIV testing prior to release (especially in facilities located in high-prevalence states). Although opt-out testing involves higher up-front costs, studies have shown that it is as cost-effective as other types of screening even when HIV prevalence is as low as 0.1 % (with an HIV prevalence of 1.5 % among state prison inmates, opt-out HIV testing in prisons and jails is likely to be highly cost effective; see [4]). In addition, improved testing has a direct positive public health impact in that many people reduce risk behaviors after being diagnosed with HIV [16].

If an inmate is known to be HIV-positive, or tests positive for HIV while incarcerated, appropriate ART should begin immediately when clinically appropriate and continue for the duration of their incarceration [17]. Directly administered antiretroviral therapy (DAART) is a technique for dispensing medications to inmates in which the patient obtains the medication from the medical staff and ingests the pills immediately under observation, and is feasible for incarcerated individuals [18, 19]; greater treatment initiation and adherence by HIV positive inmates has been found in settings that adopt DAART procedures [19, 20]. Another, but perhaps less effective strategy in correctional facilities is self-administered therapy (SAT) or keep-on-person (KOP), in which the patient obtains a weekly or monthly supply of the medication and self-administers the drugs on his or her own [21–23].

Establishing and maintaining appropriate privacy and confidentiality for inmates is crucial for establishing an institutional climate in which inmates feel comfortable seeking HIV testing, disclosing their serostatus, expressing their concern about their risk for HIV infection, or adhering to ART medication protocols. For inmates diagnosed with HIV, discontinuity in medications upon transition from institution to the community undermines public health [24]. Gaps in receiving ART increase viral load and thus transmission risk and reduce effectiveness of the medications, may make adherence more difficult, and ultimately increase public health and public safety costs [25–27]. Moreover, suboptimal adherence to ART (e.g., due to interruptions in HIV care—a common scenario) can lead an inmate to develop resistance to class-specific antiretroviral medications [28–30] thus greatly threatening both individual and public health. Reducing these gaps may require addressing institutional and community barriers to ART access that include issues related to stigma [15].

Prior Research on HIV Stigma in Correctional Institutions

Although a number of studies have documented HIV stigma in the general public [12, 31–34], research is scarce on correctional staff attitudes towards inmates living with HIV. Perceived HIV-related stigma has been found to be a barrier to getting tested for HIV and/or disclosing one’s serostatus inside correctional facilities [35, 36]. People living with HIV or AIDS (PLWHA) who are incarcerated may fear a double stigmatization for their HIV status

as well as being an inmate. Additional stigma in correctional facilities as a result of sexual orientation or minority status may also reduce willingness to self-disclose serostatus or engage in HIV services.

A mid-1990s study of correctional staff attitudes towards HIV in Scottish prisons indicated that staff tended to perceive a greater risk of HIV infection when working in correctional settings and as a result had more stigmatizing feelings toward HIV-positive inmates [37]. Derlega and colleagues also noted evidence for stigmatizing attitudes among U.S. correctional staff, who rated PLWHA more negatively than those with other chronic health conditions [35]. Thus, there seems to be a perception of HIV-related stigma in correctional systems, yet little is known about the degree to which stigmatizing attitudes exist among correctional staff or how this may affect engagement in HIV services.

The institutional climate in self-contained and controlled settings, such as prisons or jails, may be shaped by negative staff attitudes or perceptions that could create an environment in which inmates are not comfortable learning about HIV prevention, seeking testing, or taking ART medications. HIV services in correctional settings are delivered in a context which is characterized by difficulty in implementing and sustaining effective coordinated HIV care, widely disparate attention paid to HIV issues across correctional facilities, and misinformation and stigma around HIV among staff and inmates [3, 38, 39]. Access to HIV services may also vary by race and gender [40]. Yet to date, there has been limited research on how stigma may affect these contexts and how they influence the implementation of HIV interventions into correctional settings. The institutional and community corrections climates can be indifferent or hostile toward HIV services [39, 40]. Without more research on the implementation barriers and facilitators for HIV services for persons under criminal justice supervision, HIV interventions will continue to be developed and implemented in a nonintegrated fashion, be less effective than they could be, and serve relatively small numbers of at-risk inmates [41].

Identifying and modifying potential structural sources of stigma towards inmates from correctional staff is necessary to help correctional facilities fulfill their constitutional responsibility to provide adequate medical care to inmates, and reduce the incidence of infectious diseases. Incarceration itself is associated with a greater likelihood of health problems associated with stress [42]. Unaddressed, stress associated with discrimination in the correctional context, may stimulate maladaptive coping behaviors (e.g., drug use) in a setting where risky injection practices prevail and there is a greater likelihood of adverse consequences of drug use such as overdose [43] and contagion with blood borne pathogens including HIV [44].

In addition to security staff (mainly corrections officers), inmates also interact with other types of staff when accessing HIV-related services. This includes nursing and other health care provider staff, intake counselors, social workers and case managers, drug treatment counselors, and educational staff. Accordingly, there is a need to further our understanding of the attitudes and perceptions of different types of staff who work with inmates, including staff in correctional settings as well as staff of community-based organizations (such as substance abuse treatment and HIV service providers) who also come into contact with HIV-

positive inmates or those at risk for HIV following release from custody. Medical and counseling staff in correctional facilities may have lower levels of stigma and discrimination than security staff (due to their clinical training) and may therefore be more supportive and encouraging of HIV services. Less stigmatizing attitudes by medical staff can provide a "buffer" for inmates and reduce overall perceived stigma in the prison or jail facility. Variation in the levels and mechanisms of stigma among different types of staff and different types of setting (jail and prison) may impact their ability to function efficiently as a team and thus affect the delivery of services in the HIV continuum. However, we are not aware of any prior research that has compared HIV stigma attitudes of correctional staff and medical staff inside prisons or jails.

A Framework for Conceptualizing HIV Related Stigma

Although prior research on perceived HIV stigma and discrimination among corrections staff is lacking, the HSF proposed by Earnshaw and Chaudoir [11] may be adaptable for the correctional setting. The HSF differentiates between the mechanisms and related outcomes of stigma for PLWHA and those who are uninfected, and suggests that the mechanisms that produce stigma as well the outcomes produced by it differ between those two groups. Earnshaw and Chaudoir conceptualize HIV stigma as an indicator of social devaluation that is either present or absent in individuals, functioning through three mechanisms: stereotypes, prejudice, and discrimination [12]. Stereotypes refer to mistaken beliefs about the disease or infected persons which are then applied to individuals. They involve thought processes, such as beliefs about how the disease is contracted, which feed beliefs about the type of persons who are infected. Prejudice refers to negative emotional reactions toward infected persons, including anger, disgust, or projections of shamefulness. Discrimination is the "behavioral expression of prejudice," [12, p. 1162] that manifests in specific acts to socially distance members of the stigmatized group from oneself or the uninfected group. Earnshaw and Chaudoir posit that while these mechanisms are often correlated, they represent separate elements of stigma with different functional attributes (cognition, emotion, and behavior). Individually or operating together, they represent the means through which HIV-related stigma among the uninfected may increase social distancing from PLWHA, reduce willingness to be tested for HIV, or increase support for policies that adversely affect those who are infected or at risk [11]. A recent study found that enacted stigma towards HIV-positive individuals had a greater impact on their health outcomes when compared to perceived or internalized stigma, substantiating the need for differentiating and identifying the mechanisms through which stigma manifests itself [45].

Although there has been no published research to date testing the HSF on staff who are in contact with PLWHA or at high risk, there is ample research testing the impact of the components of the framework on persons at risk for or infected with HIV. A meta-analysis found that perceived discrimination has a significant positive association with both mental and physical illness, perhaps due to increased stress [46]. More generally, the Institute of Medicine has identified stereotyping and discrimination as contributing factors to the health disparities encountered by racial and ethnic minorities in the United States [47], who also comprise a disproportionate segment of the inmate population [1, 48, 49].

Stigmatizing or discriminatory attitudes toward HIV among correctional staff (whether expressed overtly or perceived so by inmates), could [1] lead to an institutional climate that encourages or ignores such attitudes, [2] increase inmate reluctance to engage in prevention, get regular HIV tests or disclose their serostatus, and [3] present barriers to initiation and adherence to ART due to confidentiality concerns, a fear of stigma, and lack of information [15, 36]. Before new policies and procedures or training efforts are implemented to increase inmates' use of HIV services, it is important to determine the extent to which stigma attitudes and perceptions exist among staff working in these settings across the domains that comprise the construct. The first step towards this goal is being able to accurately measure various dimensions of stigma and discrimination among staff in correctional settings.

Goals of the Study

As part of the National Institute on Drug Abuse's Criminal Justice Drug Abuse Treatment Studies (CJDATS) cooperative agreement comprised of nine research centers (RCs), the authors were involved in the HIV Services and Treatment Implementation in Corrections (HIV-STIC) study, which experimentally tested a process improvement model to improve delivery of HIV services in correctional facilities. The baseline data collection allowed us to study HIV stigma in questionnaires that were administered to the corrections staff. Informed by the HSF proposed by Earnshaw and Chaudoir [12], this paper explores the perceptions and attitudes around HIV stigma in our national sample of staff working in a sample of prisons and jails in 8 states and Puerto Rico, conducted as part of the HIV-STIC project [50].

The goals of the present study are: [1] to provide a general overview of staff's level of stigma, [2] to report preliminary psychometric analyses of two of the HSF mechanism scales (prejudice and discrimination) adapted for correctional and related staff, [3] to explore differences in level and mechanisms of stigma between state prison and local jail staff, and [4] to explore differences between medical and treatment staff and correctional staff. We sought to determine the extent to which stigma attitudes differed among staff in these different settings and roles.

Methods

Study Sites and Sample

Data were collected as part of our larger multisite HIV-STIC study testing the impact of a structured organizational change intervention (utilizing a local change team with external coaching) for achieving improvements in HIV services for prison and jail inmates [50]. Under the CJDATS cooperative agreement, nine RCs implemented a multisite cluster randomized trial in 24 prison and 8 jail facilities located in Arizona, Colorado, Connecticut, Delaware, Illinois, Kentucky, Pennsylvania, Puerto Rico, and Washington State. We randomized matched pairs of facilities into control and experimental sites following baseline training on best practices in HIV services in correctional settings. All sites were directed by a senior correctional official to work on improving HIV services in one area of the HIV services continuum: testing, prevention, or linkage to HIV medical care following release. Experimental sites implemented structured local change teams guided by external coaches

utilizing a modified version of the NIATx process improvement strategy [51]. Participating agencies include prisons and/or jails as well as the community agencies that provided HIV services to inmates while incarcerated or after release.

Because we were interested in assessing stigma attitudes among correctional leadership and staff that were involved in HIV service delivery, we used a purposive sample comprising all administrators and staff responsible for the oversight and delivery of HIV services at each of the research sites. Staff included correctional and/or community medical staff, correctional staff responsible for HIV infected inmates, case managers, and prevention educators, as well as facility administrators and corrections officers. These staff participated in HIV services training and other aspects of the HIV-STIC project. Additional correctional staff (e.g., security staff and administrators with responsibility for HIV medical services) were recruited to participate in the survey. Surveys (including items related to perceived value of HIV services and attitudes toward evidence-based practices, as well as the stigma items detailed below) were obtained from each of the individuals who provided informed consent. A total of 246 baseline surveys were distributed, with 223 completed surveys returned, a 90.7 % response rate. Five surveys were excluded from analyses because of incomplete data on the stigma items. Additional details on the HIV-STIC study design and measures are found in our recent article [50].

After obtaining IRB-approved informed consent, the self-administered baseline survey was administered between June 2011 and September 2012, prior to the randomization of research sites to either the experimental or control arm, to prevent introducing bias related to pre-exposure or differential exposure of staff to organizational change efforts around HIV services. Completed survey forms contained no identifying information and were placed in sealed envelopes to be collected by research staff at each RC. After preliminary quality assurance checks at each RC, the baseline survey data were sent to the CJDATS coordinating center for aggregation into a single file for additional data quality checks.

The respondents held a number of different staff positions. Among the 218 respondents providing information, 16 % were correctional administrators, 4 % were correctional security staff (i.e., corrections officers), 42 % medical staff (including 35 % correctional and 7 % community staff), 11 % substance abuse treatment counseling staff, 15 % worked for community-based HIV service providers, and 12 % held a variety of other positions. Overall, 66 % of the respondents were correctional system staff. More than two-thirds (68.4 %) were female, and the mean respondent age was 48.3. More than half were White (58.6 %), 23.1 % African American, and 18.2 % other or mixed races. About one-fifth (20.8 %) self-identified as Hispanic.

Development and Description of the HIV/AIDS Stigma Measure

One hypothesis of the overall HIV-STIC study was that the experimental intervention would reduce staff perceptions of stigma against those with HIV or at risk for HIV [50]. An extensive literature search found several potential stigma measures, but none directly applicable to staff working in correctional facilities. The instrument created by Zelaya and colleagues [34] for an exploratory community-based HIV/STD prevention study in Chennai, India was selected and modified for use with correctional and community staff in the U.S.

The original Zelaya et al. [34] stigma scale included 24 items, many of which were selected from previously developed scales [e.g., 52, 53] in four conceptual domains: [1] fear of transmission; [2] association with shame, blame and judgment; [3] personal support of discriminatory actions or policies, and [4] perceived community support for discriminatory actions or policies. For the present study, modifications included shortening the original scale and rewording items to enhance their relevance to correctional staff. All items related to the original domain of fear of transmission as well as three of the original items from the shame, blame, and judgment domain were dropped from the HIV-STIC measure for lack of relevance to the goals of our study. Eight of the remaining original items were revised by omitting "in this community" because correctional facilities are not communities in the same sense used in the original Zelaya et al. [34] measure. The resulting scale included items capturing two of the three mechanisms that comprise the HSF (prejudice and discrimination). Because the original survey [34] did not include a domain for stereotypes, the modified survey did not include a stereotype domain. The analysis thus focuses on stigma as represented by prejudice and discrimination. The wording of the 7 remaining original items was not changed. The 15 items in the final modified scale are shown in Table 1.

Analytic Plan

The analysis proceeded in three steps. First, descriptive statistics were calculated and distributional properties checked for each of the 15 items in the stigma scale. The second step included conducting an exploratory factor analysis (EFA) of the 15 items and saving the factor scores for further analysis. EFA was conducted rather than a confirmatory factor analysis (CFA) for several reasons. First, as indicated above we used a subset of the HIV/AIDS stigma items from the Zelaya et al. scale [34] that was originally developed for use with community respondents in India, so modifications needed to be made to a number of items to enhance their relevance to the correctional and community staff that participated in the HIV-STIC study. Second, the study by Zelaya et al. [34] was, itself, an exploratory study. Finally, the stigma measure was modified because the current study was conducted in the United States rather than in India. Accordingly, CFA would be inappropriate for the present study.

Each respondent rated his/her level of agreement with each item on a 5-point Likert scale. A weighted least squares (WLSMV) estimation was employed because it is a robust estimator when used with highly skewed categorical data, as was observed in the current study. Exploratory structural equation modeling [ESEM; 54] was used for the exploratory factor analyses. ESEM is integrated with EFA measurement parts, allowing access to other parameters, such as correlated residuals, regressions on covariates, regressions between factors of different EFA sets, and mean structures [54].

Geomin [55] was used to perform an oblique rotation of the initial factor structure. It is a preferred rotational procedure when items are expected to load on more than one factor [56]. Adapted from a solution to the row complexity problem suggested by Thurstone [57, 58], Yates' Geomin [55] replaced "the sum of within row products of squared reference structure elements by a sum of within row geometric means of squared pattern coefficients" [59, p.

120]. This rotation was used to estimate a series of solutions ranging from 1 to 5 factors using Mplus Version 7.0 [56]; see also [54]. Preliminary analyses indicated that item 8, "People who have HIV/AIDS should be treated the same as everyone else," was very highly correlated with items 7 (r = 0.824) and 9 (r = 0.812), as well as items 5 (r = 0.722) and 6 (r = 0.753), raising multicollinearity concerns. Hence, it was omitted from further analysis, reducing the item pool to 14 statements (results available from senior author upon request).

The final analytical step included subgroup comparisons on mean factor scores by setting (jail vs. prison facilities) and staff type (corrections staff vs. non-corrections staff; correctional treatment vs. community treatment staff, and corrections staff vs. medical staff) to determine whether the stigma attitudes differed by type of setting and staff.

Results

Descriptive Statistics for HIV/AIDS Stigma Items

In general, respondents expressed nondiscriminatory attitudes about PLWHA (items 1–9) as displayed in Table 1. For example, the vast majority of respondents indicated that persons with HIV/AIDS deserved to receive medical care, regardless of how they contracted the disease (item 1) and disagreed with the statement that people who associate with a person having HIV/AIDS will be influenced to engage in immoral or illicit activities (item 2). Most respondents (88 %) agreed with the statement that persons with HIV/AIDS should be treated the same by health care professionals as people with other illnesses (item 4), and with the statement that a teacher with HIV, who is not sick, should be allowed to continue teaching in school (item 9).

On the other hand, respondents perceived some stigma in society with regard to PLWHA (items 10–15). A majority agreed that persons with HIV/AIDS faced neglect, rejection, or abuse/teasing by others (items 10, 13, 14). About half of respondents indicated that persons with HIV/AIDS may face ejection from their homes by their families (item 12) or abandonment by their spouse or partner (item 15).

Exploratory Factor Analysis

A series of exploratory solutions, ranging from 1 to 5 factors, were computed and comparisons made between solutions in terms of how well each model fit the data. As shown in Table 2, the best solution was a five factor model which had a near perfect fit to the data—as reflected across multiple fit measures, including a non-significant Chi square, a RMSEA near 0, and CFI and TLI values of 1.

Based on item loadings (Table 3), three clear factor patterns emerged, as did two other less interpretable factors. The first distinct factor included 8 items, such as, "only those who were infected with HIV by medical needles or blood in hospitals deserve to receive treatment and care" and "people living with HIV/AIDS should be isolated from other people." This first factor included elements from domains 2 and 3 (i.e., association with shame, blame, and judgment; personal support of discriminatory actions and policies, respectively) originally reported by Zelaya et al. [34]. Interpreted within the HSF [12], this factor mainly includes elements of prejudice (negative emotions and feelings towards those

with HIV/AIDS) with one item (#7) related to discrimination (endorsement of actions that socially distance one from the individual with HIV/AIDS). Factor 1 was the biggest factor, in that more items were significantly loaded on it, indicating it was a more general factor in the data. The remaining, "smaller factors" (i.e., with fewer significant item loadings), were more content domain specific (e.g., factor 2 referring to neglect and rejection/ejection). The second factor included 3 items, such as, "people living with HIV/AIDS face neglect from family" all of which were included in Zelaya and colleagues' [34] fourth domain (perceived community support of discriminatory actions and policies); interpretation of this factor within the HSF suggests this factor reflects discrimination. Like the 2nd factor, the 3rd factor was composed of items from the fourth domain of Zelaya et al. [34], and also appears to be tapping the discrimination dimension described by Earnshaw and Chaudoir [12]. The scores for the second and third factors were highly correlated ($r = 0.57$, $p < 0.001$; Fig. 1), suggesting that they are both capturing the discrimination mechanism, but differ in terms of the extent to which the discriminatory actions are overt. For example, factor 3 includes items more externally visible like verbal abuse and teasing, rejection by peers, and abandonment by spouse or partner. As noted above, two less clear factors were also observed in our EFA. The fourth factor was comprised of three items which also had strong cross loadings on other factors, and a fifth factor had only one item. In order to improve interpretability due to overlap with the other factors, factor 4 was dropped from further consideration. Because Nunnally [60] suggests that factors should have at least 3–4 items, factor 5 also was dropped from further consideration.

The 32 study sites were nested within nine RCs; thus we conducted a two-level analysis in order to determine whether the HIV/AIDS stigma factor scores were significantly different among the RCs at level 2 (results not shown). Results indicated close to zero intraclass correlations for the factor scores (highest intraclass correlation = 0.048). Thus, there was no need to conduct further two-level analyses on factor scores.

Subgroup Comparisons

Scores were compared on the three main scale factors for different types of staff and type of correctional setting. Contrary to our hypothesis, we found few differences in factor scores as a function of staff type or setting (Table 4) aside from factor 1, where corrections treatment staff had significantly higher scores than community treatment staff, indicating higher levels of perceived stigma [$F_{(1, 156)} = 9.46$, $p < 0.01$]. Confirming the consistency of attitudes across staff subgroups, comparisons of individual scale items revealed very few significant differences. For item 3 ("People who have HIV/AIDS should be given treatment and care only if they stop participating in immoral or illegal activities"), community treatment staff were more likely to disagree or strongly disagree than corrections treatment staff (98 vs. 82 %, $p < 0.05$). For item 10 ("People living with HIV/AIDS face neglect from their family"), medical staff were more likely to agree or strongly agree than corrections staff (54 vs. 39 %, $p < 0.05$).

Discussion

To examine HIV/AIDS stigma attitudes among correctional leadership and staff involved in HIV services, we adapted a previous stigma scale and conducted a survey of stigma attitudes in 32 prison and jail facilities in 8 states and Puerto Rico, as part of a larger national multisite study. The purpose of this paper was to explore staff's level of stigma and discrimination, to report preliminary psychometric analyses of a stigma attitudes scale adapted for correctional and related staff, and to examine differences by type of staff and correctional facility.

Although community and medical staff responded in a more empathetic manner on certain items compared with other types of staff, for the most part staff expressed nondiscriminatory attitudes regarding PLWHA and indicated that they should be treated in a supportive manner. However, staff perceived that stigmatization and discrimination continues to exist across US society as a whole. Although this was not a random or representative sample of staff who work with correctional populations, the finding suggests a positive trend among diverse staff across the US and Puerto Rico with regard to the potential for reduced stigma/discrimination for PLWHA in correctional settings.

The factor analyses revealed that a three-factor structure provided the best solution for the adapted scale. Our 3-factor scale differed somewhat from the original scale [34] in terms of factor structure, but successfully captured the same key elements and tapped into two of the domains that comprise the HSF (i.e., prejudice and discrimination; [12]). Thus, our adapted scale may be a useful tool in future research to examine the influence of HIV-related stigma in the correctional system as HIV services are expanded and improved.

The relatively low level of expressed stigma across all staff subgroups is encouraging, and the lack of variation across study sites also indicates that stigma is rather low in areas that encompass most regions of the United States. It should be noted, however, that some stigma attitudes persist among correctional staff. Six percent of respondents either agreed (1 %), strongly agreed (2 %) or had no opinion (3 %) concerning the statement that only those who were infected by medical needles or blood in a hospital deserved care and treatment. Although six percent is a low endorsement rate, that particular statement is heavily judgment-laden and indicates an attitude that is inconsistent with being supportive of a high-risk incarcerated population. The percentages in the response category "no opinion" ranged from 3 to 53 %. No opinion responses were highest on those items that focused on how other persons treated PLWHA. They were the lowest on the direct personal opinion items. The items measuring how others treated PLWHA also has substantially more negative responses than the personal opinion items. These results suggest that correctional staff either perceive or have observed that others hold stigmatizing attitudes toward PLWHA, or are unsure about the level of stigma among others. This suggests a need for further research on HIV stigma among broader samples of correctional and health services staff (especially security staff), as well as inmates.

The impact of even low levels of stigma can have pronounced effects in prison settings. Prison environments are by their nature compressed and insular, such that attitudes or

behaviors by small numbers of staff are noticed and discussed, and can affect inmates' perceptions and behaviors. There is a difference between outwardly stigmatizing people through words and actions and allowing minor slights or negative attitudes to permeate, but in institutional environments, the latter can be just as detrimental as the former in terms of an inmate's willingness to get an HIV test, participate openly in prevention programming or disclose a known positive serostatus and begin ART. Many of the study participants were involved in HIV care, and thus likely to be more knowledgeable about the realities of HIV and PLWHA, and be aware of which inmates were HIV-positive, than most front line security staff. But it is the front line security staff that control movement on the cell blocks, including escorting inmates from their cells to obtain medical care, including HIV testing and care. However, our sample had too few security staff respondents to provide valid measures of their stigma attitudes.

Some relatively straightforward changes in institutional policies and procedures may reduce the negative impact of stigmatizing or discriminatory attitudes, whether perceived or overt. For example, the process for opt-in testing can require inmates to file a sick call slip, attend the sick call line with other inmates, get the HIV test and, in cases where rapid tests are not used, go through the sick call line again to receive the results. At each stage of this process, inmates may be asked by other inmates or staff why they are seeing to the doctor. To the extent that inmates perceive stigma or discrimination from others, this may deter them from requesting HIV tests under an opt-in protocol. Implementing op-out HIV testing (ideally using rapid testing procedures) as part of routine medical exams would remove the burden of requesting a test from the inmate and increase the number of inmates willing to be tested [4].

Reducing the impact of stigma on obtaining and adhering to HIV medications is potentially more difficult than reducing testing barriers. An inmate who goes to sick call or the pill line daily (i.e., the DAART technique) is likely to be asked what is wrong by staff or other inmates [36]. Likewise, inmates who are allowed to keep their medications with them (i.e., the SAT/KOP technique) may also seek ways to maintain confidentiality, particularly when they share a cell with another inmate [35]. Future empirical studies of the feasibility of differing approaches to providing ART would be highly beneficial. A final issue suggested by our findings concerns the "otherness" of stigma. As noted above, our respondents rated their own attitudes and opinions concerning PLWHA as reflecting low stigma or discrimination, but rated the way *other* people treat PLWHA in a more negative fashion. Although not addressed in the current study, it is possible that inmates feel much the same way ("I don't stigmatize, but others do"). The extent to which inmates *perceive* that correctional staff (or other inmates) stigmatizes PLWHA may present barriers to obtaining HIV tests, ART, or participating in prevention activities, regardless of the actual attitudes among staff and inmates. Positive messaging and proper education and prevention services provided to both inmates and staff may lessen the actual or perceived burden inmates encounter when accessing HIV services within the closed environments of prisons and jails. Programs modeled to accomplish this should be tested and could potentially have a positive impact on the number of infected inmates identified and receiving proper treatment while incarcerated, thereby improving overall public health.

Limitations and Conclusion

Several study limitations should be noted. First, survey respondents were not randomly selected from among all staff at the various agencies represented in this project, and thus the likelihood of selection bias must be noted. Most respondents were selected for their involvement in the HIV-STIC project or their role in delivery of HIV services at the study sites. Other staff members were recruited to represent the views of key staff types such as correctional administrators and security staff. Therefore, our findings are likely to not be generalizable to all staff at the study sites, nor to U.S. correctional staff in general. However, the purpose of our study was not to assess stigma attitudes among all correctional staff, and our sample was representative of staff likely to come into regular contact with inmates with HIV or receiving HIV services. Most correctional staff does not have such contact, and HIV services are not a routine part of correctional staff's daily work. Accordingly, the value of assessing stigma among all staff is less crucial. It is more important to assess stigma among staff overseeing the facilities, and providing HIV testing, prevention, and treatment services. In addition, the high response rate is a strength of the study. Second, the study sites across nine CJDATS RCs are not necessarily representative of other jail or prison facilities in the U.S. Nonetheless, the respondents were from geographically dispersed regions of the U.S., and were generally familiar and involved with delivery of HIV services, so their attitudes and perceptions are important to document, and are likely to influence the attitudes of other staff at the facilities. Third, the sample included only a small percentage of correctional security staff, so the findings do not necessarily represent the attitudes of corrections officers and other security personnel. Although they do not routinely provide HIV services to inmates, their attitudes toward PLWHA, and the responsibilities they have for moving inmates to and from health and other services, may affect inmates' willingness to engage in HIV services or disclose their serostatus. Future research assessing larger samples of front-line security staff would be valuable in order to determine whether our results are generalizable to a broader sample of correction officers, and whether higher levels of stigma and discrimination attitudes exist among those staff.

Fourth, in constructing our stigma scale we drew on prior validated scales, and excluded items related to fear of HIV transmission. This domain might affect correctional staff attitudes and behavior toward HIV-positive inmates and is of potential importance in expanding knowledge of the factors affecting staff attitudes toward HIV and HIV stigma in prisons and jails, and should be included in future studies.

Finally, it is possible that social desirability influenced the staff responses to questions to the stigma survey items. Although the surveys were anonymous, the number of staff surveyed at some sites was relatively small which might raise concerns among staff about confidentiality. However, the fact that the largest percentage of "no opinion" responses were for items that focused on how others treated PLWHA, and not on the direct personal opinion items, may suggest that respondents were not responding in a socially desirable way. Nonetheless, the survey did not include any tests for social desirability, and this possibility cannot be ruled out.

The current study findings supported two of the three domains that comprise stigma in the HSF. The addition of items capturing stereotypes would have made for a more robust analysis, and future research should endeavor to include all three mechanisms. Still, given the lack of empirical data on HIV stigma attitudes among correctional and medical services staff, our findings contribute to knowledge about the current perceptions in this area, and demonstrate that two of the three HSF mechanisms can be effectively measured in correctional settings.

Although we found a low level of expressed stigma and discriminatory attitudes among different types of correctional staff and community service providers, the perceptions that there are stigmatizing attitudes among others suggests that the correctional environment may still present barriers to accessing HIV services that in part reflect actual or perceived stigma toward PLWHA, and may explain the numerous gaps in HIV services that exist in correctional settings [3]. Additional validation and refinement of the stigma scale with diverse samples of correctional, medical, and HIV service provider staff, as well as inmates, would increase knowledge about HIV stigma in correctional settings.

More broadly, adoption of best practices in HIV care in U.S. correction facilities will require structural as well as cultural changes not limited to deconstructing stigmatizing attitudes towards PLWHA. Correctional health services are charged with providing care to a population group with significant health and social disparities [61] that place growing demands on services on already constrained budgets [62]. Provisions in the Affordable Care Act to address the gap in Medicaid coverage during incarceration are limited to enabling Medicaid coverage for inpatient medical care; suspending rather than terminating Medicaid benefits upon incarceration, and facilitating Medicaid enrollment during the re-entry process may expedite transition to community care and improve ART adherence [63]. Other important challenges to providing effective client-centered HIV health services in prisons include low staff-to-inmate ratios, tensions between security and health staff [64], insufficient staff education and training in HIV services delivery [65], and frequent transfers within the prison system that can interrupt care. These significant barriers notwithstanding, our finding that stigmatizing attitudes towards PLWHA were not prevalent among the staff involved in inmate HIV services should encourage interventions aimed at prison health staff to encourage their involvement in reducing structural and cultural factors that hinder provision of an effective continuum of HIV care for inmates.

With broader attention to the levels and types of stigma attitudes, new training, policies, and procedures can be developed and tested with the ultimate goal of increasing inmate access to HIV services, increasing the number of infected inmates identified, and improving initiation of and adherence to ART medications both within correctional facilities and following release to the community.

Acknowledgments

This study was funded under a cooperative agreement from the U.S. Department of Health and Human Services, National Institutes of Health, National Institute on Drug Abuse. The authors gratefully acknowledge the collaborative contributions by NIDA; the Coordinating Center, AMAR International, Inc.; and the Research Centers participating in CJ-DATS. The Research Centers include: Arizona State University and Maricopa County Adult Probation (U01DA025307); University of Connecticut and the Connecticut Department of Correction

(U01DA016194); University of Delaware and the New Jersey Department of Corrections (U01DA016230); Friends Research Institute (U01DA025233) and the Maryland Department of Public Safety Correctional Services' Division of Parole and Probation; University of Kentucky and the Kentucky Department of Corrections (U01DA016205); National Development and Research Institutes, Inc. and the Colorado Department of Corrections (U01DA016200); University of Rhode Island, Rhode Island Hospital and the Rhode Island Department of Corrections (U01DA016191); Texas Christian University and the Illinois Department of Corrections (U01DA016190); Temple University and the Pennsylvania Department of Corrections (U01DA025284); and the University of California at Los Angeles and the Washington State Department of Corrections (U01DA016211). The contents are solely the responsibility of the authors and do not necessarily represent the views of the Department of Health and Human Services, NIDA, or other CJ-DATS parties.

References

1. Centers for Disease Control and Prevention. [Accessed 10 Aug 2012] HIV in correctional settings. http://www.cdc.gov/hiv/topics/correctional
2. Maruschak, L. HIV in prisons, 2001–2010. (NCJ 238877). Washington, DC: U.S Department of Justice, Bureau of Justice Statistics; 2012.
3. Belenko S, Hiller M, Visher C, et al. Policies and practices in the delivery of HIV services in correctional agencies and facilities: results from a multisite survey. J Correct Health Care. 2013; 19:293–310. [PubMed: 24078624]
4. Centers for Disease Control and Prevention. HIV testing implementation guidance for correctional settings. Atlanta: Centers for Disease Control and Prevention; 2009.
5. Begier EM, Bennani Y, Forgione L, et al. Undiagnosed HIV infection among New York city jail entrants, 2006: results of a blinded serosurvey. J Acquir Immune Defic Syndr. 2010; 54(1):93–101. [PubMed: 20042868]
6. Anderson, RM. The transmission dynamics of sexually transmitted diseases: the behavioral component. In: Wasserheit, JN.; Aral, SO.; Holmes, KK.; Hitchcock, PJ., editors. Research issues in human behavior and sexually transmitted diseases in the AIDS era. Washington, DC: American Society for Microbiology; 1991.
7. Aral SO. Determinants of STD epidemics: implications for phase appropriate intervention strategies. Sex Transm Infect. 2002; 78(Suppl 1):i3–i13. [PubMed: 12083444]
8. Blanchard JF. Populations, pathogens, and epidemic phases: Closing the gap between theory and practice in the prevention of sexually transmitted diseases. Sex Transm Infect. 2002; 78(Suppl 1):i183–i188. [PubMed: 12083441]
9. HHS Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. U.S. Department of Health and Human Services; 2014. http://aidsinfo.nih.gov/ContentFiles/AdultandAdolescentGL.pdf [Accessed 18 Feb 2015]
10. Stuber J, Meyer I, Link B. Stigma, prejudice, discrimination and health. Soc Sci Med. 2008; 67(3): 351–357. [PubMed: 18440687]
11. UNAIDS. Research studies from Uganda and India. Geneva: UNAIDS; 2000. HIV- and AIDS-related stigmatization, discrimination and denial: forms, contexts and determinants.
12. Earnshaw VA, Chaudoir SR. From conceptualizing to measuring HIV stigma: a review of HIV stigma mechanism measures. AIDS Behav. 2009; 13:1160–1177. [PubMed: 19636699]
13. Leukefeld C, Staton-Tindall M, Hiller ML, et al. A descriptive profile of health problems, health services utilization, and HIV serostatus among incarcerated male drug abusers. J Behav Health Serv Res. 2002; 29(2):167–175. [PubMed: 12032974]
14. Visser M, Kershaw T, Makin J, Forsyth B. Development of parallel scales to measure HIV-related stigma. AIDS Behav. 2008; 12:759–771. [PubMed: 18266101]
15. Roberson D, White B, Fogel C. Factors influencing adherence to antiretroviral therapy for HIV-infected female inmates. J Assoc Nurses AIDS Care. 2009; 20:50–61. [PubMed: 19118771]
16. Marks G, Crepaz N, Senterfitt J, Janssen R. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. J Acquir Immune Defic Syndr. 2005; 39(4):446–453. [PubMed: 16010168]

17. O'Connell, DJ.; Swan, H.; Martin, SS.; Surratt, HL.; Visher, CA. An HIV continuum of care model for corrections. In: Sanders, W.; Deeds, B., editors. Crime, HIV and health: intersections of criminal justice and public health concerns. New York: Springer; 2013. p. 2013
18. Pettus-Davis C, Scheyett AM, Hailey D, Golin C, Wohl D. From the 'streets' to 'normal life': assessing the role of social support in release planning for HIV-positive and substance-involved prisoners. J Offender Rehab. 2009; 48(5):367–387.
19. Zaller N, Thurmond P, Rich JD. Limited spending: an analysis of correctional expenditures on antiretrovirals for HIV-infected prisoners. Pub Health Rep. 2007; 122(1):49–54. [PubMed: 17236608]
20. Baillargeon JG, Giordano TP, Harzke AJ, Baillargeon G, Rich JD, Paar DP. Enrollment in outpatient care among newly released prison inmates with HIV infection. Pub Health Rep. 2010; 125(Supp 1):64–71. [PubMed: 20408389]
21. Di Paola A, Altice FL, Powell ML, Trestman RL, Springer SA. A comparison of psychiatric diagnoses among HIV-infected prisoners receiving combination antiretroviral therapy and transitioning to the community. Health Justice. 2014; 2:11.
22. Altice, FL.; Tehrani, AS.; Qiu, J.; Herme, M.; Springer, SA. Directly administered antiretroviral therapy (DAART) is superior to self-administered therapy (SAT) among released HIV + prisoners: results from a randomized controlled trial; Boston, MA. Paper presented at the 18th Conference on Retroviruses and Opportunistic Infections; 2011 Feb-Mar.
23. Fischl, M.; Castro, J.; Monroid, R., et al. Impact of directly observed therapy on long-term outcomes in HIV clinical trials; Chicago, IL. Program and Abstracts of the 8th Conference on Retroviruses and Opportunistic Infections; 2001 Feb 4–8. Abstract 528
24. Baillargeon J, Giordano TP, Rich JD, et al. Accessing antiretroviral therapy following release from prison. JAMA. 2009; 310:848–857. [PubMed: 19244192]
25. Deloria-Knoll M, Chmiel J, Moorman A, Wood K, Holmberg S, Palella F Jr. HIV Outpatient Study (HOPS) Investigators. Factors related to and consequences of adherence to antiretroviral therapy in an ambulatory HIV-infected patient cohort. AIDS Patient Care STDs. 2004; 18:721–727. [PubMed: 15659883]
26. Mannheimer S, Friedland G, Matts J, et al. The consistency of adherence to antiretroviral therapy predicts biologic outcomes for human immunodeficiency virus-infected persons in clinical trials. Clin Infect Dis. 2002; 34:1115–1121. [PubMed: 11915001]
27. Paterson DL, Swindells S, Mohr J, et al. Adherence to protease inhibitor therapy and outcomes in patients with HIV infection. Ann Intern Med. 2000; 133:21–30. [PubMed: 10877736]
28. Bangsberg DR, Porco TC, Kagay C, Charlebois ED, Deeks SG, Guzman D, Clark R, Moss A. Modeling the HIV protease inhibitor adherence-resistance curve by use of empirically derived estimates. J Infect Dis. 2004; 190(1):162–165. [PubMed: 15195256]
29. Bangsberg DR, Kroetz DL, Deeks SG. Adherence-resistance relationships to combination HIV antiretroviral therapy. Curr HIV/ AIDS Rep. 2007; 4(2):65–72. [PubMed: 17547827]
30. Gardner EM, Burman WJ, Steiner JF, Anderson PL, Bangsberg DR. Antiretroviral medication adherence and the development of class-specific antiretroviral resistance. AIDS. 2009; 23(9): 1035–1046. [PubMed: 19381075]
31. Herek GM, Capitanio JP, Widaman KF. HIV-related stigma and knowledge in the United States: prevalence and trends, 1991–1999. Am J Public Health. 2002; 92:371–377. [PubMed: 11867313]
32. Kalichman SC, Simbayi LC, Cloete A, et al. Measuring AIDS stigmas in people living with HIV/ AIDS: the internalized AIDS-related stigma scale. AIDS Care. 2009; 21:87–93. [PubMed: 19085224]
33. Shapiro PD. How close is too close? The negative relationship between knowledge of HIV transmission routes and social distancing tendencies. Soc Sci J. 2005; 42:629–637.
34. Zelaya CE, Sivaram S, Johnson SC, Srikrishnan AK, Solomon S, Celentano DD. HIV/AIDS stigma: reliability and validity of a new measurement instrument in Chennai, India. AIDS Behav. 2008; 12:781–788. [PubMed: 18030613]
35. Derlega VJ, Winstead BA, Brockington JE Jr. AIDS stigma among inmates and staff in a USA state prison. Int J STD AIDS. 2008; 19:259–263. [PubMed: 18482946]

36. Derlega VJ, Winstead BA, Gamble KA, Kelkar K, Khuanghlawn P. Inmates with HIV, stigma, and disclosure decision-making. J Health Psychol. 2010; 15(2):258–268. [PubMed: 20207669]
37. McKee KJ, Marková I, Power KG. Concern, perceived risk and attitudes towards HIV/AIDS in Scottish prisons. AIDS Care. 1995; 7(2):159–170. [PubMed: 7619870]
38. Arriola K, Kennedy SS, Coltharp JC, Braithwaite RL, Hammett TM, Tinsley MJ. Development and implementation of the cross-site evaluation of the CDC/HRSA corrections demonstration project. AIDS Educ Prev. 2002; 14(Suppl A):107–118. [PubMed: 12092929]
39. Hammett, TM.; Harmon, P.; Maruschak, LM. 1996–1997 update: HIV/AIDS, STDs, and TB in correctional facilities. Washington, DC: U.S. Department of Justice, Office of Justice Programs; 1999.
40. Belenko S, Shedlin M, Chaple M. HIV risk behaviors, knowledge, and prevention service experiences among African American and other offenders. J Health Care Poor Underserved. 2005; 16:108–129. [PubMed: 16327111]
41. Solomon J, Card JJ, Malow RM. Adapting efficacious interventions: advancing translational research in HIV prevention. Eval Health Prof. 2006; 29:162–194. [PubMed: 16645183]
42. Massoglia M. Incarceration as exposure: the prison, infectious disease, and other stress-related illnesses. J Health Soc Behav. 2008; 49:56. [PubMed: 18418985]
43. Albizu-García CE, Hernández-Viver A, Feal J, Rodríguez-Orengo JF. Characteristics of inmates witnessing overdose events in prison: implications for prevention in the correctional setting. Harm Reduct J. 2009; 6:15–23. [PubMed: 19589157]
44. Macalino GE, Vlahov D, Sanford-Colby S, et al. Prevalence and incidence of HIV, hepatitis B virus, and hepatitis C virus infections among males in Rhode Island prisons. Am J Public Health. 2004; 94(7):1218–1223. [PubMed: 15226146]
45. Earnshaw VA, Smith LR, Chaudoir SR, Amico KR, Copenhaver MM. HIV stigma mechanisms and well-being among PLWH: a test of the HIV stigma framework. AIDS Behav. 2013; 17(5): 1785–1795. [PubMed: 23456594]
46. Pascoe EA, Smart Richman L. Perceived discrimination and health: a meta-analytic review. Psychol Bull. 2009; 135:531–554. [PubMed: 19586161]
47. Smedley, BD.; Stith, AY.; Nelson, AR., editors. Unequal treatment: confronting racial and ethnic disparities in health care. Washington, DC: Institute of Medicine, National Academy Press; 2003.
48. Carson, EA.; Golinelli, D. Prisoners in 2012, trends in admissions and releases, 1991–2012 (NCJ 243920). Washington DC: U.S. Department of Justice, Bureau of Justice Statistics; http://www.bjs.gov/index.cfm?ty=pbdetail&iid=4842 [Accessed 29 July 2014]
49. Minton, TD.; Golinelli, D. Jail inmates at midyear 2013- statistical tables (NCJ 245350). Washington DC: U.S Department of Justice, Bureau of Justice Statistics; http://www.bjs.gov/index.cfm?ty=pbdetail&iid=4988 [Accessed 29 July 2014]
50. Belenko S, Visher C, Copenhaver M, et al. A cluster randomized trial of utilizing a local change team approach to improve the delivery of HIV services in correctional settings: study protocol. Health Justice. 2013; 1:8. [PubMed: 25530933]
51. McCarty D, Gustafson D, Wisdom J, et al. The Network for the Improvement of Addiction Treatment (NIATx): enhancing access and retention. Drug Alcohol Depend. 2007; 88:138–145. [PubMed: 17129680]
52. Genberg BL, Kawichai S, Chingono A, et al. Assessing HIV/ AIDS stigma and discrimination in developing countries. AIDS Behav. 2008; 12(5):772–780. [PubMed: 18080830]
53. Young S, Hlavka Z, Modiba P, et al. HIV-related stigma, social norms, and HIV testing in Soweto and Vulindlela, South Africa: National Institutes of Mental Health Project Accept (HPTN 043). J Acquir Immune Defic Syndr. 2010; 55:620–624. [PubMed: 20980913]
54. Asparouhov T, Muthén B. Exploratory structural equation modeling. Struct Equ Model. 2009; 16:397–438.
55. Yates, A. Multivariate exploratory data analysis: a perspective on exploratory factor analysis. Albany: State University of New York Press; 1987.
56. Muthén, LK.; Muthén, B. Mplus user's guide. Los Angeles: Muthén & Muthén; 2012.
57. Thurstone, LL. The vectors of mind: multiple factor analysis for the isolation of primary traits. Chicago: The University of Chicago Press; 1935.

58. Thurstone, LL. Multiple-factor analysis. Chicago: The University of Chicago Press; 1947.
59. Browne MW. An overview of analytic rotation in exploratory factor analysis. Multivar Behav Res. 2001; 36:111–150.
60. Nunnally, JC. Psychometric theory. New York: McGraw-Hill; 1978.
61. Wilper AP, Woolhandler S, Boyd JW, et al. The health and health care of US prisoners: results of a nationwide survey (Review). Am J Pub Health. 2009; 99:666–672. [PubMed: 19150898]
62. The Pew Charitable Trusts and the John D and Catherine T. [Accessed 6 Mar 2015] MacArthur Foundation. 2013. Managing Prison Health Care Spending. http://www.pewtrusts.org/*/media/legacy/uploadedfiles/pcs_assets/2014/PCTCorrectionsHealthcareBrief050814pdf.pdf.
63. Council of State Governments, Justice Center. [Accessed 16 Jan 2015] Policy Brief: Opportunities for Criminal Justice Systems to Increase Medicaid Enrollment. 2013. http://csgjusticecenter.org/wp-content/uploads/2013/12/ACA-Medicaid-Expansion-Policy-Brief.pdf
64. MacDonald, M. Study of the health care provision, existing drug services and strategies operating in prisons in ten countries from Central and Eastern Europe. European Institute for Crime Prevention and Control, affiliated with the United Nations (HEUNI). Finland: Publication Series No. 45. Helsinki; 2005. http://www.heuni.fi/material/attachments/heuni/papers/6KtmY2gvf/HEUNI_papers_23.pdf [Accessed 15 Jan 2015]
65. Sabharwal CJ, Hunt Muse K, Alper H, et al. Jail-based providers' perceptions of challenges to routine HIV testing in New York City jails. J Correct Health Care. 2010; 16(4):310–321. [PubMed: 20881145]

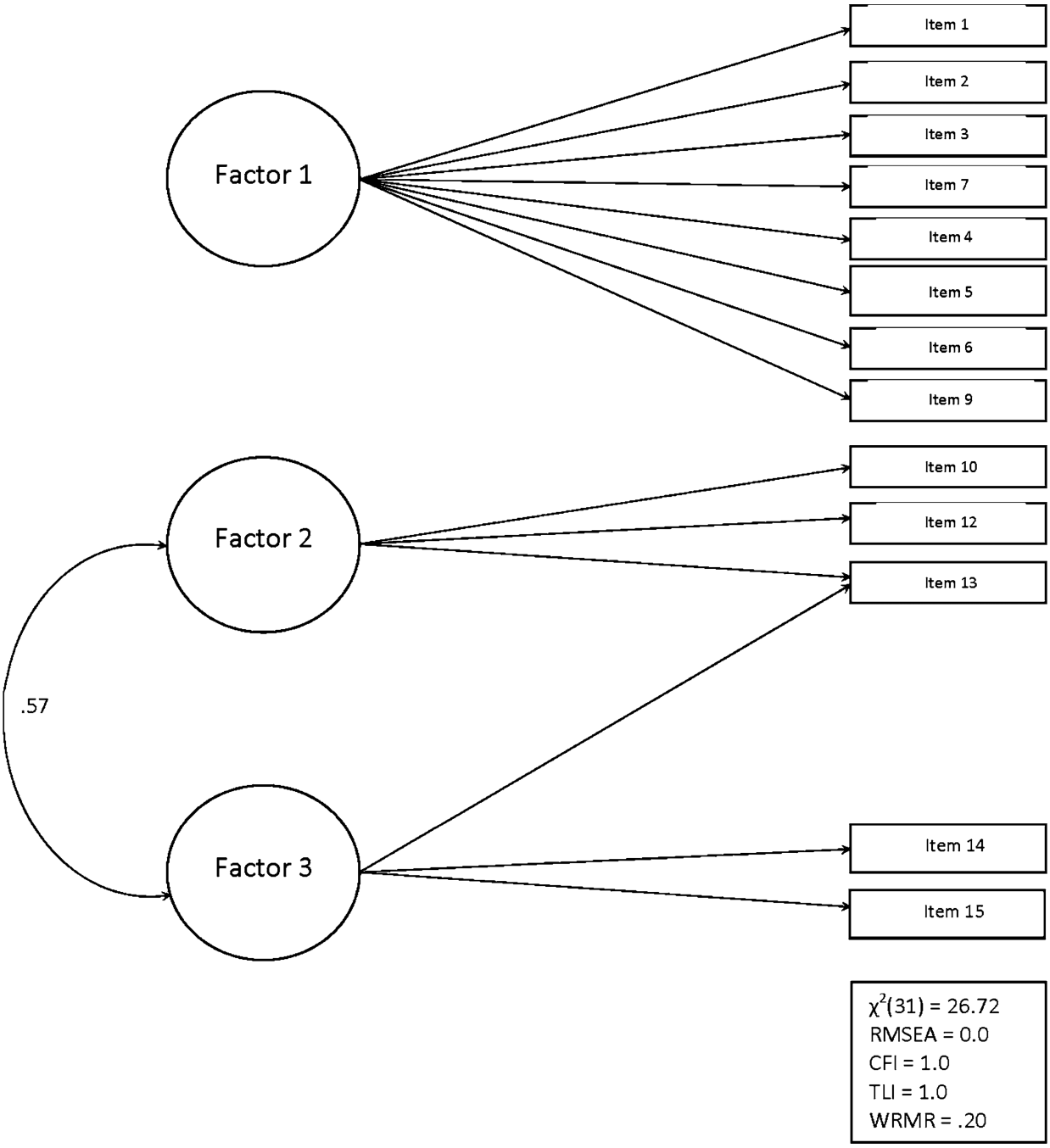

Fig. 1.

Final analytic solution showing measurement model with the best fit to the data. Factor loadings shown were ≥0.30. Factors 4 and 5 were omitted from diagram (see explanation in Results)

Table 1

Responses to the HIV/AIDS stigma items

Item	Strongly disagree (%)	Disagree (%)	No opinion (%)	Agree (%)	Strongly agree (%)
	1	2	3	4	5
1. Only those who were infected with HIV by medical needles or blood in a hospital deserve to receive care and treatment	80	14	3	1	2
2. If people associate or interact with a person who has HIV/AIDS, they may be influenced to participate in immoral or illicit activities	74	14	7	4	2
3. People who have HIV/AIDS should be given treatment and care only if they stop participating in immoral or illicit activities	65	21	8	4	2
4. People living with HIV/AIDS should be treated the same by health care professionals as people with other illnesses (R)	3	3	7	20	68
5. A person with HIV/AIDS should be allowed to work with other people (R)	2	1	4	21	72
6. People with HIV/AIDS should be allowed to participate in social events (R)	1	1	3	19	76
7. People with HIV/AIDS should be isolated from other people	82	14	3	<1	<1
8. People who have HIV/AIDS should be treated the same as everyone else (R)	0	<1	4	19	76
9. If a teacher has HIV, but is not sick, they should be allowed to continue teaching in school (R)	1	1	5	20	72
10. People living with HIV/AIDS face neglect from their family	4	14	32	34	17
11. People want to be friends with someone who has HIV/AIDS (R)	6	22	53	14	5
12. People living with HIV/AIDS face ejection from their homes by their families	5	13	37	34	11
13. People living with HIV/AIDS face rejection from their peers	3	9	25	49	14
14. People living with HIV/AIDS face verbal abuse or teasing	3	6	28	49	14
15. People with HIV/AIDs are abandoned by their spouse or partner	3	7	42	37	11

There were few cases with missing data; the number of respondents per item ranged from 220 to 222. Items that were reverse coded are designated with (R)

Percentages may not sum to 100 due to rounding error

Table 2

Exploratory factor analysis results

Factor result	χ^2 (df)	*P* value	RMSEA	CFI	TLI	WRMR
1 Factor	1026.83 (77)	0.000	0.236	0.803	0.768	3.095
2 Factors	197.25 (64)	0.000	0.097	0.972	0.961	0.857
3 Factors	86.73 (52)	0.002	0.055	0.993	0.987	0.457
4 Factors	59.30 (41)	0.032	0.045	0.996	0.992	0.335
5 Factors	26.72 (31)	0.686	0.000	1.000	1.003	0.195

Fit indices were the root mean square of approximation (RMSEA), comparative fit index (CFI), Tucker Lewis index (TLI), and the weighted root mean residual (WRMR)

Table 3

Geomin rotated factor analysis results-weighted least squares estimation

HIV item	Geomin factors				
	1	2	3	4	5
1. Only those who were infected with HIV by medical needles or blood in a hospital deserve to receive care and treatment	**0.860*****	0.001	0.030	−0.023	−0.292**
2. If people associate or interact with a person who has HIV/AIDS, they may be influenced to participate in immoral or illicit activities	**0.830*****	0.127	−0.030	0.007	−0.151
3. People who have HIV/AIDS should be given treatment and care only if they stop participating in immoral or illicit activities	**0.841*****	0.270	−0.151	−0.040	−0.016
7. People with HIV/AIDS should be isolated from other people	**0.863*****	−0.150	0.189	0.010	0.129
10. People living with HIV/AIDS face neglect from their family	−0.018	**0.600*****	0.160	−0.016	0.201*
12. People living with HIV/AIDS face ejection from their homes by their families	−0.011	**0.965*****	0.041	**0.521***	−0.003
13. People living with HIV/AIDS face rejection from their peers	0.031	**0.346****	**0.669*****	−0.084	0.009
14. People living with HIV/AIDS face verbal abuse or teasing	−0.128	0.041	**0.752*****	0.011	−0.043
15. People with HIV/AIDs are abandoned by their spouse or partner	0.003	0.049	**0.775*****	0.101	0.000
4. People living with HIV/AIDS should be treated the same by health care professionals as people with other illnesses (R)	**0.554*****	0.031	−0.063	0.196**	0.061
5. A person with HIV/AIDS should be allowed to work with other people (R)	**0.557*****	−0.010	0.012	**0.536*****	0.034
6. People with HIV/AIDS should be allowed to participate in social events (R)	**0.621*****	−0.012	−0.063	**0.605*****	−0.032
9. If a teacher has HIV, but is not sick, they should be allowed to continue teaching in school (R)	**0.627*****	−0.149	0.107	0.250**	0.025
11. People want to be friends with someone who has HIV/AIDS (R)	0.025	0.035	−0.017	−0.002	**0.689****

[a]The number preceding the item reflects its presentation order in the section of the questionnaire in which it was included. To facilitate factor interpretation, factor loadings greater than 0.3 are in bold

*Two-tailed p values: $p < 0.05$;

** $p < 0.01$;

*** $p < 0.001$

Table 4

Comparison of HIV stigma factor scores across subgroups

Factor	Correctional setting		*p*≤	General type of staff		*p*≤	Treatment staff		*p*≤	Corrections vs. medical		*p*≤
	Jail (*n* = 74)	Prison (*n* = 146)		Corrections (*n* = 53)	Non-corrections (*n* = 107)		Correctional staff (*n* = 107)	Community staff (*n* = 51)		Corrections staff (*n* = 53)	Medical staff (*n* = 158)	
Factor 1	0.01	0.12	ns	0.24	0.14	ns	0.14	−0.24	0.01	0.24	0.02	ns
Factor 2	0.12	−0.09	ns	−0.21	0.03	ns	0.03	−0.10	ns	−0.21	0.06	ns
Factor 3	−0.09	−0.05	ns	−0.10	−0.02	ns	−0.02	0.15	ns	−0.10	0.04	ns

Factor scores were calculated in MPlus II. A description of the algorithm used can be found on pages 385–386 of the *Mplus User's Manual*, version 7

Two-tailed p-values noted in the table