HIV Care Engagement Among Justice-Involved and Substance Using People of Puerto Rican Origin Who are Living with HIV

Janet J. Wiersema¹ · Paul A. Teixeira¹ · Tracy Pugh² · Jacqueline Cruzado-Quiñones³ · Alison O. Jordan³

Accepted: 26 March 2021
© The Author(s) 2021

Abstract

Persons living with diagnosed HIV (PLWDH) are overrepresented in correctional settings, as are Latinx including those of Puerto Rican (PR) origin. Little is known about this population's HIV care engagement after incarceration. Semi-structured interviews were conducted with 23 PLWDH of PR origin incarcerated in NYC jails using the Behavioral Model for Vulnerable Populations as the theoretical basis. Most participants described a fragile connection to HIV care and inconsistent antiretroviral therapy adherence due to issues including substance use, poverty (e.g. homelessness), and other factors. Most were satisfied with their current communitybased providers and reported that their PR ethnicity and transnational ties to PR did not impact their HIV care, although some preferred Spanish-speaking providers. Greater access to stable housing and HIV care that is convenient to substance use treatment and other services appear to be the greatest needs of PLWDH of PR origin leaving jail.

Keywords Linkage and retention in HIV care · Transitional care coordination for persons living with HIV · Patient navigation · Antiretroviral therapy (ART) adherence · Criminal justice-involved · Behavioral model for vulnerable populations

Introduction

People who are incarcerated have a higher burden of HIV compared to the general population, and Latinx are disproportionately represented in both the correctional population and those who are living with HIV in the United States. The

rate of new HIV diagnoses in 2018 was nearly 3.5 times greater for Latinx persons than for non-Latinx whites, and the rate of Latinx living with diagnosed HIV was 2.5 times higher [1]. In 2018, Latinx incarceration rates were 2.5 times that of non-Latinx whites [2]. While Latinx comprised only 18.3% of the U.S. population in 2018 [3], they accounted for 23.5% of the incarcerated population [2] and 26.2% of new HIV diagnoses [1].

Primary contributors to improved HIV-related morbidity and mortality include timely and consistent access to HIV care and adherence to antiretroviral therapy (ART). Research shows that people who are incarcerated can successfully engage in HIV care and adhere to ART. In fact, a systematic review showed that incarcerated persons have better rates in four of the five HIV Care Continuum (HCC) phases—linkage to care, retention in care, ART adherence, and viral suppression—compared to national averages [4, 5]. However, these rates fall to levels below the national averages following incarceration [5] likely due to substance use [6–8], mental health conditions [9], and housing instability and/or homelessness [10–12]. Transitional Care Coordination (TCC) can ameliorate some of the challenges that incarcerated persons experience while transitioning to the

✉ Janet J. Wiersema
Jwiersema1@nychhc.org

Paul A. Teixeira
pault212@gmail.com

Tracy Pugh
tp2464@cumc.columbia.edu

Jacqueline Cruzado-Quiñones
jackie@acojaconsulting.com

Alison O. Jordan
ali@acojaconsulting.com

¹ Correctional Health Services, NYC Health + Hospitals, 55 Water Street, 18th Floor, New York, NY 10041, USA

² Mailman School of Public Health, Columbia University, New York, NY, USA

³ ACOJA Consulting LLC, New York, NY, USA

community by connecting them to housing resources, substance use treatment, health care, and other services [13–16].

Latinx in the U.S. are typically viewed as a homogenous group with shared values and concerns despite differences by country of origin [17]. However, existing research suggests that the health, health care experiences, and needs of PLWDH may vary by country of origin, as may intervention efficacy [18]. Research further suggests that transnational practices and “transnationalism” may impact health behaviors including health care engagement [19, 20]. Transnational practices include the formal or informal social, economic, and political ways that migrants or immigrants maintain ties to their place of origin [19]. Transnationalism refers to the dual processes of maintaining ties to one’s country of origin while also adapting to a new country [19, 20]. To better understand the needs and experiences of specific Latinx PLWDH communities along the HCC, the Health Resources and Services Administration awarded Special Projects of National Significance (SPNS) grants to organizations that served or had a concentration of Latinx PLWDH with a shared country of origin [21]. NYC Correctional Health Services (CHS), which oversees the provision of health care in the NYC jail system [22], selected Latinx of Puerto Rican (PR) origin as the primary population for this grant. CHS included persons born in Puerto Rico (PR) and persons of PR origin born in the continental U.S. because of their documented HIV risks, substance use, high rate of overdose deaths, and migration patterns [23–26]. In addition, persons of PR origin comprised a relatively large proportion (62%) of Latinx persons living with diagnosed HIV (PLWDH) in the NYC jail system in 2014 [27]. The CHS intervention had two components: (1) to better tailor TCC services to meet client needs, and (2) to develop and deliver a cultural competency curriculum to jail- and community-based providers about the needs and characteristics of justice-involved PR PLWDH [28].

The purpose of this study was to inform the CHS intervention and it had three research aims. First, we wanted to learn about the barriers and facilitators to community HIV care engagement for PLWDH of PR origin. We considered engagement in care to include linkage to care, retention in care, and ART adherence. Second, we sought to learn about provider characteristics perceived as supportive to and enabling of HIV care. Third, we wanted to investigate how participants believed their ethnicity, transnational practices, and transnationalism affected their HIV care experiences and engagement in community care.

Conceptual Framework

The conceptual framework guiding this research was the Behavioral Model for Vulnerable Populations [29]. This model was adapted from the Andersen Behavioral Model

which posits that three constructs – predisposing (e.g. demographics), enabling (e.g. personal resources), and need (e.g. perceived/evaluated health status) – influence health behaviors, health care use, and provider satisfaction [30, 31]. The original model did not explicitly incorporate social or structural challenges facing many vulnerable groups. Such challenges can include homelessness, food insecurity, substance use, living with HIV, and/or incarceration. The model tailored for vulnerable populations expands the original constructs to include these characteristics. For PLWDH transitioning to the community following incarceration, predisposing factors in the vulnerable domain include incarceration history and living with HIV. Additional predisposing factors for this population may include mental illnesses [9], substance use [6], victimization [32, 33], social isolation [34], and housing instability [35]. These factors can exacerbate health care-related needs and limit the ability of such persons to engage in health-promoting behaviors including ART adherence (Fig. 1) [36]. Conversely, access to enabling factors in the vulnerable domain, such as correctional-based health care and TCC, may support health-promoting behaviors and improve health outcomes [37, 38]. Through a series of qualitative interviews, our study examined HIV care engagement (*health behavior, traditional domain*), attitudes toward care and race/ethnicity (*predisposing factors, traditional domain*), and social support (*enabling factor, traditional domain*). We also asked about transnationalism and transitional ties to PR (*predisposing factor, vulnerable domain*), as described below.

Methods

Participant Eligibility and Recruitment

Participants included incarcerated PLWDH who were 18 years old or older, TCC clients, not newly diagnosed (e.g. $\geq$ two years living with diagnosed HIV), and who self-identified as being of PR origin. CHS care coordinators identified and recruited participants during routine office visits. CHS researchers (JW, PT) obtained participants’ written informed consent prior to interviews informing them that participation was voluntary, that personal health and interview information would remain confidential, and that participation or lack of participation would not affect their length of stay in jail, access to jail-based services, or legal status. The informed consent also allowed for inclusion of participant medical record information. Participants received a \$20 commissary deposit for participation. This study was reviewed by CHS’s designated institutional review board and was determined to be

Fig. 1 Behavioral Model for Vulnerable Populations specialized for incarcerated persons of Puerto Rican origin living with diagnosed HIV.** Adapted from: Gelberg L, Anderson RM, Leake, BD. The

Behavioral Model for Vulnerable Populations: Application to Medical Care Use and Outcomes for Homeless People. Health Services Research 34:6. Feb 2000

an evaluation study for quality improvement and exempt from human subjects research.

Research Team, Instrument, and Measures

The CHS research team consisted of two research assistants and three doctoral and masters-level researchers with experience in qualitative research and/or working in correctional settings (PT, JW, TP). Researchers (PT, JW) developed a semi-structured interview guide with open-ended questions around broad programmatic topic areas and SPNS study priorities following the conceptual framework. Key questions included: (1) What makes attending HIV care appointments and taking ART in the community easy or difficult (e.g. *HIV care engagement, health behavior*)? and (2) What characteristics or features of a provider are important to you and enable your care (e.g. *attitudes toward care, predisposing factor*)? We also added questions to ask about how PR ethnicity, transnational ties to PR, or being non-English speaking (*predisposing factors*) influenced HIV care engagement. Finally, we added questions about the impact of social support (*enabling factor*), importance of provider ethnicity, and about experienced stigma from providers related to PR ethnicity, HIV status, substance use, or incarceration history. We also added several close-ended questions to better understand and describe the participants, including age, location and year of HIV diagnosis, and housing status prior to incarceration. The interview guide was pilot-tested with PR PLWDH and modified based on their feedback for conversational flow and to ensure capture of key concepts. We also revised the instrument midway through the interviews to better address transnationalism and transnational practices.

Data Collection

A convenience sample of the study population was interviewed in semi-private jail-based offices with auditory privacy and a direct line of sight to the clinic waiting area. Researchers encouraged participant-driven conversation, but if a study-specific topic (e.g. social support) did not come up during the interviews, researchers inquired about them directly. After reviewing data from 14 interviews, we modified the interview guide to better capture participant experiences and opinions related to transnational practices and transnationalism, and their impact on HIV care engagement. We then conducted an additional nine interviews at which point we attained thematic saturation. The interviews lasted 45–60 min and were conducted from July 2014 through October 2015. Interviews were primarily conducted in English, although two were conducted in both English and Spanish and translated into English for analysis. Interviews were audio-recorded and transcribed.

CHS used an electronic health record system, eClinical-Works (eCW), to collect patient information during routine medical, mental health, substance use, and discharge planning visits. eCW allows for customizable templates and was the source for participant demographic, comorbidity, clinical markers for HIV disease (e.g. CD4, HIV viral load), self-reported housing stability/homelessness, and incarceration information. eCW data were manually extracted for analysis (JW).

Analysis

We developed a coding scheme aligned with our research aims and conceptual model. Our initial codes corresponded

to the following topics as they related to HIV care engagement: 1) barriers/challenges, 2) facilitators/enabling factors, 3) social support, 4) Puerto Rican ethnicity, and 5) transnational practices and transnationalism. Within these broad topics, we left space for emergent themes (e.g. substance use, reincarceration). We analyzed the data in two phases. The first phase began after completion of fourteen interviews. Two research assistants and JW independently coded the first five interviews and then met to resolve discrepancies and achieve consensus through discussion. They jointly developed the initial codebook that was then used to examine the remaining nine interviews. The codebook was iteratively revised throughout this analysis and after discussion and reaching consensus. During the second analysis phase, researchers (TP, JW) independently reviewed and analyzed all 23 of the interviews in the same manner. Recruitment ended when thematic saturation was achieved. Researchers (JW, TP) referred to prior research and consulted with program leadership and staff to confirm findings and to achieve trustworthiness in emergent themes [39]. Interview data were analyzed in NVivo. Descriptive analyses (e.g. frequencies, mean, standard deviation) of eCW data were conducted in SPSS.

Findings

Participant Characteristics

Twenty-three PLWDH of PR origin participated in this study, including thirteen men and ten women (including two transwomen). Participants' average age was 45.3 years (range 30 to 61) and over two-thirds had less than a high school education (Table 1). Most participants (thirteen) were diagnosed with HIV in a correctional setting, and the average age at diagnosis was 29.8 years (range 18 to 52). Participants had been living with HIV, on average, almost 15 years (range 3 to 30 years), and all but one reported prior ART use. Initial jail-based labs showed that seven participants were admitted to jail with stage 3 HIV (AIDS diagnosis, $CD4 < 200$ cells/mm³) and the majority (seventeen) were not virally suppressed (viral load suppression ≤ 200 copies/mL). All reported having used drugs, including 20 who had used opioids. Most (fifteen) reported current drug use at medical intake. Twenty-one participants reported physical comorbidities and eighteen had diagnosed mental illnesses. All but one participant had a prior NYC jail incarceration. Five participants preferred Spanish-speaking clinicians and 18 had no preference. Of the seventeen participants asked about nativity; eleven were born in NYC and six were born in PR.

The findings below pertain to participants' recent HIV care experiences and engagement (e.g. in the six months

prior to current incarceration). Experiences around their time of diagnosis are not included.

HIV Care Engagement

Most participants described a fragile and inconsistent engagement to community HIV care primarily due to substance use and relapse. Additional factors influencing community HIV care included struggles with meeting priority and survival needs such as housing, negative perceptions about ART, social support or a lack thereof, and particular provider characteristics. Most participants described their intentions to engage in HIV care after prior incarcerations, but substance use and poverty, along with the uncertainty and chaos after incarceration, often made it difficult to do so. We elaborate on these themes below.

Substance Use

Substance use, both a predisposing factor and health behavior (*vulnerable domain*) in the conceptual model, was the primary challenge to consistent HIV care engagement and it was a predominant and recurring theme for most participants. Participants reported using substances in the community, often to cope with their current life stressors including family estrangement and economic uncertainty. Participants overwhelmingly reported successful engagement in care when they were sober. However, they said their HIV care engagement stopped once they started actively using substances. One participant noted, "*I usually take [ART] every day and you know, when I start getting high is when I start deviating from it – so, so I'm more focused on getting high and not focused on taking medication.*" Most echoed this experience, saying that once they started getting high, they were less likely to engage in care because "*getting high was more important.*" Some participants reported using substances immediately after prior incarcerations, while others were sober for a period of time before relapsing. However, a few participants said that they were able to take ART consistently during periods of active substance use. See Table 2 for additional data on this and other themes.

Meeting Priority and Survival Needs

Poverty and the inability to meet basic priority and survival needs such as housing (*predisposing factor; vulnerable domain*) was also a recurring theme among participants and an explanation for inconsistent HIV care engagement. The majority of participants reported histories of homelessness, including eight who experienced homelessness during the prior year. While some received NYC governmental housing assistance, many reported not having a place to live after incarceration. Some participants also

Table 1 Participant demographic, incarceration, and health characteristics (n = 23)^a

	Number	Percent
Demographics		
Gender		
Male	13	56.5
Female	8	34.8
Transgender Female	2	8.7
Age, Average (SD) (range 30 to 61)	45.3 (7.80)	
Education		
< high school	16	69.5
High school diploma/GED	5	21.7
> high school	2	8.7
Ever homeless	16	69.6
Homeless in prior year	7	30.4
Had prior incarceration	22	95.7
HIV-Related Health Characteristics		
Where Diagnosed with HIV		
Correctional setting (jail/prison)	13	56.5
Community setting (substance use program, emergency room, other)	10	43.5
Diagnosis Year $\leq$ 1995	8	34.8
Age at HIV Diagnosis: Average in years (SD) (Range 18 to 52)	29.8 (9.06)	
Years Living with HIV: Average (SD) (Range 3 to 30)	14.9 (7.62)	
Stage 3 HIV (AIDS) diagnosis at initial jail lab (CD4 < 200 cells/mm)	7	30.4
Viral suppression at initial jail lab (viral load $\leq$ 200 copies/mL)	6	26.1
Other Health Characteristics		
Ever used drugs	23	100.0
Ever used opioids	20	87.0
Currently using drugs (at jail intake)	15	65.2
Diagnosed comorbidity (not including mental health conditions) ^b	21	91.3
Diagnosed mental health condition ^c	18	78.3

^aMost data are self-reported. Exceptions include 1) had prior incarceration, 2) stage 3 HIV, 3) viral suppression, 4) diagnosed comorbidity, and 5) diagnosed mental health condition

^bDiagnosed comorbidities include Hepatitis C, asthma, hypertension, diabetes, sexually transmitted infections, and other conditions

^cMental health conditions included adjustment disorders; personality disorders; bipolar and related disorders; PTSD, trauma, and stress-related disorders; and depression and depressive disorders

reported selling their prescribed ART for economic gain, often to purchase drugs or alcohol. The discussions illustrated how participants prioritized survival needs and substance use over health care. One participant noted:

If I'm homeless, I just stay out and get stressed out and then I start drinking again. If I would've had my own home, you know, [it would be easier to take medication], but if I'm in the streets, I'm like, I'm not gonna care. If anything, I'm just going to throw [the pills] away.

Incarceration and hospitalization provided participants with structured settings that met survival needs including a place to sleep, a roof overhead, and food. Participants said

these settings, with consistent access to health care, facilitated their sobriety and HIV care engagement (*enabling factors, vulnerable domain*). Many viewed their jail stay as an opportunity to reengage in care and reinitiate ART. Participants incarcerated for a relatively longer time saw their viral load and CD4 values improve which they attributed to consistent HIV care and ART adherence. However, this consistency was not always sustained after returning to the community often due to substance use or homelessness. One participant noted, "Every time I come up in jail, my numbers go up; and then when I'm in the street, my numbers go down."

Table 2 Selected comments from interviews of justice-involved PLWDH of Puerto Rican origin

HIV Care Engagement

Substance Use

When I'm on drugs I don't take my medication. I'm one hundred percent [adherent] until I start getting high. So, as long as I'm sober I take my meds every day. [Transfemale, 37]

I started going to [a hospital] in the Bronx. I did that for like about probably like two or three weeks. And then I started getting high again. I went off meds, stopping taking meds— Well, um, for like about month, even if that, then I got re-arrested again. I started taking my meds again [in jail]. You know, my biggest thing is drugs, you know, once I start taking drugs, I forget about the meds. [Male, 37]

I usually jump around from my doctor to doctor... the longest one I've been into was when I was in the methadone program... for like about two months, three months. But I always... jumped around because I'm always moving from one to place [neighborhood] to another ... You know, getting high and chasing drugs. I would only stay in one neighborhood for so long. [Male 37]

Meeting Priority and Survival Needs

I haven't had my place in a minute because I've been getting incarcerated on and off, on and off ... The last time I had my own place was in 2006. ... And before that I kept getting arrested on and off, on and off, ... I'm staying in SROs, SROs, back and forth. [Female 53]

Right now, I don't have a place to go [after incarceration]. [Male 46]

[When] I started smoking crack, there were times that I sold my medication for drugs. [Transfemale, 36]

Social Support

The only people that really knows [my HIV status] is my family. And my family love me to death, so I really don't care what anybody else think about it. You know, honestly. [Male, 47]

[The organization] is a whole different world. Like, it was unbelievable. People with the problem I had – it was like a whole different world. And, when I get out of here, I plan to go back to them, too. ... It's not only the staff, but just the people that go there period. Like, they put a smile on my face. It's just like, I am someone. I'm not a piece of garbage. I'm not – everybody – especially, me, people make mistakes. ... I made a big, big mistake, but I'm still human. [Male, 36]

I really didn't have nobody. Everybody I knew is from the street and the circle, and get high. You know what I'm saying? And I'm pretty sure that anybody in that circle either has AIDS or is at risk of having it, you know. So I really didn't have nobody close. [Male, 37]

I was just like basically like stressed out, didn't care about things you know like... Well what I was really doing was I, I sniff a bag here and there and ... I didn't really have to do that. But I was just like, closed in, you know I secluded myself into my home you know, I didn't call my kids as much." [Male, 55]

As far as friends, I only ever had, actually, two real friends ... Everybody else was just a friend when I had money ... Family-wise, my family is upset about jail, about when I got diagnosed. ... They've always worried about me due to my drug addiction. ... I worry about myself sometimes – because, like, I do good for a while. Then, out of nowhere, I try to test myself [with getting high], and, obviously, I always fail. [Male, 36]

Provider Characteristics

It's close to my house. I can walk there. And since I, since I was going from [a nearby substance use program] over there, they treat me right, they treat me OK. I feel comfortable with them. [Male, 53]

If I'm down, [my doctor] tries to bring me back up. And she's very supportive. So, sometime I forget I even got it when I'm with her. [Male, 48]

Well, he knows everything about my lifestyle. Like, he knows everything I do, so – he knows about my addiction, he knows what to give me, what not to give me. [Male, 36]

They don't judge you and they know what you there for. And it feels a lot easier when you can call to speak to somebody about your condition. And they look at you and they say, 'you're going to be alright. Don't worry. It's not over.' ... That makes you feel comfortable. ... If I feel comfortable with people, it makes it a lot more easier to express myself. [Male, 43]

"[What's more important is] that you know your job and you know what you doing. That's what matters to me—and that you give me the right information. Whether you Puerto Rican, White, Black. It doesn't even matter your color and nation – I think it's your ethic. You know what I mean? As long as you know what you talking about, that's all that matters to me. [TransFemale, 36]

Negative Perceptions about ART

Many participants voiced negative opinions about ART (*predisposing factor, traditional domain*) which they said contributed to their inconsistent ART adherence. Their comments illustrated their skepticism of ART effectiveness, fear of side effects, feeling overwhelmed by presumed complex regimens, and medication fatigue. Participants reported that they were “*stressed out*” and that ART was a “*false hope*.” For some participants, the challenges to consistent HIV care engagement, coupled with frequent institutional stays in jail or hospitals, often led to the starting and stopping of ART. Several reported that this inconsistent ART use led to side effects when reinitiating the medication, which further contributed to their negative perceptions about ART and inconsistent use. Some also reported medication resistance as a result: “*I started, I stopped, you know, playing with the medication. And it became resistant, my body, and now my chances are limited.*”

Social Support

Participants stated that social support (*enabling factor, traditional domain*), or lack thereof, often influenced their mental well-being positively or negatively (*predisposing factor, vulnerable domain*). For some, social support was a positive influence that appeared to mitigate the negative perceptions about ART and other obstacles to HIV care. Over half of the respondents identified specific persons, including family members or partners, as sources of necessary and motivating emotional support, often saying that a loved one “*was there for me*.” Some participants valued the support that came from having an active listener and confidant. A few participants said that a supportive person in their life checked in with them regularly and encouraged their HIV care and treatment. One participant said: “*My girlfriend, she practice safe sex and she be grilling me about medication and all that. Sometimes she just bring me [the medication], and say, ‘here, take your medication.’*” Some appreciated peer support groups, especially groups with other PLWDH, and highlighted the support and information exchange, along with learning that they were not alone.

However, many participants described family estrangement and social isolation due to their HIV status, substance use, and/or incarceration. These participants said that they were depressed and/or anxious and that their social isolation contributed to and sometimes resulted from their perceived depression or anxiety. They also reported that their social isolation and family estrangement contributed to greater substance use and less motivation to visit health care providers or take ART.

Provider Characteristics

Participants identified organizational factors, practitioner competence, and the patient-practitioner relationship as important when describing what they liked about their community HIV care providers (*attitudes toward care, predisposing factor* and *satisfaction with provider, outcome*). Organizational factors included geographic convenience, hours of operation, walk-in settings, offering a variety of services, accepting Medicaid, and having a good HIV care reputation. Participants also mentioned practitioner competency-related characteristics, saying that they were knowledgeable, professional, “*don’t rush*,” “*explain things nice*,” and “*I’m very confident in her*.” Finally, participants emphasized the importance of feeling comfortable and having a good relationship with their practitioner, describing them as supportive, non-judgmental, “*takes care of me*,” “*puts a smile on my face*,” and “*treats me with respect*.” Participants also named particular social service agencies and community health centers, and their non-clinical professionals such as receptionists, social workers, and peer workers, as important sources of support who were knowledgeable, compassionate, non-judgmental, respectful, and maintained confidentiality.

Transnational Influences and Puerto Rican Ethnicity

Overall, participants described having a strong and proud PR identity, often referring to themselves as “*Nuyorican*” or “*Boricua*.” Many described transnational ties to PR and most stayed connected to PR culture through music, television, newspapers, and websites. Most participants had not visited PR for many years but expressed a desire to do so. Many mentioned having family members in PR, but for most, they were distant relatives and not their immediate family. A few received financial remittances from family in PR to cover phone or utility bills, however this was rare and never ongoing. Most participants did not believe that their transnational practices, including any emotional and/or financial support from PR-based family members, impacted their HIV care engagement. Even participants who regularly communicated with family in PR and who semi-regularly traveled there said that these relationships did not impact their care engagement. However, one participant said that he received emotional support from his mother that encouraged his HIV care engagement. Only one participant reported regular travel to PR, saying that she notified her provider prior to travel and brought sufficient ART to last her entire visit.

Participants did not think that their PR ethnicity impacted their HIV care and they reported no experienced stigma from practitioners related to their PR ethnicity. However, many participants did mention experiencing HIV- or substance use-related stigma from prior clinicians which was very

upsetting and hurtful. Nevertheless, these participants had all since found community-based clinicians that they liked and trusted, often after a period of trying different providers. Most participants described themselves as being fluent and comfortable with English, although a few reported not understanding all of what English-speaking practitioners said. However, these participants all had current Spanish-speaking clinicians who they trusted. Participants did not feel that having a PR or Latinx practitioner would impact their care engagement or provider satisfaction, and this did not vary by nativity. Participants responded that other qualities such as professionalism, competency, expertise, empathy, and trustworthiness were more important.

Discussion

The purpose of this study was to understand the barriers and facilitators to HIV care engagement for incarcerated PLWDH of PR origin. We found that the major challenges to care engagement, a health behavior in our conceptual model [29], were not that different from the challenges of other justice-involved, non-PR populations identified in prior research. Consistent with other studies, factors such as substance use, homelessness, and lack of social support were all mentioned as reasons participants fell out of care or stopped taking prescribed medications [6–12, 40]. The findings related to preferred provider characteristics were similarly consistent with existing research related to provider satisfaction. Participants voiced the importance of organizational characteristics (e.g. convenient location, walk-in hours), practitioner competence (e.g. knowledgeable, good communication skills), and the patient-practitioner relationship (e.g. supportive, caring, respectful) [41–43]. To our knowledge, no prior study has conducted interviews of incarcerated PLWDH of PR origin related to HIV care engagement and provider preferences. However, it is not surprising that our findings were not unique to this population.

Investigation into whether participants' PR ethnicity or transnational practices impacted current HIV care engagement largely showed that these factors had little or no impact. We likely found that these factors had little or no impact because most of the study population had been born in or migrated to NYC at an early age. Participants spoke English fluently or very well and were largely assimilated into NYC culture. In this respect, our study population reflected the larger PR community in NYC as many migrated to and had been living in NYC for over a generation [44]. This situation is in contrast to the more recent migration of persons from PR to Florida [45, 46], where transnational ties, perceived practitioner stigma, and practitioner ethnicity and/or language may be more germane.

This was a formative study and was not intended to be representative of all incarcerated PLWDH of PR origin. Participants were recruited to participate in the study for programmatic reasons. Participants were TCC clients in NYC jails who had been living with HIV for over two years. Also, as stated above, most had been living in NYC for many years and spoke English fluently or very well. To better understand the broader population of incarcerated PLWDH of PR origin, future studies should include those who are newly diagnosed, not receiving TCC, recently migrated, non-English speaking, and those in prisons. Also, the NYC jail system includes provision of onsite health care by CHS, facilitating HIV care and other services. Future studies may want to examine PR PLWDH in other, and especially smaller, jail jurisdictions that do not provide onsite health care. Potential limitations to this study include social desirability bias, such that respondents may have over- or under-reported certain behaviors (e.g. ART adherence). Recall bias may also have occurred, such that participants did not accurately remember and relate their prior HIV care experiences. Finally, we did not examine race as a predisposing factor. It is possible that PR PLWDH perceived by clinicians as Black experienced HIV care differently than those perceived as white as research shows that people of color experience greater HIV-related stigma from practitioners [47–49].

All participants in the study were current or former substance users who described their substance use and relapse, along with the stressors of homelessness, economic insecurity, and social isolation, as a barrier to care. Although some studies have shown improved ART adherence and clinical indicators (e.g. HIV viral suppression, improved CD4) when treating substance-using PLWDH [50–52], most research finds that continued substance use predicts poor medication adherence and health outcomes [53, 54]. To improve the HIV care engagement and health outcomes of substance using, incarcerated PLWDH of PR origin, strategies and policies to address the predisposing, enabling, and need factors, are needed. In particular, convenience of HIV care to substance use treatment and other services, greater access to stable housing, and TCC resources are needed to facilitate HIV care engagement of PLWDH of PR origin after incarceration.

Acknowledgements This project was made possible by a Special Projects of National Significance (SPNS) Grant from the Health Resources and Services Administration (HRSA), Grant award number: H97HA26530. The authors would like to thank the following people and agencies for their participation and support: Health Resources and Services Administration Special Projects of National Significance including Adan J. Cajina II, Jessica Xavier and John Hannay; University of California San Francisco including Janet J. Myers, Sophia Zamudio-Haas, and Starley Shade; Columbia University including Skye Ross and Cameron Paine-Thaler; and NYC Health + Hospitals Correctional Health Services including Abenai Sanders, Press Canady, Allison Dansby, Monica Katyal, Ross MacDonald and Patricia Yang.

The authors would also like to thank the men and women who participated in this study and shared their experiences related to HIV care engagement with us.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

1. U.S. Centers for Disease Control and Prevention: Diagnoses of HIV Infection in the United States and Dependent Areas; 2018, (Updated) 2020
2. Carson EA. Prisoners in 2018. Department of Justice: U.S; 2020.
3. U.S. Census Bureau: Population Estimates Show Aging Across Race Groups Differs; 2019
4. U.S. Health Resources and Services Administration: HIV Care Continuum; 2016; Available from: <https://hab.hrsa.gov/about-ryan-white-hiv-aids-program/hiv-care-continuum>.
5. Iroh PA, Mayo H, Nijhawan AE. The HIV care cascade before, during, and after incarceration: a systematic review and data synthesis. *Am J Public Health*. 2015;105(7):e5–16.
6. Bronson J, et al. Drug Use, Dependence, and Abuse Among State Prisoners and Jail Inmates, 2007–2009. Department of Justice: U.S; 2017.
7. Avery AK, et al. Jails as an opportunity to increase engagement in HIV care: findings from an observational cross-sectional study. *AIDS Behav*. 2013;17(2):137–44.
8. Kalichman SC, et al. Continued substance use among people living with HIV–hepatitis-C co-infection and receiving antiretroviral therapy. *Subst Use Misuse*. 2015;50(12):1536–43.
9. Bronson J, Berzofsky M: Indicators of Mental Health Problems Reported by Prisoners and Jail Inmates, 2011–12. US Department of Justice; 2017
10. Greenberg GA, Rosenheck RA. Jail incarceration, homelessness, and mental health: a national study. *Psychiatr Serv*. 2008;59(2):170–7.
11. Binswanger IA, et al. Gender differences in chronic medical, psychiatric, and substance-dependence disorders among jail inmates. *Am J Public Health*. 2010;100(3):476–82.
12. Booker CA, et al. Linkage to HIV care for jail detainees: findings from detention to the first 30 days after release. *AIDS Behav*. 2013;17(2):128–36.
13. Jordan AO, et al. Transitional care coordination in New York City jails: facilitating linkages to care for people with HIV returning home from Rikers Island. *AIDS Behav*. 2013;17(2):212–9.
14. Springer SA, et al. Public health implications for adequate transitional care for HIV-infected prisoners: five essential components. *Clin Infect Dis*. 2011;53(5):469–79.
15. Teixeira PA, et al. Health outcomes for HIV-infected persons released from the New York City jail system with a transitional care-coordination plan. *Am J Public Health*. 2015;105(2):351–7.
16. Health Resources and Services Administration. Transitional Care Coordination: From Jail Intake to Community HIV Primary Care. 2020. Available from: <https://targethiv.org/deii/deii-transition-al-care>.
17. Taylor P, et al: When Labels Don't Fit: Hispanics and Their Views of Identity. Pew Research Center, 2012
18. Sheehan DM, et al. Latinos in the United States on the HIV/AIDS care continuum by birth country/region: a systematic review of the literature. *Int J STD AIDS*. 2015;26(1):1–12.
19. Saucedo JA, et al. From theory to application: A description of transnationalism in culturally-appropriate HIV interventions of outreach, access, and retention among latino/a populations. *J Immigr Minor Health*. 2019;21(2):332–45.
20. Villa-Torres L, et al. Transnationalism and health: A systematic literature review on the use of transnationalism in the study of the health practices and behaviors of migrants. *SocSci Med*. 2017;183:70–9.
21. Health Resources and Services Administration: Introducing the Latino Initiative: Affirming Cultural Diversity through Culturally Competent Care. 2013
22. NYC Health + Hospitals Correctional Health Services: Correctional Health Services Progress Report, May 2016; 2016
23. Deren S, et al. The Puerto Rico-New York airbridge for drug users: description and relationship to HIV risk behaviors. *J Urban Health*. 2007;84(2):243–54.
24. Kang SY, et al. HIV transmission behaviors in jail/prison among Puerto Rican drug injectors in New York and Puerto Rico. *AIDS Behav*. 2005;9(3):377–86.
25. Gelpí-Acosta C, et al. Time since migration and HIV risk behaviors among Puerto Ricans who inject drugs in New York City. *Subst Use Misuse*. 2016;51(7):870–81.
26. Greer SN, et al: Health of Latinos in NYC. New York City Department of Health and Mental Hygiene, 2017
27. Health + Hospitals Correctional Health Services: Client-Level Data Upload Confirmation Report, 2014 Ryan White Annual Report (Internal Data). 2015
28. Guilamo-Ramos V, Munoz-Laboy M: Culturally Appropriate Engagement and Service Delivery with Latino/as to Enhance Linkage and Retention to HIV Primary Care—including a Transnational Case Study for Puerto Ricans. 2018. Webinars available from: <https://aidsetc.org/resource/culturally-appropriate-engagement-and-service-delivery-latinoas-enhance-linkage-and>.
29. Gelberg L, et al. The behavioral model for vulnerable populations: application to medical care use and outcomes for homeless people. *Health Serv Res*. 2000;34(6):1273–302.
30. Andersen R. A behavioral model of families' use of health services. Chicago: University of Chicago Press; 1968.
31. Andersen RM: Revisiting the behavioral model and access to medical care: does it matter? *Journal of Health and Social Behavior* 1995; 1–10
32. Freudenberg N. Coming home from jail: A review of health and social problems facing US jail populations and of opportunities for reentry interventions. Washington DC: The Urban Institute; 2006.
33. Bradford J, et al. Experiences of transgender-related discrimination and implications for health: results from the virginia transgender health initiative study. *Am J Public Health*. 2013;103(10):1820–9.
34. Springer SA, et al. Effectiveness of antiretroviral therapy among HIV-infected prisoners: reincarceration and the lack of sustained benefit after release to the community. *Clin Infect Dis*. 2004;38(12):1754–60.
35. Davis LM, et al. Understanding the Public Health Implications of Prisoner Reentry in California: State of the State Report. Santa Monica CA: RAND Corporation; 2011.

36. Hammett TM, et al. Health-related issues in prisoner reentry. *Crime Delinq*. 2001;47(3):390–409.
37. Lincoln T, et al. Facilitators and Barriers to Continuing Health-care After Jail: A Community-integrated Program. *The Journal of Ambulatory Care Management*. 2006;29(1):2–16.
38. Roberts C, et al. Linkages between in-prison and community-based health services. *J Correct Health Care*. 2004;10(3):333–68.
39. Lincoln YS, Guba EG. But is it rigorous? Trustworthiness and authenticity in naturalistic evaluation. *New directions for program evaluation*. 1986;30:73–84.
40. Fuge TG, et al. A systematic review and meta-analyses on initiation, adherence and outcomes of antiretroviral therapy in incarcerated people. *PLoS ONE*. 2020;15(5):e0233355.
41. Oetzel J, et al. Patient–provider interaction, patient satisfaction, and health outcomes: testing explanatory models for people living with HIV/AIDS. *AIDS Care*. 2015;27(8):972–8.
42. Andersen RM, et al. Exploring dimensions of access to medical care. *Health Serv Res*. 1983;18(1):49–74.
43. Rothman J, et al. Co-located substance use treatment and HIV prevention and primary care services, New York State, 1990–2002: a model for effective service delivery to a high-risk population. *Journal of Urban Health, Bulletin of the New York Academy of Medicine*. 2007;84(2):226–42.
44. Thomas L. Puerto Ricans in the United States Oxford Research Encyclopaedia in American History. Oxford England: Oxford University Press; 2015.
45. Krogstad JM. In a shift away from New York, more Puerto Ricans head to Florida. Fact Tank. Washington DC: Pew Research Center; 2015.
46. Melendez E, Hinojosa J: Estimates for Post-Hurricane Maria Exodus from Puerto Rico. Research Brief. New Yor, NY: Hunter College Center for Puerto Rican Studies; 2017
47. Algarin AB, et al. Age, sex, race, ethnicity, sexual orientation: Intersectionality of marginalized-group identities and enacted HIV-related stigma among people living with HIV in Florida. *AIDS Behav*. 2019;23(11):2992–3001.
48. Loutfy MR, et al. Gender and ethnicity differences in HIV-related stigma experienced by people living with HIV in Ontario, Canada. *PLoS ONE*. 2012;7(12):e48168.
49. Goodman A, et al. “They treated me like crap and I know it was because I was Native”: The healthcare experiences of Aboriginal peoples living in Vancouver’s inner city. *Soc Sci Med*. 2017;178:87–94.
50. Safren SA, et al. Cognitive behavioral therapy for adherence and depression (CBT-AD) in HIV-infected injection drug users: a randomized controlled trial. *J Consult ClinPsychol*. 2012;80(3):404–15.
51. Conway B, et al. Directly observed therapy for the management of HIV-infected patients in a methadone program. *Clin Infect Dis*. 2004;38(Suppl 5):S402–8.
52. Panel on antiretroviral guidelines for adults and adolescents: guidelines for the use of antiretroviral agents in adults and adolescents with HIV. Bethesda, MD: National Institutes of Health; 2019
53. Gonzalez A, et al. Substance use predictors of poor medication adherence: the role of substance use coping among HIV-infected patients in opioid dependence treatment. *AIDS Behav*. 2013;17(1):168–73.
54. Gonzalez A, et al. Substance use: impact on adherence and HIV medical treatment. *Curr HIV/AIDS Rep*. 2011;8(4):223–34.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.