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WOMEN, INCARCERATION AND HIV: A SYSTEMATIC REVIEW OF HIV TREATMENT ACCESS, CONTINUITY OF CARE AND HEALTH OUTCOMES ACROSS INCARCERATION TRAJECTORIES

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Abstract

Objective: The aim of this study was to systematically review the literature on gendered implications of incarceration for HIV outcomes and engagement in care for women living with HIV (WLWH).

Design: We systematically searched seven bibliographic databases, for peer-reviewed English-language studies, published between 2007 and 2017 reporting on incarceration, women (transgender inclusive) and HIV.

Methods: Articles were included for evaluation if they reported outcomes for at least one of three measures of interest: viral load, antiretroviral therapy (ART) adherence or engagement in care among WLWH along incarceration trajectories.

Results: Out of 1119 studies, 24 (2%) met the inclusion criteria. Of these 24 studies, the majority ($n = 23$) were conducted in the USA, 19 included samples of women and men and seven studies were transgender inclusive. Our review did not reveal clear sex differences in HIV outcomes during periods of incarceration; however, studies reporting postincarceration outcomes demonstrated significant sex disparities in all three outcomes of interest.

Following incarceration, women were less likely to be virally suppressed, less likely to achieve optimal ART adherence and less likely to be engaged in care.

Conclusion: Despite growing numbers of incarcerated WLWH globally, there is a substantial gap in research examining the impact of incarceration on HIV outcomes for WLWH. Significant

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Conflicts of interest

There are no conflicts of interest.

sex disparities in HIV outcomes and engagement in care exist along incarceration trajectories for WLWH, especially postincarceration. For improved health outcomes, research is needed to examine the experiences of WLWH throughout incarceration trajectories to develop interventions tailored to the specific needs of WLWH both during and following incarceration.

BACKGROUND

In the last decade, there have been significant advances in HIV treatment and care for people living with HIV (PLWH) [1,2]. Improved outcomes are frequently attributed to engagement in the HIV ‘cascade of care’, which includes timely HIV testing and diagnosis, linkage to care and support, retention in care, adherence and viral suppression [3,4]. This approach promotes improved health outcomes, such as lower mortality and morbidity, and reduced transmission of HIV [1,5,6]. However, not all PLWH have equally benefited from advances in HIV treatment and care; this is especially true for PLWH with a history of incarceration and criminal justice involvement [7–9]. Globally, PLWH are disproportionately represented among incarcerated populations [10,11], with the global HIV burden among incarcerated persons estimated between two and 10 times higher than the general adult population [12]. Racialized represent a rapidly increasing proportion of incarcerated people globally [13–15], and women living with HIV (WLWH) make up an ever-growing proportion of incarcerated women worldwide [16,17]. Within correctional facilities globally, women are more likely to be identified as living with HIV than men [18,19].

Although global research is limited, findings from the United States indicate that correctional facilities can provide an opportunity to connect with marginalized populations, subsequently creating an opportunity to engage PLWH in HIV treatment and care during incarceration [20]. However, overall optimal HIV treatment outcomes for incarcerated populations remain a challenge [21], and for many PLWH, arrest and detention often leads to interruptions and gaps in ART access and adherence [7–9,22].

WLWH experience intersecting structural vulnerabilities that create additional obstacles to receiving high-quality HIV care, including experiencing sex-based violence [23] and trauma [24], increased intersectional stigma due to racialization and sex [25], as well as high rates of unstable housing, poverty, illicit substance use and lack of access to high-quality HIV healthcare [26,27]. For WLWH, who in some settings including Canada and the USA, already experience suboptimal HIV treatment outcomes compared with men [27–30], incarceration is an added obstacle towards achieving optimal health [31]. For transgender women, and especially racialized transgender women, incarceration is associated with mistreatment and increased marginalization within a context of racism and transphobia, resulting in a disproportionate burden of social, mental and physical health disparities [32].

A lack of appropriate programming and supports for WLWH during and after incarceration, including limited supports for accessing healthcare, housing, addiction treatments and employment opportunities [33], has been linked to recidivism [34]. In addition, women are also more commonly tasked with additional responsibilities of taking care of their families [35], which can take precedent over their own health, including HIV care for some WLWH [36,37]. Barriers facing postincarceration add to the challenges for achieving viral

suppression [38] and a loss of the potential health benefits from the provision of HIV care during incarceration [39]. There is currently limited understanding of the specific impacts of incarceration on HIV outcomes and continuity of care among WLWH on a global scale. Amidst a call for action and better interventions for incarcerated populations living with HIV [40], we conducted a systematic review to summarize the existing knowledge concerning how incarceration shapes HIV treatment adherence, viral suppression and continuity of care across incarceration trajectories (the pathways that characterize the carceral experience, including pretrial detention, incarceration and post release) among WLWH. A better understanding of the current state of knowledge will guide future research priorities and inform the development of interventions for WLWH who experience incarceration.

MATERIALS AND METHODS

Our systematic review was conducted and reported on the basis of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [41].

Search strategy

Seven databases (OVID Medline, Web of Science, PsycINFO, Cumulative Index to Nursing and Allied Health Literature, Sociological abstracts, Cochrane Library and EMBASE) were searched to reflect the following three distinct search term

domains: Incarceration, Women (transgender women) and HIV. The terms used in our literature search were 'incarceration' OR 'incarcerated' OR 'prison*' OR 'jail*' OR 'detention centre*' OR 'detention center*' AND 'women' OR 'female*' OR 'trans' OR 'transgender' OR 'transsexual' 'woman' AND 'HIV' OR 'AIDS' OR 'human immunodeficiency virus' OR 'acquired immunodeficiency syndrome' OR 'acquired immune deficiency syndrome' OR 'HIV infections'. We used the following medical subject heading (MeSH) terms: for the Incarceration search domain: 'Prisoners', 'Prisons', 'Legal Detention', 'Recidivism', 'Correctional Facilities'; for the sex and sexual identity search domain - 'Transgender Persons', 'Transgender', 'Women'; and for the HIV domain - 'HIV infections'. We developed search strategies with the assistance of a qualified librarian. Studies were restricted to the English language research, published between 1 January 2007 and 15 February 2017.

Our initial search amounted to 1119 unique English-language. Three reviewers (A.S., M.E., A.K.) evaluated the articles in three distinct stages to assess the relevance of each record.

Inclusion

Articles were included in the initial review process if they were peer-reviewed quantitative and/or qualitative studies, matched at least one term within each of the three search term domains and were published in English between January 2007 and February 2017.

Studies were included if the sample population involved HIV-seropositive women (transgender inclusive) with a history of incarceration, defined as involvement in the criminal justice system that resulted in one or more nights in either jail or prison, or those

currently incarcerated. Studies that did not focus exclusively on women (i.e. inclusive of both men, women and transgender participants) were only included if they contained analysis of our outcomes of interest stratified by sex/gender. Of these studies, articles were included for evaluation if they provided data specific to WLWH during or following periods of incarceration that related to one of the following three HIV-related outcomes: HIV viral load, adherence to ART and engagement in care. Please see Table 1 for a detailed description of the outcomes definition, inclusion criteria and rationale [31,39,42,43]. To be included in the final review, studies had to report outcomes with the above-mentioned criteria through either appropriate statistical tests or the estimation of effect measures and confidence intervals (CIs), or through qualitative methods.

Search protocol and data extraction

One author conducted the database search and compiled studies matching one or more terms for each of the search criteria groups. After removing duplicates, at least two authors reviewed titles and abstracts and excluded studies that did not meet the inclusion criteria. Full-text versions of all remaining potentially eligible articles were retrieved and independently reviewed, by two or three authors, to determine eligibility; 24 full-text peer-reviewed published articles met our inclusion criteria and were included in this systematic review. See Fig. 1 for flowchart of search strategy and data extraction process.

RESULTS

As outlined in Fig. 1, of the identified 1119 unique publications from our original search, 24 studies (2%) met the full inclusion criteria and are included in this report [31,32,39,42–62]. Characteristics for the included studies are described in Table 2. Notably, all included publications were conducted in the USA, with the exception of one study set in Spain [59]. The studies include cross-sectional and longitudinal design, including 22 quantitative and two qualitative studies [56,57]. A significant number of studies ($n = 6$, 25%) utilized data from the Enhancing Linkages to HIV Primary Care in Jail Settings Initiative (EnhanceLink), a multisite study of 20 prisons across the United States evaluating HIV testing and linkages to care postrelease, which included 8056 PLWH [42]. In order to highlight findings across the incarceration trajectory, we separated results in two distinct tables. Table 3 includes outcomes of interest reflecting periods of incarceration (i.e. access to ART or viral suppression during incarceration and so on). Table 4 outlines findings captured following release from prison or postincarceration (i.e. engagement in care, adherence and viral suppression following release from prison). Studies that specifically captured findings related to individuals who experienced reincarceration were also included in Table 3. Tables 3 and 4 are further subdivided to include each of our outcomes of interest (i.e. viral load, adherence, engagement in care).

During incarceration

Twelve studies reported on HIV outcomes and engagement in care among WLWH during incarceration (see Table 3). With regards to sex disparities in HIV outcomes during incarceration, five studies found that a smaller proportion of women received ART while incarcerated compared with men [45,47,50,55,59]. When reasons for sex disparities in ART

access were discussed at all, the authors mainly attributed it to shorter sentences among women. Although only a small amount of research compiled data for transgender women, Pai et al. [55] found that transgender women were slightly less likely than cisgender women to receive ART while incarcerated (63 vs. 71%), while Beckwith et al. [47] found that transgender women were significantly more likely to receive ART while incarcerated compared with ciswomen (95 vs. 67%) in their sample.

Of the analyses measuring viral suppression at release from incarceration, two studies found that women were slightly more likely to achieve viral suppression during incarceration within Connecticut correctional facilities in the United States [39,54], yet slightly less likely to achieve viral suppression compared with men from multisite data with the EnhanceLink Study [31]. No studies reported quantitative measures of ART adherence during incarceration. In qualitative studies, WLWH reported that adherence to ART was shaped by a variety of factors, including privacy concerns, experience of stigma, and quality of relationships with healthcare and prison staff. WLWH also reported that access to medications and types of administration affected adherence (i.e. WLWH reported concerns regarding loss of privacy with directly observed therapy as well as with keeping medications in their sleeping quarters due to fear of inadvertent disclosure to cell mates) [56,57].

Postincarceration

Sixteen studies reported outcomes for periods postincarceration (see Table 4). Overall, the majority of these studies reported worse HIV outcomes postincarceration for women compared with men.

Although a limited number of studies reported on viral load postincarceration ($n = 6$), women were overall less likely to achieve viral suppression in the months following release from prison [38,45–47,53], with the exception of one study that found no sex differences in viral suppression [43]. The one study that reported on ART adherence postincarceration indicated that women were significantly less likely to report optimal adherence 6 months postincarceration compared with men (28 vs. 44%) [53].

The majority of studies exploring periods of postincarceration reported on factors related to engagement in care in the period following release from prison. An overwhelming amount of these studies indicated that women experienced worse outcomes compared with men concerning engagement in care postincarceration [31,38,44–46,48,49,52,53,55,60,62]. One study demonstrated that men were twice as likely (AOR = 2.10; CI 1.42–3.11; $P < 0.01$) to be retained in care postincarceration compared with women [44]. Women were also less likely to fill ART prescriptions [46], less likely to have a regular HIV care provider postincarceration [53] and significantly more likely to be lost to follow-up following incarceration (62% of women vs. 78% of transgender women vs. 38% of men) [60]. Two separate studies found that WLWH were over twice as likely to access hospital emergency departments compared with men postincarceration [IRR: 2.4; CI: 1.4–4.4 and odds ratio (OR): 2.07; CI: 0.65–6.6, respectively] [48,52].

Women also expressed different needs postincarceration compared with men. Although men commonly reported needing assistance with employment, job training and legal services,

women's needs focused on basic sustenance needs, including securing cash, food, clothing and transportation, along with the added need for case management and both HIV and general medical services [31]. Women who expressed more needs were significantly less likely than men to engage and stay in care postincarceration [31].

DISCUSSION

A systematic review of the literature revealed a concerning scarcity of global research surrounding the impact of incarceration on HIV outcomes among WLWH in the last decade. Of the limited research that exists, our review of the literature identified significant sex disparities in HIV outcomes and engagement in care following release from correctional facilities, suggesting substantial gaps in care for WLWH after incarceration.

Results from our review show inconsistencies in delivery of ART and viral suppression during incarceration for WLWH; research using data from four different US-based cohorts demonstrated that the percentage of WLWH who received ART during incarceration was below 50% [50,55] and of those provided treatment under 70% achieved viral suppression by the time of their release [31,39]. One study revealed that women with a history of incarceration were over twice as likely to develop AIDS compared with women who were never incarcerated [61].

The most pronounced and significant sex differences in HIV outcomes for women were observed in the period following incarceration. Release from correctional facilities is often complex and disruptive for individuals reintegrating into their communities [63]; our findings highlight barriers to optimal HIV outcomes for WLWH and point to potentially unique challenges faced by WLWH postincarceration. For example, although in one study 77% of cisgender women had an HIV care provider in the community after release, only 48% of these women achieved viral suppression in the same period [64]. In another study, 65% of women had an HIV provider at release, yet at the 6-month follow-up, this number dropped to 50% [53]. Another analysis found that 26% of women had not been linked to any HIV care within 30 days postrelease [62].

Outcomes for transgender women

This study also highlights the lack of research and visibility for transgender WLWH who experience incarceration. The one study that examined the unique experiences of transgender women with a history of incarceration, of whom 11.7% were living with HIV, highlighted the overall lack of robust research surrounding the impact of incarceration for transgender women, often related to small sample sized and limitations in research design [32]. With the exception of the above study, no mention of sex identity affirming practices, in regards to what type of correctional facility (i.e. male or female) transgender participants were imprisoned within, existed within any of the studies. This adds a level of complexity when analysing findings for this population.

Structural vulnerabilities and intersecting factors for women living with HIV

Alongside sex disparities, many studies highlighted intersecting factors that increased poor HIV outcomes for women. Compared with men, WLWH who were incarcerated were

significantly more likely to experience homelessness and illicit substance use prior to and following periods of incarceration [53]. WLWH also experienced higher rates of both mental and physical illness than their male counterparts [31]. Age and race also constituted significant barriers to optimal health, whereby younger age [43,45,54,62] and being black [31,52] were consistently associated with gaps in linkages to care and adherence to ART. This is particularly concerning given the vast overrepresentation of racialized and marginalized WLWH in correctional systems globally [16]. In Canada for example, indigenous WLWH reported the highest HIV rates among the incarcerated population [65]. As the majority of research compiled in this analysis was conducted in the United States, it is important to highlight the vast overrepresentation of black people in the United States correctional system due to various structural vulnerabilities, including institutionalized racism, economic marginalization and the overpolicing and criminalization of black communities in the United States [66]. Consequently, black and other racialized WLWH face unique intersectional vulnerabilities that are not well captured in the current literature on HIV outcomes and incarceration experiences. WLWH also face disproportionate rates of trauma [67], with gendered power dynamics and violence linked to poor HIV health outcomes for WLWH [24,68,69], including disengagement from HIV care following release from correctional facilities [53]. Historically, correctional facilities were designed for men [70], yet with the increasing rates of incarcerated women worldwide, little has been done to adjust for how the needs of women may differ within carceral settings. Incarcerated women are unique in comparison to incarcerated men, with women's criminal justice involvement being predominantly related to poverty, mental health issues and illicit substance use, rather than violent crime [70]. This translates to shorter sentences, which can lead to more frequent interruptions in HIV treatment, and poorer HIV outcomes for WLWH [54]. In addition, as previously described, research found that women's needs postincarceration were more focused on basic needs of health and social services, whereby men expressed needs surrounding employment, job training and legal services [31]. Consequently, women's unmet needs postrelease were associated with poorer HIV health outcomes overall [31]. Unfortunately, despite varying needs and increased structural vulnerabilities for women, there is an overall lack of support given to WLWH upon release to community; one study in our review reported only 25% of women received HIV discharge planning upon release from prison [45].

Recommendations and suggested interventions

For WLWH, incarceration is a compounding structural vulnerability that adds to an existing list of barriers undermining the potential to achieve optimal health. The findings of this systematic review expose the significant sex disparities and negative impact of incarceration for WLWH, and highlight the need for enhanced discharge planning and specific sex-informed interventions, including trauma-informed care [71], during and following incarceration to address the sex-specific needs of incarcerated WLWH. An increase in robust longitudinal research is needed to identify the sex-specific needs of incarcerated WLWH. Future studies need to focus on the effects of incarceration among various subgroups of WLWH, including those who are racialized, live in poverty, suffer from mental health conditions or are criminalized due to illicit substance use. This will help to elucidate the constitutive and intersectional relationships between social and structural factors that

intersect to shape HIV outcomes and continuity of care along incarceration trajectories. Future research should include consistent HIV viral load monitoring upon entry into correctional facilities coupled with research surrounding the health and wellbeing of WLWH during times of arrest in order to gain a better sense of the impact of incarceration for WLWH. Finally, given the dearth in data on transgender PLWH who experience incarceration, more research is needed to respond to the specific needs of this population.

Limitations

There are several limitations that should be noted in this study. First, as the overwhelming majority of studies were conducted in the United States, findings cannot be generalized to inform global perspective on the impact of incarceration for WLWH. Many studies utilized data from the same study samples; notably, six studies included in this review drew from the EnhanceLink project. Although the EnhanceLink sample is extensive and includes over 8000 participants, this narrows the generalizability of our findings. In addition, many studies did not identify the HIV treatment guidelines that pertained to their study population and location at the time of the study thus limiting conclusions regarding how HIV care differed between community and carceral settings. As most studies did not stratify structural vulnerabilities (i.e. race, substance use, homelessness and so on) based on sex, we were unable to draw conclusions on how sex intersects with various structural vulnerabilities incarcerated WLWH face to shape HIV outcomes and engagement in care. Furthermore, not all studies distinguished transgender participants from cisgender participants and most were limited by small sample sizes of transgender participants [55,60]. Therefore, conclusions about the unique impacts of incarceration among transgender PLWH are limited.

Conclusion

This systematic review demonstrates that despite growing numbers of incarcerated WLWH globally, there remain substantial gaps in research examining the impact of incarceration on health and HIV outcomes for women. In the period of postincarceration, our review revealed significant sex disparities in women's needs, HIV outcomes and continuity of care for WLWH. Following release from correctional facilities, women are less likely to be virally suppressed, less likely to achieve optimal ART adherence and less likely to be engaged and retained in care. This review highlights the critical need to better understand the experiences of WLWH throughout incarceration trajectories, and the need to develop cisgender and transgender women-centred interventions. In order to improve postrelease engagement in healthcare and HIV outcomes for WLWH, and address the overcriminalization of WLWH, efforts addressing the intersectional structural vulnerabilities faced by WLWH are urgently needed.

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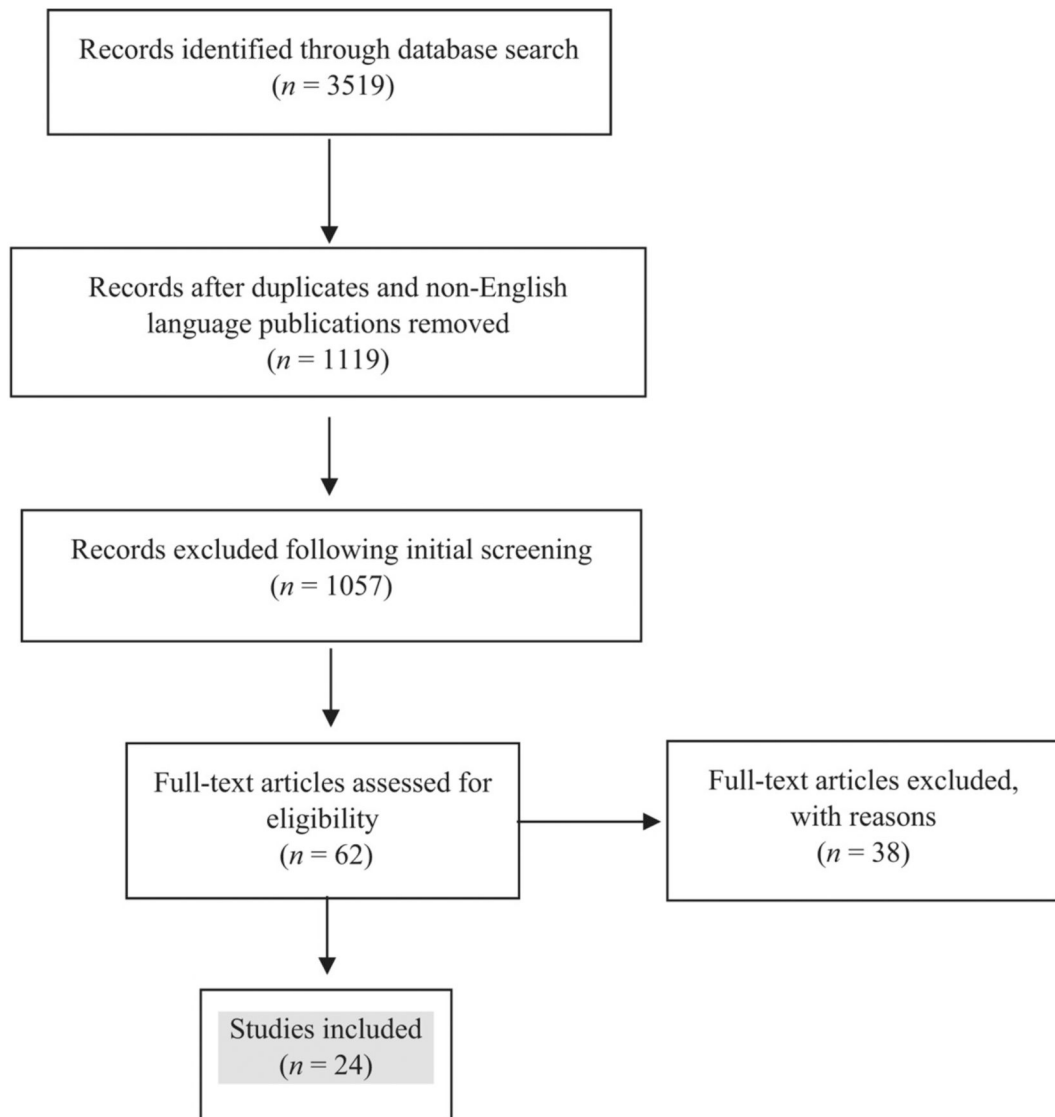


Figure 1.
Search strategy and data extraction process

Table 1.

Summary of definitions for main outcomes of interests for women living with HIV who experience incarceration.

Outcome	Definition and inclusion criteria	Additional definition or rational
HIV viral load (VL)	Serology data that examined HIV viral load	Viral suppression was defined as having a VL < 400 copies/ml, as defined by the majority of studies that reported this outcome [31,39,42,43]
Adherence to ART	Self-reported ART adherence, or other measures (i.e. pharmacy data) that confirmed achieving a predefined threshold of adherence whenever possible	Optimal adherence referred to 90, 95 or 100%
Engagement in care	Any HIV-related care reported along the incarceration trajectory ^a .	Examples include accessing HIV-related healthcare either in the context of primary care or HIV specialist care, having a regular HIV care provider, being prescribed ART, postrelease HIV care discharge planning, referrals to HIV-specific services and so on

ART, antiretroviral therapy.

^aNo requirement for a longitudinal component (i.e. more than one follow-up visit).

Table 2.

Summary of study characteristics and outcome measures on HIV treatment access, continuity of care and health outcomes across incarceration trajectories.

Ref.	Study design and data source	Facility ^b , Setting	Population of PLWH [n,(% of total sample)]	Reported HIV outcome for WLWH		
				VL	Adherence	Engagement in care
Althoff <i>et al.</i> [44]	Prospective cohort study enhancing linkages to HIV Primary Care and Services in Jail Setting Initiative (EnhanceLink)	Jail, Multi-Site, USA	Women: 281 (32%) Men: 586 (68%)			✓
Baillargeon <i>et al.</i> [46]	Retrospective cohort study Texas Department of Criminal Justice (TDCJ) EMR, Centralized Patient Care Data Management System (CPCDMS)	Prison, Texas, USA	Women: 353 (17%) Men: 1762 (83%)	✓		✓
Baillargeon <i>et al.</i> [45]	Retrospective cohort study TDCJ EMR and CPCDMS	Prison, Texas, USA	Women: 386 (22%) Men: 1364 (78%)	✓		✓
Beckwith <i>et al.</i> [47]	Cross-sectional CARE+ Corrections Study, DC Department of Corrections	Jail, multisite, USA	Women: 26 (24%) Transgender Women: 20 (18%) Men: 64 (58%)	✓		✓
Booker <i>et al.</i> [63]	Prospective cohort study EnhanceLink	Jail, multisite, USA	Women: 301 (29%) Transgender Women: 17 (2%) Men: 703 (69%)			✓
Boyd <i>et al.</i> [48]	Prospective cohort study EnhanceLink	Jail, Connecticut, USA	Women: 33 (30%) Men: 76 (70%)			✓
Clements-Noelle <i>et al.</i> [49]	Cross-sectional The San Francisco Department of Public Health's Forensic AIDS Project	Jail, San Francisco, USA	Women (Transgender ^a): 32 (18%) M: 145 (82%)			✓
Jaffer <i>et al.</i> [50]	Cross-sectional The New York City (NYC) Department of Health and Mental Hygiene's Correctional Health Services (CHS)	Jail, New York, USA	Women: 132 (22.3%) Men: 461 (77.7%)			✓
Lavanbakht <i>et al.</i> [51]	Cross-sectional Los Angeles County Sheriff's Department and LA County Department of Public Health	Jail, Los Angeles, USA	Women: 84 (1.1% incarcerated women being tested for HIV)			✓
Meyer <i>et al.</i> [53]	Prospective cohort study Project CONNECT, Connecticut Department of	Jail, Connecticut, USA	Women: 28(19%) Men: 123 (81%)			✓

Ref.	Study design and data source	Facility ^b , Setting	Population of PLWH [n,(% of total sample)]	Reported HIV outcome for WLWH		
				VL	Adherence	Engagement in care
	Corrections (CTDOC)					
Meyer <i>et al.</i> [43]	Prospective cohort study EnhanceLink	Jail, multisite, USA	Women: 277 (32%) Men: 590 (68%)	✓	✓	✓
Meyer <i>et al.</i> [40]	Retrospective cohort study CTDOC	Jail/Prison, Connecticut, USA	Women: 168 (19%) Men: 714(81%)	✓		
Meyer <i>et al.</i> [47]	Retrospective cohort study CTDOC	Jail/Prison, Connecticut, USA	Women: 163 (18%) Men: 696 (79%)	✓		✓
Meyer <i>et al.</i> [54]	Retrospective cohort study CTDOC	Jail/Prison, Connecticut, USA	Women: 223 (21%) Men: 866 (79%)	✓		
Pai <i>et al.</i> [55]	Retrospective cohort study The San Francisco City and Country jail's Forensic AIDS Project (FAP)	Jail, San Francisco, USA	Women: 63 (12%) Transgender: 8 (2%) Men: 441 (86%)			✓
Reisner <i>et al.</i> [33]	Cross-sectional The National Transgender Discrimination Survey (NTDS); cross-sectional	Jail/Prison, multisite, USA	Transgender WLWH: 88 (12% of transgender women with a history of incarceration)			✓
Roberson <i>et al.</i> [59] (2008)	Secondary analysis of qualitative data	Prison, North Carolina, USA	Women: 12 (100%)		✓	✓
Roberson <i>et al.</i> [57] (2012)	Secondary analysis of qualitative data	Prison, North Carolina, USA	Women: 12 (100%)		✓	
Seth <i>et al.</i> [58]	Cross-sectional ^a National HIV Prevention Program Monitoring and Evaluation (NHM&E)	Jail/Prison, multisite, USA	Women: 165 (20%) Men: 676 (80%)			✓
Spaulding <i>et al.</i> [39]	Prospective cohort study EnhanceLink	Jail, multisite, USA	Women: 328 (30%) Men (Transgender ^a): 754 (70%)	✓		
Sordo <i>et al.</i> [59]	Cross-sectional Medical Outcomes Study (MOS)	Prison, multisite, Spain	Women: 49 (8%) Men: 536 (92%)			✓
Teixeira <i>et al.</i> [60]	Prospective cohort study New York City Department of Health and Mental Hygiene (DOHMH)	Jail, New York, USA	Women: 87 (20%) Transgender women: 9 (2%) Men: 338 (78%)			✓
Williams <i>et al.</i> [32]	Prospective cohort study EnhanceLink	Jail, multisite, USA	Women: 350 (28%) Men: 920 (72%)	✓	✓	✓
Youmans <i>et al.</i> [61]	Retrospective cohort study South Carolina HIV/AIDS Reporting System (eHARS), the SC Department of Corrections and the SC Law	Jail/Prison, South Carolina, USA	WLWH with a history of criminal justice involvement: 678 (74%)			✓

Ref.	Study design and data source	Facility ^b , Setting	Population of PLWH [n,(% of total sample)]	Reported HIV outcome for WLWH		
				VL	Adherence	Engagement in care
	Enforcement Division Computerized Criminal History Database					

PLWH, people living with HIV; WLWH, women living with HIV.

^aTransgender = Inclusive of transgender participants.

^bOf note, Jails are typically designed to hold individuals awaiting trial, or those with shorter sentences, whereby Prisons are characterized by longer sentences.

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Table 3.

Summary of studies reporting on viral suppression, adherence or engagement in care during incarceration.

Ref.	Viral suppression	Adherence	Engagement in care
Baillargeon <i>et al.</i> [46]	-	-	41% of women vs. 49% of men received ART while incarcerated 25% of women vs. 33% of men received enhanced HIV discharge planning
Beckwith <i>et al.</i> [47]	-	-	67% of women vs. 95% of transgender women vs. 96% of men received ART during incarceration
Jaffer <i>et al.</i> [50]	-	-	65% of known status women vs. 77% of known status men continued ART treatment at intake or initiated ART within 2 weeks of intake; 35% of women vs. 23% of men were not on treatment
Javanbakht <i>et al.</i> [51]	-	-	100% HIV-positive cases received ART and were successfully referred to case manager to ensure linkages to healthcare following release
Meyer <i>et al.</i> [54]	30% of women vs. 34% of men had viral suppression upon entry; 80% of women vs. 69% of men had viral suppression upon release	-	-
Meyer <i>et al.</i> [40]	79% of women vs. 68% of men achieved viral suppression upon release	-	-
Pai <i>et al.</i> [55]	VL not significant based on sex in multivariate model	-	71% of women vs. 63% of transgender participants vs. 76% of men took ART during incarceration 18% of women vs. 13% of transgender participants vs. 7% of men refused ART
Reisner <i>et al.</i> [33]	-	-	Transgender WLWH not at an increased risk of denial of healthcare in jail/prison (RR: 1.57; 95% CI: 0.85–2.91, $P=0.15$)
Roberson <i>et al.</i> [57]	-	ART adherence determined by medication line, stigma, access to medication, administration choice, relationships with healthcare team, prison policies, receiving education and counselling about the disease and medical privacy	-
Roberson <i>et al.</i> [56]	-	Medications line and lack of medical privacy seen as a barrier to adherence Relationships with healthcare providers both hindered and helped adherence	-
Sordo <i>et al.</i> [59]	-	-	11% of women vs. 7.8% of men did not receive ART treatment
Williams <i>et al.</i> [32]	69% of women vs. 72% of men had VL suppression at release	-	-

CI, confidence interval; RR, risk ratio.

Table 4.

Summary of studies reporting on viral suppression, adherence or engagement in care postincarceration.

Ref.	VL suppression	Adherence	Engagement in care
Althoff <i>et al.</i> [44]	-	-	Women (referent) are less likely than men to be retained in care in both early and late retention stages postrelease to be retained in care in early and late retention post release (AOR = 2.10, <i>P</i> 0.01)
Baillargeon <i>et al.</i> [46]	52% of women vs. 56% of men had an undetectable VL at baseline	-	23% of women (RR: 0.9; CI: 0.7–1.1, <i>P</i> = 0.20) vs. 31% of men had an ART prescription filled 60 days postrelease
Baillargeon <i>et al.</i> [45]	31% of women vs. 38% of men had undetectable VL at baseline	-	18% of women (OR: 1.0; CI: 0.7–1.3) vs. 21% of men initiated in HIV outpatient care 30 days postrelease. 24% of (OR: 0.8; CI: 0.6–1.1) vs. 29% of men initiated in HIV outpatient care 90 days postrelease
Beckwith <i>et al.</i> [47]	48% of women vs. 80% transgender women vs. 69% of men had VL suppression (<200copies/ml) at baseline following release	-	77% of women vs. 100% of transgender women vs. 75% of men had an HIV care provider in community postrelease 85% of women vs. 90% of transgender women vs. 86% of men reported currently taking HIV treatment
Booker <i>et al.</i> [63]	-	-	26% of women (OR: 1.1; CI: 0.6–2.0) vs. 24% of transgender women (OR: 0.7; CI: 0.2–1.9) vs. 19% of men (referent) were not linked to care within 30 days postrelease
Boyd <i>et al.</i> [48]	-	-	More women vs. men frequently accessed the emergency department postrelease (IRR: 2.4; CI: 1.4–4.4)
Clements-Noelle <i>et al.</i> [49]	-	-	67% of women and transgender participants vs. 57% of men with a history of ART were engaged in care in the month preceding reincarceration
Meyer <i>et al.</i> [53]	-	-	Women were more likely than men to have two or more Emergency Department visits (OR: 2.07; CI: 0.65–6.6) within 12 months postrelease
Meyer <i>et al.</i> [40]	VL upon reincarceration not significant by sex	-	71% of women vs. 45% of men experienced recidivism (compared with 362 nonrecidivists, the 497 recidivists were more likely to be women), <i>P</i> = 0.0003
Meyer <i>et al.</i> [54]	26% of women (referent) vs. 25% of men (AOR:2.0; CI: 1.3.6, <i>P</i> = 0.02) had achieved viral suppression at baseline 18% of women vs. 30% of men achieved viral suppression at 6-month follow up (AOR: 2.88; CI: 1.4–5.8, <i>P</i> 0.001)	18% of women vs. 29% of men had optimal ART adherence at baseline; 28% of women vs. 44% of men had optimal ART adherence at 6-month follow-up	65% of women vs. 73% of men had a usual HIV provider at baseline 50% of women vs. 63% of men had a usual HIV provider at 6-month follow-up
Pai <i>et al.</i> [55]	-	-	10% of women vs. 13% of transgender women vs. 16% of men had continuous use of ART (following release) 18% of women vs. 13% of transgender women vs. 7% of men refused ART
Seth <i>et al.</i> [58]	-	-	36% of women vs. 38% of men linked to HIV care within 90 days; 67% of women vs. 68% of men linked to care at any time frame (within 90 days and >90 days) Hispanic/Latina women more likely to be linked to care than black women and white women (70 vs. 35 vs. 28%) after 90 days
Spaulding <i>et al.</i> [39]	Men (trans*) more likely to be virally suppressed at 6-month follow up compared	-	-

Ref.	VL suppression	Adherence	Engagement in care
	to women (OR: 1.66; CI: 1.09–2.53)		
Teixeira <i>et al.</i> [60]	-	-	62% of women vs. 78% of transgender women vs. 38% of men lost to follow-up ay 6-month postincarceration
Williams <i>et al.</i> [32]	-	-	49% of women vs. 35% of men reported needing case management; 46% of women vs. 34% of men reported needing HIV medical services.
Youmans <i>et al.</i> [61]	-	-	Women who expressed more needs were significantly less likely than men to engage and stay in care (OR: 0.90; CI: 0.84–0.97) Women who were arrested (HR: 1.92, 95% CI: 1.43–2.58) and women who went to prison (HR: 2.27, 95% CI: 1.52–3.39) had an increased risk of developing AIDS when compared with women without criminal justice-involvement

ART, antiretroviral therapy; confidence interval; HR, hazard ratio; IRR, incidence rate ratio; OR, odds ratio; RR, risk ratio; VL, viral load.