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Measuring and Addressing Stigma Within HIV Interventions for People Who Use Drugs: a Scoping Review of Recent Research

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Abstract

Purpose of Review—Persistent stigma remains a crucial barrier to HIV prevention and treatment services among people who use drugs (PWUD), particularly for those living with or at-risk for HIV. This scoping review examines the current state of science with regard to approaches for measuring and addressing stigma within HIV interventions among PWUD.

Recent Findings—Sixteen studies fit the inclusion criteria for this review. Half the studies originated within the USA, and the remaining represented four different regions. Within these studies, stigma was measured using various quantitative, qualitative, and mixed methods. The studies primarily focused on HIV stigma, including value-based judgments, anticipated stigma, and perceived stigma domains. Information-based and skills building approaches at the individual level were the most common for the stigma reduction interventions.

Summary—Adoption of systematic evaluations is needed for measuring stigma, including intersectional stigma, within HIV interventions among PWUD. Future studies should focus on developing multilevel intersectional stigma reduction interventions for PWUD with and at-risk for HIV globally.

Keywords

HIV; People Who Use Drugs; Substance Use; Stigma; Intersectionality; Scoping Review

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Conflict of Interest The authors declare no competing interests.

Introduction

As we are near 40 years into the HIV epidemic with tremendous biomedical and behavioral advancements, people who use drugs (PWUD) remain disproportionately affected by HIV [1, 2]. The relationship between HIV transmission and drug use has shifted throughout the epidemic, with decreases in the proportion of people acquiring HIV via injection drug use, yet more recent HIV clusters and outbreaks identified both nationally and internationally among people who inject drugs (PWID) [3, 4]. In 2017, an estimated 18% of PWID globally were living with HIV [1]. While sharing needles and injection equipment continues to significantly increase the risk for HIV acquisitions compared to sexual intercourse, non-injection drug use can also increase the risk for HIV and prevent engagement in HIV care. The HIV prevalence among PWUD more broadly is rising not only due to injection drug use but also sub-optimal engagement in prevention (e.g., PrEP and inconsistent condom use) and engagement in risk behaviors such as multiple sex partners, overlapping of sexual networks between PWID and non-PWID, and polysubstance use coupled with the potential to start injecting drugs [5–9]. PWUD are often discriminated against and stigmatized which can lead to limited access and engagement in HIV prevention and treatment services further exacerbating their HIV burden.

A significant barrier to HIV prevention and treatment services for PWUD is stigma. Stigma is a complex social process conceptualized as an “attribute that is deeply discrediting” imposed by society that diminishes someone “from a whole and usual person to a tainted, discounted one” [10]. Broadly, stigma has four primary components, including distinguishing and labeling differences among individuals, associating negative attributes to identified differences, and separation and distancing that results in status loss and discrimination [11]. Stigma has been conceptually differentiated into several manifestations—experienced, perceived, anticipated, and internalized. Experienced stigma includes actual experiences of the interpersonal act of discrimination. Perceived stigma is one’s perception that individuals or societies treat people differently due to a stigmatized attribute. Anticipated stigma is the expectation of stigma or discrimination within a particular context. Finally, internalized stigma refers to accepting experienced and perceived stigma leading to a belief of one’s lesser status within a society.

Both external and internal stigma can negatively affect engagement in HIV prevention and treatment [12–14]. External stigma refers to experiential acts of discrimination, including perceived and anticipated stigma that can occur within one’s community [15]. Internal stigma is the shame or internal oppression that can result in self-loathing, isolation, and low levels of self-worth [15, 16]. External and internalized stigma related to HIV can undermine ongoing efforts for enhancing HIV prevention, testing, linkage to care, and treatment adherence. Substantial evidence exists demonstrating HIV stigma can hinder one’s utilization of HIV prevention and delay HIV testing and knowledge of status [17–19]. Furthermore, HIV stigma is a well-documented barrier to linkage to care and treatment [18, 20], thus severely hindering ambitious goals for ending the HIV epidemic by 2030 [21].

PWUD often endure overlapping or intersectional stigma, further obstructing HIV prevention and treatment provision and utilization. Intersecting stigma is the convergence

of multiple stigmas from social identities, health conditions, or behaviors, such as drug use and HIV [22–24]. PWUD experience various types of intersecting stigma related to drug use and HIV and potentially other intersecting identities (e.g., related to a mental health condition, gender, or sexual orientation). Evidence indicates that PWUD often have elevated levels of internalized and anticipated stigma related to their drug use [25]. As a result, PWUD may avoid seeking healthcare, including HIV care [26–29]. HIV stigma has similarly been associated with sub-optimal engagement in HIV prevention and treatment among PWUD [30, 31]. PWUD may avoid HIV testing, pre-exposure prophylaxis (PrEP) use, HIV treatment due to shame, fear of disclosure, or possible isolation or ostracization from social networks [32–36]. Both drug use and HIV stigma likely are not occurring in isolation from one another but rather are interrelated.

PWUD uniquely experience intersecting drug use stigma in conjunction with HIV and potentially other forms of stigma. Intersectional stigma is the juncture of multiple stigmas from social identities, health conditions, or behaviors, such as drug use and HIV [22–24, 37, 38]. While recent studies are beginning to assess intersecting HIV and drug stigma quantitatively [23, 39], challenges remain given the complexity in estimations and interpretations [40, 41]. Additionally, internalized substance use stigma may be under-reported because it is a stigma that ascribes blame to the stigmatized individual, further complicating the assessment of intersectional stigma among PWUD [42].

Several reviews have documented a rich history of HIV stigma reduction within HIV prevention and treatment interventions [43–47]. Broadly, most reviews have identified substantial progress in the HIV stigma reduction field, with a growing body of evidence on multilevel strategies for reducing HIV stigma. However, few examine stigma-reduction strategies and studies specifically for PWUD, which are needed to optimize HIV biomedical and behavioral advancements. For example, one meta-analysis quantified HIV and drug-related stigma associations on injection equipment sharing across studies, specifically among PWID [47]. The majority of these reviews broadly include all HIV stigma regardless of the target population, limiting our understanding of interventions tailored for PWUD and other stigmatized conditions, such as drug use or addiction.

In this scoping review, we assess the recent state of science with regard to approaches for measuring and addressing stigma within HIV interventions among PWUD. We will describe the country and origin of research studies, detail the measurements utilized to understand HIV and drug use stigma, and depict the design and participants of the HIV interventions. We conclude by highlighting opportunities for new research. We chose a scoping review of the literature to allow for rapid mapping of all types of available evidence underpinning this research topic [48].

Methods

For this scoping review, we followed the Arksey and O'Malley's framework for a scoping study, including (a) identifying the research question (if and how has stigma been measured and/or addressed in HIV prevention and treatment interventions among PWUD?); (b) identifying relevant studies; (c) selecting studies; (d) charting the data; and (e) summarizing

and reporting results [48]. Our review considered the following types of stigma, including HIV stigma and stigma surrounding marginalized populations such as PWUD.

Identifying Relevant Studies

The search was conducted in five bibliographic databases, including PubMed, Web of Science, CINAHL, PsycINFO, and Academic Search Complete, to identify relevant publications. Keywords were used in combination according to the proper syntax of each database and included the following expressions: “HIV/AIDS”; “HIV”; “Human Immunodeficiency Virus”; “AIDS”; “Acquired immune deficiency syndrome”; “PrEP”; “Pre-exposure prophylaxis”; “Preexposure prophylaxis”; “ART”; “Antiretroviral therapy”; “Antiretrovirals”; “drug-use”; “drug use”; “PWID”; “PWUD”; “people who use drugs”; “people who inject drugs”; “substance use”; “substance use disorder”; “Stigma”; “Prejudice”; “Attitude”; and “Discrimination” (see supplementary document for the detailed search strategy).

To increase the relevance of the findings of this review for current practice, only papers published from September 1, 2011, through October 15, 2021, were included. Papers not published in English were excluded along with commentaries, letters, editorials, review articles not including primary data collection, articles with no reported drug use or measure of stigma, and articles without an intervention. Additionally, papers that detailed cross-sectional studies and protocol papers that did not contain an endpoint were excluded from our search. Only interventions that contained prospective follow-up or a measure of feasibility and effectiveness outcomes were included.

Study Selection

The selection process consisted of two phases. First, two of five reviewers screened all titles and abstracts independently. Studies were selected for second phase review if reviewers had consensus, where discrepancies could not be resolved, and if eligibility could not be determined based on the titles and abstracts. Two of five reviewers independently screened full texts of the studies selected in phase 1 to determine eligibility conclusively in the second phase. A hand review was then conducted of final articles, in which references of included papers were scanned for any additional articles that fit the defined search criteria. Any discrepancies in study eligibility after this phase were subject to a third-party reviewer who decided whether to include the article in our scoping review and resolve any remaining disputes.

Charting Data

Peer-reviewed titles and abstracts identified during the literature search were uploaded, assigned an article ID number, and reviewed in an excel spreadsheet. (1) abstracts without full text available, (2) non-peer-reviewed, (3) review or not original research, (4) non-human subjects research, (5) no illicit drug use reported among participants or intervention goal was not focused on PWUD, (6) no measures of stigma reported, or (7) not an HIV or stigma reduction intervention. After this was completed, the third reviewer checked over their work to ensure accuracy.

All articles passing the first phase of study selection were added to a second excel spreadsheet. Reviewers then exported the title, author, year of publication, and article ID number for all the studies into the excel spreadsheet for data abstraction and charting. Two of the five reviewers then abstracted data on the following topics from each article: study population, study origin, stigma instrument, assessment format, stigma reduction approach, and intervention level. Stigma reduction approaches included information-based, skills building, counseling, contact and partnership, structural, or biomedical approaches [12]. Intervention level was informed by the social-ecological environment involving individual, interpersonal, organizational, and structural levels [49]. Abstracted data were reviewed for consistency, and the first author and reviewers discussed any discrepancies and settled any disputes.

Results

Our initial search produced 2441 results (PubMed = 730; CINAHL = 292; PsycInfo = 483; Academic Search Complete = 384; Web of Science = 552). After removing duplicates, 1,151 peer-reviewed studies remained. Review of the titles and abstracts identified 134 studies for full-text examination, after which 16 studies were identified as meeting the inclusion criteria (Fig. 1).

Study Characteristics

The studies represented five WHO regions (Table 1). Eight studies originated from the Americas, three from the Western Pacific region, two from the African region, one European region, and one from Southeast Asia. In addition, one study included multiple regions, including the Southeast Asia, Western Pacific, and European regions. Of all the studies, a total of six originated from World Bank defined low to middle-income countries.

Stigma Instruments and Measurement

Studies that met the inclusion criteria reported a variety of quantitative, qualitative, and mixed methods for measuring stigma among PWUD (Table 2). Stigma domains included value-based judgments, anticipated stigma, perceived stigma, with much of the focus on HIV stigma rather than drug use stigma.

Five studies reported using or adapting established stigma and stigma-related scales [50–54]. One of these studies among PWUD in New York City measured externalized stigma, which involved a 9-item scale of anticipated HIV shame and blame from the HIV Stigma Index 2.0 [53]. PWUD also participated in qualitative interviews to identify internalized stigma towards accessing post-exposure prophylaxis (PEP). Basta et al. adapted nine Likert scale items from a national AIDS and stigma survey to measure negative attitudes towards or value-based judgments of those with HIV among people living in rural Appalachia and reporting a mental illness and alcohol, tobacco, and drug addiction [55]. The items focused on negative emotions and feelings such as disgust, anger, and fear towards those living with HIV. As part of a non-experimental intervention pilot among PWID in New York, IDU stigma management was examined using a 10-item scale called Keeping It Together [50]. This scale covered three domains: living a normal life, taking care of veins, and distancing

oneself socially from other injectors. Lastly, one study originating in Australia measured members of the general public's negative attitudes towards people living with HIV or who injected drugs with a 5-item Likert scale with options ranging from "never" to "always" [56].

Five studies measured stigma using quantitative evaluations [57–60]. For example, one trial reported drug use stigma quantitatively among PWID in Vietnam using a single question on experiencing stigma by their community due to their drug use [57]. An additional trial conducted in Indonesia, Ukraine, and Vietnam ascertained reported benefits to trial participation that included stigma reduction, without specification on type of stigma or stigmatizing condition [58]. As part of a feasibility study of training and support in managing opioid use disorder among primary care providers (PCPs), pre- and post-training surveys obtained suggestions for improving future trainings [60]. PCPs suggested providing future training on reducing stigma toward PWUD among clinic staff.

Several studies used mixed-methods of qualitative and quantitative measures that also included established quantitative scales [54, 61–63]. In mixed-methods evaluation within South Africa for example, Dube et al. examined the effects of a sensitization training intervention, the "Integrated Key Populations Sensitivity Training Programme for Healthcare Workers in South Africa," on changes in stigma and discrimination towards key populations, including PWUD [61]. Both quantitative and qualitative methods were conducted. Pre- and post-training assessments documented staff's awareness on "how stigma affecting key populations limits access to effective healthcare." Qualitative interviews also revealed how the intervention addressed their previous judgmental attitudes or enhanced their understanding of the discrimination key populations may experience.

Three studies used only qualitative methodology to assess stigma [56, 64, 65]. For example, Lunze et al. conducted an implementation study of an intervention linking PWID to HIV care in Russia [65]. Qualitative interviews were conducted among PWID participants to identify implementation barriers and levers of implementation guided by the Consolidated Framework for Implementation Research (CFIR) and Normalization Process Theory as analytical frameworks. Experience and anticipated stigma and discrimination emerged as inhibiting health-seeking behavior. Within a study among men who have sex with men (MSM) who use methamphetamine, qualitative interviews were conducted as part of participating within a methamphetamine treatment and support program for MSM, in which lack of perceived stigma when engaging with peers emerged in intervention feedback [64]. An implementation study of the Women's Health CoOp (WHC) is a gender-focused, risk-reduction EBI originally developed for women who use alcohol, and other drugs (AOD) used focus group discussions, joint interviews, and in-depth interviews to explore the intervention acceptability and appropriateness [62]. Participants reported experiencing community-level stigma due to their gender, substance use, and HIV status.

Intervention Characteristics

The most common stigma reduction strategies involved information-based and skills building approaches, including education to enhance knowledge on HIV or drug use or the effect of stigma manifestations on health and well-being (Table 2) [50, 51, 53, 56, 57,

59, 60, 62–66]. For example, in Vietnam, a randomized control trial of a multilevel PWID and HIV stigma reduction intervention was conducted to optimize HIV outcomes, including survival, among PWID [57]. The multilevel intervention addressed structural level stigma with a community educational campaign of door-to-door communications, community video screenings, and individual-level counseling and group support. Community educational campaigns focused on correcting misconceptions related to HIV transmission and promoting positive HIV and drug use messages. At the individual-level counseling and group support were provided to facilitate discussion and skills building to cope with stigma. At baseline, approximately three-fourths reported being stigmatized due to drug use by their community. PWID who were members of the community-wide intervention and the individual-level intervention had increased 2-year survival and improvements in HIV treatment.

Six studies included on stigma reduction towards PWUD with community members or clinic providers [52, 56, 59, 61, 63, 66]. Drawing from Allport's intergroup contact theory, an online contact intervention was conducted with the goal of reducing stigma and discrimination of members within the Australian general public towards people living with HIV or who inject drugs [56]. Participants were presented a short three-to-five-minute video depicting people living with HIV or who inject drugs describing real-life experiences with discriminatory attitudes or anticipated stigma within community and healthcare settings. Reductions were identified in reports of negative attitudes towards both people living with HIV or who inject drugs. The Integrated Key Populations Sensitivity Training Programme for Healthcare Workers in South Africa involved a one-day sensitization training program for healthcare workers that addressed socio-structural marginalization and prejudice and interventions to foster an enabling healthcare environment for key populations, including PWUD [61]. Post-intervention evaluations identified increases in knowledge of discrimination and marginalization of key populations among healthcare workers.

The individual level was the most frequent target of the interventions [50, 51, 53, 54, 57, 60, 62, 64, 65]. For example, PWUD in NYC received a 10-min vignette-based PEP education video and direct pharmacy access to PEP following HIV exposure [53]. The video content was guided by the social cognitive theory, which focused on enhancing PEP knowledge and did not report an explicit stigma component. Instead, low anticipated stigma was identified as a factor associated with PEP willingness. Another study conducted in the USA developed a brief text-enhanced transdiagnostic emotion regulation intervention for HIV-positive persons with substance use disorders to mitigate the negative consequences of internalized stigma, shame, and other self-conscious emotions on engagement in HIV self-care behaviors [54]. The intervention involved five individual sessions that addressed metacognitive awareness of emotions and cognitions, cognitive reframing (e.g., compassionate self-statements), and identifying and refining self-care goals (e.g., goal setting and problem-solving skill development). Participants also received daily and weekly texts, which included emotion queries and compassionate self-statements.

Discussion

The studies identified in this scoping review were few, highlighting the need for systematic stigma evaluations and multilevel stigma reduction interventions for PWUD with and

at-risk for HIV globally. Most of the studies originated from the USA, which may not be directly translatable to other global settings where HIV and drug use may be more prevalent and discriminated against. Further, studies primarily assessed HIV-related stigma. Only a few examined drug use stigma, despite a focus on PWUD, and none of these studies specifically measured intersecting stigmas. Gender-related stigma was also largely unmeasured or unaddressed across the studies. Common approaches for stigma reduction interventions consisted of information-based and skills building approaches mainly situated at the individual level. While a range of interventions have been designed to mitigate the negative consequences of stigma related to drug use [67], our results indicate that few have been implemented among PWUD with and at-risk for HIV. To date, therapeutic interventions to reduce drug-related internalized or self-stigma, motivational interviewing, or sharing humanizing stories of stigmatized others have been used to reduce drug-related social stigma, and contact-based strategies and educational interventions have been used to reduce structural stigma. More work is needed to incorporate these strategies into intersectional stigma reduction interventions for PWUD with and at-risk for HIV.

Given the broad range of approaches and measures used to assess stigma among PWUD, more rigorous and valid measures of stigma may be warranted. Qualitative research on stigma among PWUD can provide illustrative examples and documentation of the lived experiences and attitudes of stigma among PWUD [68]. While this evidence is critical to enhance our understanding of manifestations of stigma, qualitative work limits our ability to systematically evaluate the impact of stigma reduction interventions or engagement in HIV prevention and treatment. Several validated HIV and drug use stigma scales exist, including the Substance Use Stigma Mechanisms Scale (SU-SMS), Social Distance Scale for Substance Users, and Affect Scale for Substance Users [69, 70]. However, more work is needed to psychometrically establish these scales across populations of people who use drugs with and vulnerable to HIV [71, 72]. Further quantitative research will be critical for developing and culturally adapting well-validated stigma to rigorously measure stigma as part of stigma reduction interventions for specifically for PWUD.

The studies within our review primarily originated within the USA. Yet, HIV incidence is highly concentrated among PWUD in many global settings, including Eastern Europe and parts of Southeast Asia, and the Western Pacific [1, 73, 74]. Notably, an HIV and drug use stigma reduction in Vietnam implemented culturally relevant community-level information-based approaches to delink people living with HIV and using drugs as “social evils” [57, 75]. HIV and drug use stigma can manifest in unique ways across cultural and social norms that vary geographically. Because stigma is culturally bound, culture-based stigma reduction interventions will be critical for mitigating HIV and drug use stigma throughout various contexts.

None of the included studies examined or addressed intersectional stigma explicitly. While this may be attributable to the documented challenges of evaluating intersectional stigma [41], the intersectionality framework indicates that individuals’ identities interlock and interact with social contexts involving privilege and oppression [76–78]. Recent strides have been made in the measurement of intersectional stigma [79, 80]; however, work is needed to integrate substance use stigma into these conceptualizations and measurement strategies.

Therefore, according to this framework, identity is not the additive compilations of identities but rather the concurrent experience of the intersection of aspects of one's identity [81]. From this perspective, the impact of stigmas related to HIV and drug use among PWUD with and at-risk for HIV, as well as potentially other stigmas experienced by this population (e.g., stigmas related to living with mental illness, being a sexual minority, being homeless or marginally housed, and gender), is most meaningfully examined together. Recent work has begun to examine intersecting HIV and drug use stigmas and other intersecting stigmas (e.g., sexual orientation-related stigma) in relation to health outcomes such as engagement in HIV self-care behaviors [25, 26, 38, 39]. However, interventions are needed to address intersecting HIV and drug use stigma.

Relatedly, gender-related stigma was under-investigated across studies. Only one included study focused on women living with HIV and using alcohol or other drugs [62]. While this study had a gender focus, none of the other studies reported gender differences in stigma or examined gender-based stigma or sexism. Evidence indicates that women, both cis- and transgender women, who inject drugs are the most vulnerable to HIV via unprotected sex and unsafe injection practices [74, 82, 83], likely exacerbated by violence, poorer quality of healthcare [84, 85], and stigma and discrimination related to gender (e.g., sexism, transphobia, and femmephobia) [86, 87]. Women-specific, multilevel interventions will be essential to acknowledge and intervene on the unique intersectional stigmas and related barriers women who use drugs face [88, 89].

While this article makes an important contribution to the literature, there are several limitations. Our process of article selection, including studies reported in English only, excluding gray literature, including unpublished and non-peer-reviewed studies, may limit the generalizability of our findings beyond peer-reviewed English studies. To minimize possible selection bias, we did utilize independent secondary article reviewers and data extractors. Our search terms were specific to illicit drug or substance use and therefore did not include articles that evaluated or addressed stigma for people who reported only alcohol or tobacco use. Additionally, we did not include some terms indicative of specific forms of stigma such as minority stress, and homonegativity, potentially limiting the inclusion of studies that focused on specific forms of stigma which used more specific language. Despite these limitations, this synthesis of the current literature indicates critical next steps in the reduction of stigma among PWUD with and at-risk for HIV.

Conclusion

Despite the global progress over the past, there remains the need to strengthen HIV and drug use stigma measurement and interventions for PWUD. Systematic and harmonized stigma measurements, particularly for intersecting stigmas, will enhance comparisons of stigma manifestations and reduction efforts worldwide. Future multilevel stigma reduction interventions should address the intersectional stigma that PWUD with and at-risk for HIV endure.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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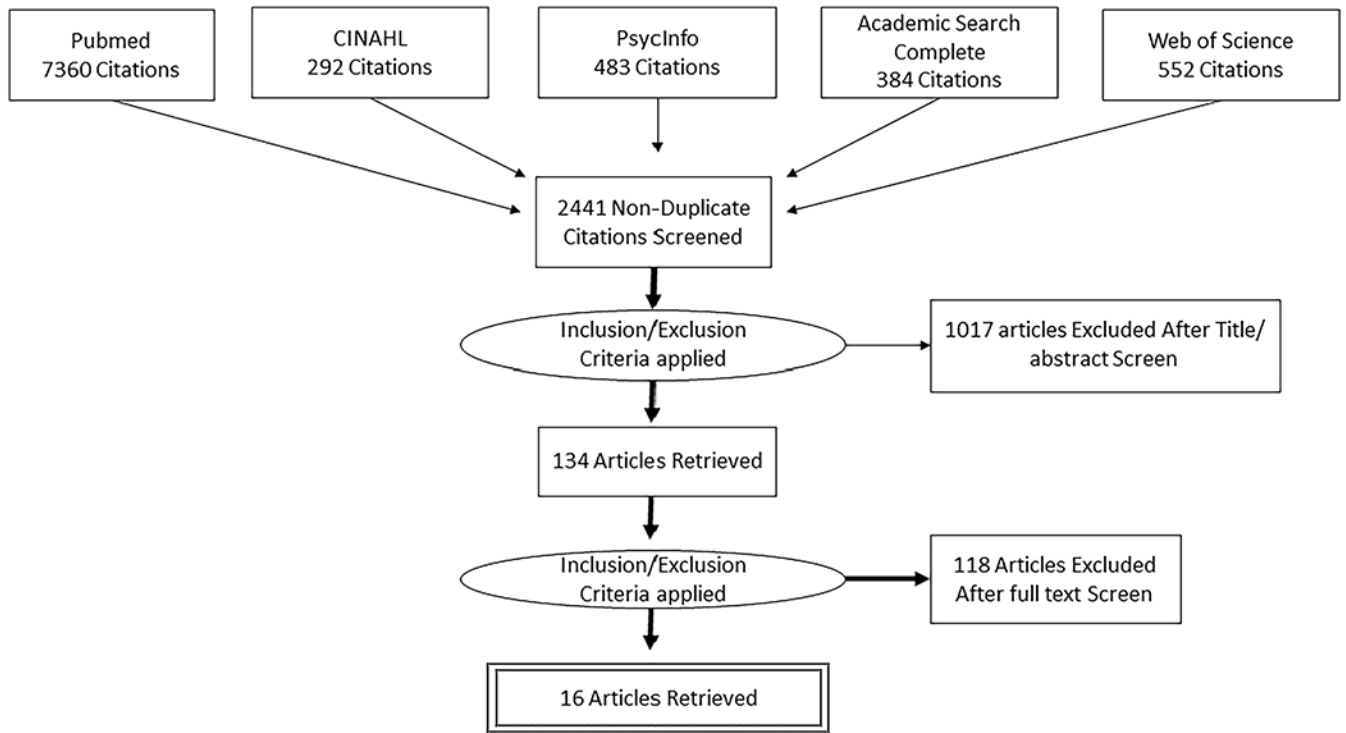


Fig. 1.
Overview of study selection

Table 1

Characteristics of included studies

World Health Organization region	
Africa	2
Americas	8
Europe	1
Southeast Asia	1
Western Pacific	3
Multiple: Southeast Asia, Western Pacific, and Europe	1

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Table 2

Included studies ($n = 16$) by year of publication

Authors	Year published	Study origin	Stigma instrument and measurement	Stigma assessment method	Intervention target	Intervention strategy	Level
Mateu-Gelabert et al. [50]	2014	New York, USA	Keeping It Together 10-item scale	Quantitative	PWID ¹	Skills building	Individual
Basta, Stambaugh & Fisher [51]	2015	Ohio, USA	Nine Likert scale items adapted from a national AIDS and stigma survey	Quantitative	People living in rural Appalachia, unaware of HIV status or HIV negative	Information	Individual
Go et al. [57]	2017	Vietnam	Experience drug use stigma	Quantitative	HIV-positive men who inject drugs	Information, skills building, and counseling	Individual, interpersonal
Burgess et al. [64]	2018	Australia	Intervention feedback: lack of stigma	Qualitative	Gay men and other men who have sex with other men who use methamphetamine	Skills building and biomedical	Individual, interpersonal
Maskay et al. [52]	2018	6 geographically diverse sites, USA	Six questions on perceived and external HIV stigma adapted from the Behavioral Risk Factor Surveillance System module	Quantitative	HIV positive persons with previous or current substance use disorders or mental illness	Structural	Individual, organizational
Sugarman et al. [58]	2019	Indonesia, Ukraine, and Vietnam	Reported benefits related to trial participation, including "reduced stigma"	Quantitative	HIV-infected people who use drugs	Biomedical, counseling, and structural	Individual, organizational
Duby et al. [61]	2019	South Africa	Stigma awareness, understanding of experienced stigma	Mixed methods	Healthcare workers	Information, contact and partnership, and structural	Organizational
Tofighti et al. [59]	2019	New York, USA	Intervention feedback: open text	Quantitative	Healthcare workers	Information, contact and partnership, structural	Organizational
Fix et al. [60]	2019	USA	Reported fear/stigma as reason for not HIV testing	Quantitative	Adolescents in juvenile drug court	Information, skills building, and counseling	Individual
Lewis et al. [53]	2020	New York, USA	HIV Stigma Index 2.0 scale	Quantitative	PWUD ²	Information and biomedical	Individual
Gichane et al. [62]	2020	South Africa	intervention acceptability and appropriateness	Mixed methods	Women living with HIV and who use alcohol or other drugs	Information, skills building, and biomedical	Individual
Batchelder et al. [54]	2020	USA	HIV Shame Inventory (HARSI); intervention participant feedback	Mixed methods	HIV positive individuals with substance use disorders	Counseling, skills building	Individual
Silvia [63]	2020	USA	Intervention feedback: Change in empathy towards PWUD	Mixed methods	Health care workers	Information	Organizational
Lunze et al. [65]	2021	St. Petersburg, Russia	Experience and anticipated stigma	Qualitative	HIV positive PWID ³	Skills building and structural	Individual, Organizational

Authors	Year published	Study origin	Stigma instrument and measurement	Stigma assessment method	Intervention target	Intervention strategy	Level
Broadly et al. [56]	2021	Australia	Negative attitudes towards people of their HIV status or IDU with a 5 Likert scale response options ranging from “never” to “always”	Qualitative	General public	Contact and partnership	Interpersonal
Lemons-Lyn et al. [66]	2021	Myanmar	Single question on feeling safe and free from stigma in waiting area	Mixed methods	Health care workers	Information, skills building, and structural	Organizational

¹ People who inject drugs

² People who use drugs

³ People who inject drugs