



Stigma, HIV Risk, and Access to HIV Prevention and Treatment Services Among Men Who have Sex with Men (MSM) in the United States: A Scoping Review

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Abstract

In light of recent advances in HIV prevention and treatment, we reviewed the literature to understand how different types of stigma impact HIV risk; access to HIV prevention, care, and treatment services; and related health outcomes among men who have sex with men (MSM) in the US. We conducted a scoping literature review of observational and qualitative studies that examined stigma and HIV-related outcomes among MSM. Our search identified 5794 studies, of which 47 met the eligibility criteria and were included in the final analysis. The review suggests that stigma remains a formidable barrier to engaging in HIV prevention and treatment among both HIV-negative and HIV-positive MSM. Among the studies of HIV-positive MSM, internalized stigma was related to lower levels of treatment engagement. HIV-positive MSM in the Southern part of the US were also more likely to engage in risky sexual behavior. Perceived health care discrimination was negatively associated with PrEP awareness, particularly among HIV-negative Black MSM. Among young MSM of color, intersectional stigma compounded the social structural barriers to PrEP adherence. Findings indicate that stigma reduction interventions should be implemented in diverse MSM communities to address the disproportionate burden of HIV along with critical gap in the care continuum. Further research should examine how individual types of stigma, including intersectional stigma, affect viral suppression and PrEP uptake and adherence, especially among MSM of color.

Keywords Stigma · Discrimination · Intersectionality · HIV · MSM · Scoping review

Abbreviations

MSM	Men who have sex with men
PrEP	Pre-exposure prophylaxis
TasP	Treatment as prevention
HIV	Human immunodeficiency virus
CDC	Centers for disease control and prevention

Introduction

Stigma is a social-psychological construct that manifests in a process by which individuals relegated to a particular social category are subjected to prejudice, discrimination, and unfair treatment because of this category [1, 2]. Stigma has been shown to relate to host of negative health outcomes [1, 2]. Thus, different domains of stigma have been studied to enhance health-related research and develop interventions that specifically target these domains. Enacted stigma refers to the actual experience of prejudice and discrimination that occurs due to one's social category (e.g., being the victim of a hate crime because one is gay) [3]. Anticipated stigma is the fear or expectation of being rejected due to, for example, one's social category (e.g., sexual identity, gender identity, race/ethnicity, or HIV serostatus) [4]. Perceived stigma refers to one's perception about how others might feel about them because they are part of stigmatized group [5]. Internalized stigma is the internalization of negative societal attitudes related to one's stigmatized identity, typically resulting in diminished self-worth [6]. Marginalized groups such as

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men who have sex with men (MSM) often contend with these various forms of stigma. Further, because they may also possess more than one minority status (e.g., Black, gay man), they may also experience intersectional stigma [7, 8], which studies have begun to demonstrate negatively impact HIV-related outcomes among MSM [9].

Understanding the impacts of stigma on HIV risk, prevention, and care among MSM warrants immediate attention, as empirical studies continue to show that MSM are disproportionately affected by HIV, despite advances in prevention and treatment [10–12]. In fact, in 2018, 1.1 million people in the US were living with HIV, with MSM accounting for approximately 69% of all the diagnosed HIV infections [13]. The burden that is concentrated among this population has been attributed to a combination of psychosocial factors contributing to syndemics among MSM [14–18]. For example, syndemic factors such as child abuse, substance use, depression, traumatic stress, as well as various forms of stigma interact to increase the vulnerability of these individuals and confer excess risk to HIV infection [15, 16, 19]. One of the suggested mechanisms is through minority stress pathway [20, 21]. In addition to concurrently acting as factors that amplifies the risks for HIV, stigma or marginalization associated with sexual identity, exploration, and race has also been known to act in an additive way through this path [17, 22].

In the absence of a cure for HIV infection, HIV prevention methods and programs that use antiretroviral treatment (ART), also referred to as Treatment as Prevention (TasP) can control and prevent further spread of the virus to uninfected individuals [23]. However, efficacy and effectiveness of TasP can be greatly reduced in MSM who are often stigmatized due to concurrent discriminations acting in unison. Different types of stigma such as internalized stigma, HIV related stigma, stigma experienced in healthcare settings impacts prevention strategies and results in reduced accessibility and decreased quality of care [24, 25]. Thus, stigma may play a significant role in hampering HIV prevention efforts among the MSM population. It can discourage them from seeking information, prevent them from getting tested, seeking care or support, and hinder access to biomedical interventions such as TasP and PrEP [26]. This has resulted in significant challenges when conducting biobehavioral HIV surveillance studies as well as understanding of the social structural factors contributing to HIV risk. In order to strengthen efforts to characterize and to reduce stigma and discrimination and further improve health outcomes, an improved understanding of how stigma impacts HIV risk and access to prevention and care among MSM is needed. Studies have assessed stigma in different ways, some examine it by using a scale while others adopted a more qualitative or a mixed method approach [20, 27, 28]. This paper presents a critical scoping review by summarizing the largely fragmented literature on stigma among MSM in the

United States as it pertains to risk of HIV infection, access to prevention, care and treatment services, and other health outcomes. The review is guided by the following research questions:

- (1) How did the studies conceptualize and measure individual types of stigma as well as intersectional stigma?
- (2) How did different types of stigma affect HIV risks, in particular syndemic conditions?
- (3) What types of stigma negatively impact prevention (e.g., PrEP) and care continuum outcomes?

Our objectives were to summarize research on the associations between stigma and these different measures of HIV cascade by systematically reviewing peer-reviewed literature. In line with the broad coverage of our topic, a scoping review was chosen as the most appropriate methodology to inform the way research has been conducted [29].

Methods

Search Strategy

Original peer-reviewed articles published in English language journals from early 1980's to October 2019 were obtained from systematic searches of five electronic bibliographic databases: PubMed, CINAHL, Psych Info, Scopus, and Web Science. The search was implemented in November 2019. The search query consisted of terms such as stigma, discrimination, stereotype, gay, HIV, AIDS, MSM or other associated terms (supplementary file), and this was tailored to the specific requirements of each database. Grey literature, commentaries, or other document types such as reports, and essays were excluded since they were not peer reviewed. All identified articles from the searches were transferred to a bibliographic management system software program (EndNote, Rayyan). Duplicates were excluded by automatic duplication removal process in EndNote's default one step auto-deduplication process. The articles were further checked and then removed manually if they had not already been identified by the reference manager software. This was carried out independently by two reviewers (RAB, PW).

Eligibility Criteria

In order to be included in this scoping review, original peer-reviewed articles had to meet three inclusion criteria. First, the study had to be conducted in the United States among the adult MSM population. This criterion was not limited to behavior only; we have included gay and bisexual men in this review. Second, the study had to examine at least one type of stigma and discrimination and have at least one

HIV-related outcomes as the dependent variable (e.g., risk of HIV acquisition, HIV medication or treatment adherence, suppression of viral load, linkage to care, and HIV prevention measures such as HIV testing and PrEP use). Third, only peer-reviewed articles written in English that presented original quantitative, qualitative, or mixed methods research were considered. Studies were excluded if any of the above criteria were missing.

Data Charting and Synthesis

Applying the eligibility criteria, the two independent reviewers screened and assessed the articles using a two-step process. In the first step, the reviewers selected the articles based on title and abstract and in the second step they screened the full text of the articles that had been included in the first step. In circumstances where the title/abstract was deemed to not provide sufficient information, the full article was retrieved and examined before a final decision was made. All conflicts and disagreements generated through the screening stages between the two reviewers were discussed until consensus was reached. Furthermore, when needed, a third opinion from the senior author (CY) was consulted to reach unanimity. After the articles were selected, the following data was recorded in a spreadsheet for data extraction and charting: author(s), year, city/region, study purpose, study design (e.g., quantitative, qualitative, or mixed methods), exposure, outcomes measured, and key findings. To ensure accuracy, the same reviewers abstracted the data. We did not perform an assessment of the quality of included studies in align with the methodology of scoping reviews.

Results

Search Results

The initial literature search resulted in a total of 5,794 citations from the five electronic databases (PubMed: 1356, CINAHL: 921, Psych Info: 1346, Scopus: 392, and Web Science: 1779). After removing the duplicates, a total of 2,482 records were potentially eligible and were hence screened for title and abstract. Subsequent to this, a full text assessment of 217 articles were performed. The full-text screening led to 47 eligible articles relevant to our scoping review that were included in the final data extraction and further analysis. Figure 1 shows the flow chart of articles examined for this scoping review.

The results begin with an overall summary of the studies included in the scoping review and then describe the findings related to different types of stigma and its measurements, as well as its association with syndemic conditions, PrEP use, and the HIV care continuum.

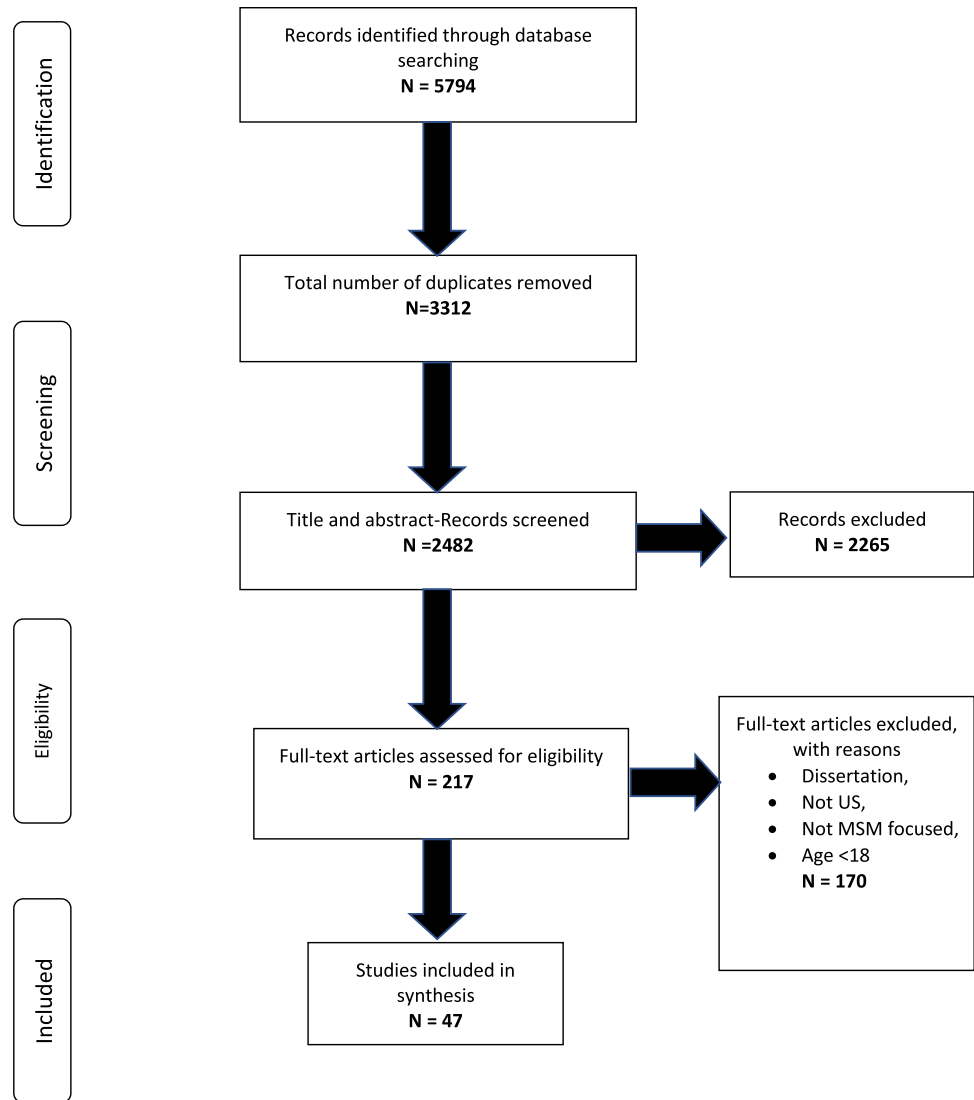
Characteristics of Studies

The majority of studies were quantitative ($n = 30$) [20, 24, 28, 30–56] with the remaining being qualitative studies ($n = 16$) [25, 57–71]. There was only one study that applied a mixed method study design [27]. Five studies spanned the larger geographical area of the United States, thereby including the 50 states [31, 36, 38, 39, 52]. Most frequently, the studies were conducted in New York City ($n = 15$) [27, 32, 33, 37, 40, 43, 47, 49, 51, 54, 59, 63, 66, 68, 70], followed by Chicago ($n = 6$) [35, 37, 48, 57, 58, 69], Los Angeles ($n = 6$) [25, 30, 34, 37, 51, 61], Boston ($n = 5$) [20, 37, 46, 51, 56], and San Francisco ($n = 4$) [27, 28, 37, 51]. Twenty-seven of the quantitative investigations were cross-sectional surveys [24, 28, 30, 31, 33–41, 43–56], and the remaining three were longitudinal studies [20, 32, 42]. Of the seventeen qualitative and mixed method studies [25, 27, 57–71], seven were conducted using focus group discussions [25, 61–64, 67, 68] and the remaining were either in-depth or semi-structured interviews [27, 57–60, 65, 66, 69–71]. Approximately, 85% ($n = 40$) of all included studies were published in 2010 or later [20, 24, 25, 28, 30–43, 45–54, 56–62, 64, 65, 67, 70, 71].

Fewer studies ($n = 14$) [20, 27, 30–35, 57–60, 70, 71] were conducted among HIV-positive MSM as compared to HIV-negative MSM ($n = 33$) [24, 25, 28, 36–56, 61–69]. Only one quantitative [35] and three qualitative studies [58–60] focused exclusively on the effects of stigma among HIV-positive African American MSM. In contrast, one qualitative study [71] focused on HIV-negative Hispanic MSM, while three other studies were conducted on both Hispanic and Black MSM populations [30, 34, 70]. Furthermore, among HIV-negative Black MSM, five quantitative [43, 45, 48, 49, 51] and six qualitative [25, 61, 63, 67–69] studies were conducted, whereas one qualitative study [62] was among Hispanic MSM. Lastly, there was only one quantitative study [41] that included both Black and Hispanic MSM.

Types of Stigma

Both quantitative and qualitative studies of MSM living with HIV showed that internalized, perceived and experienced HIV stigma was associated with increased prevalence of HIV-transmission risk behaviors and poorer self-reported health [20, 27, 30–35, 57–60, 70, 71] (Table 1). Among HIV-negative MSM, the most frequently measured stigma was experienced stigma due to sexual or racial prejudice [37, 38, 40, 41, 43, 48, 53, 55, 56]. Internalized and perceived stigma were less frequently assessed [24, 36, 39, 51], as were structural and healthcare discrimination [42, 44, 45, 47]. These various forms of stigma and discrimination have been shown to be negatively associated with willingness and awareness to use PrEP and engage in HIV testing but

Fig. 1 Scoping review flow diagram

positively associated with engagement in high-risk sexual behavior [24, 25, 28, 36–56, 61–69] (Table 2).

Intersectional Stigma

Of all the studies reviewed, the theory of intersectionality was explicitly investigated in just one qualitative study [71]. Individual, community and structural determinants among MSM was informed by intersectional stigma in this particular study, which included Hispanic MSM living with HIV. This qualitative study assessed the salient intersections of identities among participants and how their multiple identities shaped HIV testing and treatment experiences. Findings from this study demonstrated that Hispanic MSM who are HIV-positive may find it easier to disclose their sexual orientation to family, friends, and sexual partners than their HIV status, due to both internalized and perceived HIV stigma [71]. Intersecting identities are even discriminated against

within gay communities, leading to more social isolation and lesser support. Even though not explicitly investigating intersectional stigma, one of the significant findings of this particular study among HIV negative MSM is worth mentioning. It reported the interaction between enacted stigma and healthcare discrimination resulting in increased substance use and thus resulting in more risky behaviors such as condom less sex [56].

Stigma and Syndemic Conditions

Of the literature available on the interaction of syndemic conditions, six studies examined the relationships between stigma and syndemic conditions [20, 32, 35, 40, 46, 62]. The greater likelihood of sexual risk behavior among MSM can be explained by higher co-occurrence of psychosocial health problems, resulting in increased HIV infection. In a study of HIV negative Hispanic MSM, it was reported

Table 1 Characteristics of studies (HIV positive MSM)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Quantitative studies								
Laura M. Bogart, et al. [30]	2013	Los Angeles	1. To develop a Multiple Discrimination Scale (MDS) for assessment of perceived interpersonal, institutional, and violent forms of discrimination; 2. To explore health correlates of perceived discrimination due to HIV-status, race/ethnicity, and sexual orientation among Black and Latino men who have sex with men (MSM) living with HIV using MDS	181 Black MSM; 167 Latino MSM	Cross-sectional; audio computer assisted self-interview	MDS; race/ethnicity, sexual orientation, HIV-serostatus	CD4, Viral Load, AIDS-related symptoms, medication side effects, emergency department use	1. All three discrimination types were significantly correlated with worse physical health outcomes; 2. For Black, racial discrimination has more effects, while for Latino all three are not different; 3. No interaction effects among the different types of discrimination
Mark Hatzembuehler, et al. [20]	2011	Boston	To examine the prospective relationships between experiencing HIV-related stigma and symptoms of anxiety and depression, as well as sexual transmission risk behavior	314 MSM	Survey, longitudinal follow-up	Perceived HIV stigma	HIV transmission risk behaviors	1. Perceived HIV stigma led to sexual risk behaviors where perceived fear was uniquely associated with depressive and anxious symptoms and perceived shame was uniquely predictive of HIV risk behaviors
Luke D. Mitzel, et al. [31]	2015	USA	To examine the association of HIV related stigma and medication adherence	66 MSM	Cross-sectional survey	HIV related stigma	Medication adherence	1. Depressive symptoms mediated the association of HIV-related stigma to medication adherence

Table 1 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
H. Jonathon Rendina, et al. [33]	2012	NYC	To examine sexual behavior, internalized homonegativity, internalized HIV stigma, and interpersonal HIV stigma in their associations with SC	127 GBM	Cross-sectional	Number of sexual partners, Internalized homonegativity, Interpersonal and internalized HIV stigma	Sexual compulsivity (SC)	1. The number of recent male sexual partners and internalized HIV stigma significantly predicted SC symptomology. 2. SC symptomology with SC symptomology and Black higher
H. Jonathon Rendina, et al. [32]	2017	NYC	Explore the role of HIV-related stress within a minority stress model of mental health and condom less anal sex	136 GBM	Longitudinal study	Internalized homonegativity, Gay-related rejection sensitivity, Internalized HIV stigma and HIV-related rejection sensitivity	Condom less anal sex	1. For both sexual minority and HIV-related stressors, internalized stigma (i.e., internalized homonegativity, internalized HIV stigma) was significantly associated with poorer mental health and increased sexual transmission risk behavior while rejection sensitivity was not
Amy Rock Wohl, et al. [34]	2011	LA	To examine the impact of social support, stress, stigma, HIV disclosure on HIV care of African Americans and Latinos	198 Black and Latino MSM	Cross-sectional	Social support, stigma, stress, HIV disclosure	Retention in HIV care	1. Stress was associated with retention in HIV care for Black MSM who disclosed their status, but not for Latino MSM; 2. Latino MSM with higher MSM stigma are less likely to be retained in HIV care

Table 1 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Katherine Quinn, et al. [35]	2017	Chicago	To examine the association between multiple domains of HIV-related stigma and health-related correlates including viral load and medication adherence	92 Black YMSM	Baseline survey of RCT	HIV stigma	Medication adherence and viral load; psychological distress; sexual risk;	1. Total stigma and personalized stigma were significantly negatively associated with viral suppression; 2. Stronger perceptions that people will react negatively to people living with HIV was associated with a higher likelihood of achieving optimal medication adherence
Qualitative studies Clare Barrington, et al. [71]	2019	North Carolina	To explore the experiences of Latino gay men living with HIV in NC to improve understanding of the factors that shape their HIV care and treatment outcomes, including timely linkage to HIV care, retention in care, and adherence to ART	14 Latino MSM	Semi-structured interview	Internalized HIV stigma	HIV care and treatment outcomes; Linkage to HIV care, retention in care, and adherence to ART	1. It is hard for subjects to disclose their HIV status to families; the structures of institutionalized homophobia and clinic policy impede HIV care; 2. HIV care in the US is still a major time and logistical burden for people living with HIV, especially among those who are undocumented

Table 1 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Jason D. P. Bird, et al. [57]	2017	Chicago	To identify and explore the potential role of parental rejection on high-risk sexual behaviors among a sample of young, self-identified gay and bisexual men who acquired HIV during adolescence	21 YGBM	In-depth interviews	Parental rejection	High risk behaviors	1. The decreased instrumental and emotional support that accompanied parental rejection was related to housing instability, homelessness, poverty, lack of guidance and support, and emotional isolation, and these factors seemed to be potentially linked to their engaging in survival sex or having riskier sexual partnerships
Jason D. P. Bird, et al. [58]	2013	Chicago	To better understand how beliefs about and experiences with HIV-related stigma among Black MSM influence HIV disclosure to sexual partners, family, and friends	20 Black MSM	Semi-structured open-ended interview	HIV stigma	Disclosure	1. HIV-related stigma is a significant barrier to their discussions with family and friends; 2. Gay communities are not so tolerant to HIV Positive people
Rahwa Haile, et al. [59]	2011	NYC	Focusing on the life history narratives on what it means to live with the stigmas of race/ethnicity, HIV status, sexual nonnormativity, and poverty	10 Black GBM	In-depth interview	Stigmas of race/ethnicity, HIV status, sexual non-normativity, and poverty	Ability to survive with HIV	1. Stigma were multiple and ubiquitous participants in this study described stigma as an intractable social force that has impeded their ability to survive with HIV and that they needed to subordinate to the broader structure

Table 1 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
John B. Jemmott 3rd, et al. [60]	2019	Philadelphia	To identify modifiable factors potentially affecting Black MSM's low rates of engagement in HIV care continuum	27 Black MSM	One-on-one interview	Stigma, concerns about HCP, social support	Low rates of engagement in HIV care continuum	1. Stigma is the biggest barrier to HIV care continuum; 2. concerns about HCP were most evident in seeking care; 3. social support helps the engagement
Robert H. Remien, et al. [70]	2015	NYC	Explore system, social, and individual barriers to and facilitators of engagement in HIV care among HIV-positive African immigrants, previously incarcerated adults, YMSM, and TGW	20 Black and Latino YMSM	Face-to-Face interview	Barriers and Facilitators to Engagement (housing, CBOs, immigration status, healthcare provider, stigma, social support, individual)	Engagement in HIV care	1. Stigma was a powerful deterrent to entering and staying in HIV care across populations; 2. They wanted providers to make them feel comfortable in sharing their sexual and gender identity and practices and to be knowledgeable to explain treatment options thoroughly and address their concerns

Table 1 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Mixed study Cari Courtenay-Quirk, et al. [27]	2006	NYC and SF	To describe perceptions of HIV/AIDS stigma among a diverse sample of HIV-positive MSM and to examine whether perceived stigma is related to increased HIV transmission risk behavior, increased substance use, decreased serostatus disclosure, and poorer mental health	456 MSM	Cross-sectional; semi-structured interview and quantitative survey;	Perceived HIV/AIDS stigma	Sexual risk behaviors, substance use, disclosure of HIV serostatus, mental health	1. Perceived HIV/AIDS stigma is related to mental health and unrelated to sexual risk behavior; 2. HIV-related stigma was not associated with awareness of HIV serostatus; 3. Those who perceived higher levels of HIV/AIDS stigma in the gay community were more likely to seek partners in settings that facilitate anonymous sex

that various sexual behaviors and health and social conditions (sexual risk, substance abuse, and violence), which were compounded by health disparities and social inequalities, increased their risk of HIV exposure [62]. This phenomenon is further intensified among African Americans, where co-occurring conditions like racism, HIV stigma, and substance use increase their risk of infection by acting as a barrier for PrEP adherence [46]. This was supplemented by another study, that reported substance abuse and mental health distress as consequences of sexual orientation-based discrimination, resulting in higher observed sexual risk [40]. Among HIV positive MSM, the stress associated with HIV stigma was one of the fundamental hypothesized and examined syndemic relationships that was considered to drive the HIV epidemic [20, 35]. This was strengthened by findings from a longitudinal study that reported that, internalized HIV stigma along with sexual minority stressor was significantly related with adverse mental health, which ultimately led to an increased risk of transmission [32].

Stigma and PrEP, Care Continuum Outcomes

Among HIV negative MSM, there were a total of 11 studies that assessed the association between stigma and PrEP awareness and use [24, 25, 45, 48, 50, 52, 61, 63–66]. In particular among Black and Hispanic MSM, perceived intolerance against someone with HIV resulted in the knowledge, awareness, and intention to take PrEP among them as being low. This was due to the cultural norms of belonging to a particular race, resulting in reduced visibility and availability of services [24, 50, 65]. In addition, among Black MSM, perceived health-care discrimination as result of race and sexual orientation led to negative awareness about PrEP, thereby, restricting information. However, disclosure of same-sex behavior to healthcare providers (HCP) was positively related to PrEP awareness [45]. Among trans-MSM, although knowledge about PrEP was high, its use was nevertheless low, due to internalized stigma as a result of sexual orientation [52]. Moreover, merely being cognizant about PrEP is not sufficient, its usage is increased if you know other PrEP users or individuals with recent infections in your network, thereby, bridging the gap between them [48]. Besides, major barriers have been noted pertaining to this high-risk population. As compared to young MSM (YMSM, ages 18–29), the awareness about PrEP was lower in older MSM [45]. In YMSM, the perception of HIV related stigma was identified as a formidable barrier to HIV testing [64]. In addition to this, among YMSM of color, other factors that contributed to not getting tested was unfriendly environment at the testing centers attributable to one’s race and lack of support within community [25, 63]. Moreover, lack of knowledge among both MSM and some HCP as they are not comfortable in prescribing PrEP, low awareness about

Table 2 Characteristics of studies (HIV negative MSM)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Quantitative studies								
Kaston D. Anderson-Carpenter, et al. [36]	2019	All 50 US states, Washington, DC, and Puerto Rico	To examine associations between perceived homophobia, community connectedness, and having a health care provider among men who have sex with men (MSM)	2281 MSM	Cross-sectional	Perceived Homophobia	Having a regular health care provider	1. Greater level of perceived community level homophobia were associated with a lower likelihood of having a health care provider
Alexandra B. Balaji, et al. [37]	2017	Atlanta, Georgia; Baltimore, Maryland; Boston, Massachusetts; Chicago, Illinois; Dallas, Texas; Denver, Colorado; Detroit, Michigan; Houston, Texas; Los Angeles, California; Miami, Florida; Nassau, New York; Newark, New Jersey; New Orleans, Louisiana; New York City, New York; Philadelphia, Pennsylvania; San Diego, California; San Francisco, California; San Juan, Puerto Rico; Seattle, Washington; and Washington, District of Columbia	To examine the association between measures of enacted stigma (related to sexual minority) and HIV-related risk behaviors	9819 MSM	Cross-sectional; NHBS	Enacted Stigma: verbal harassment, discrimination, physical assault	HIV-related risk behaviors: CAI at last sex with a male partner of HIV discordant or unknown status and the past 12-month measures of CAI with a male partner, four or more male sexual partners, and exchange sex	1. A sizable proportion of participants had experienced some form of enacted stigma related to sexual minority status in the past 12 months; 2. Age was strongly related to the risk of victimization (more for younger ones); 3. No association between self-reported HIV status and any of the enacted stigma measures

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Abigail W. Batchelder, et al. [56]	2020	Boston, Massachusetts	To examine sexual orientation discrimination and HIV stigma in relation to condom less anal sex among MSM	382 MSM	Cross-sectional; NHBS	Sexual orientation discrimination, HIV related stigma	Sexual risk (number of condom less anal sex male partners in the past 12 months)	1. Substance use was associated with health care discrimination and physical assault; 2. Substance use and both forms of discrimination were associated with more condom less anal sex; 3. Hispanic MSM reported more workplace discrimination
Adolph Joseph Delgado, et al. [38]	2016	USA	To increase the body of knowledge on the sexual and behavioral health among gay and bisexual service-men while investigating whether heteronormative roles and expectations led to discrimination and psychological stress. Further analyses were conducted to determine if stress and discrimination that negatively impacted negative health behaviors (i.e., using tobacco, drinking alcohol) and risky sexual behavior (i.e., having casual sex partners)	85 GB service men	Cross-sectional	Discrimination and psychological stress	Negative health behaviors (i.e., drugs, tobacco, and alcohol) and risky sexual behaviors	1. Gay and Bi ser-vicemen reported experiencing discrimination more often than straight; 2. Sexual orientation is a significant predictor of tobacco use, alcohol use, and casual sex

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Susan A. Fallon, et al. [24]	2017	Baltimore	To examine correlates of PrEP awareness and willingness to use PrEP	399 MSM	Cross-sectional	Discrimination and stigma	PrEP awareness and PrEP use	<p>1. Black was associated with decreased awareness of PrEP;</p> <p>2. People who perceived discrimination against HIV were less likely to hear of PrEP but more likely to take it; 3. Perception of HIV intolerance is a barrier for MSM to accessing HIV prevention; 4. HIV-related stigma influence PrEP use</p>
Catherine Finneran, et al. [39]	2014	USA	To explore the associations between minority stress and both intimate partner violence and sexual risk-taking	1575 MSM	Cross-sectional	Internalized homophobia index, homophobic discrimination index, racist discrimination index	Experienced Physical Violence, experienced sexual violence, perpetrated physical violence, perpetrated sexual violence, unprotected anal sex	<p>1. Minority stress has significant associations with sexual violence;</p> <p>2. Non-white race, low education, HIV Positive have significant associations with violence and sexual risk; 3. The bidirectional association between perpetration of sexual intimate partner violence and unprotected anal intercourse at last sex; 4. No association of homophobia and HIV risk</p>

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Victoria Frye, et al. [40]	2015	NYC	To assess the relationship between sexual orientation and race-based experiences of discrimination and sexual HIV risk behavior	1369 MSM	Cross-sectional	Experience of race- and sexual orientation-based discrimination	HIV acquisition risk behavior, HIV transmission risk behavior	1. self-reported experience of sexual orientation-based discrimination only within the past 3 months that was significantly associated with sexual HIV acquisition risk behavior; 2. Psychological distress and alcohol and/or drug use before/during last sex, were associated with the outcome, but not internalized homophobia
Tamar Goldenberg, et al. [41]	2018	Detroit	To understand and address the social and structural factors influencing HIV/AIDS among Black and Latino YMSM	334 YMSM	Cross-sectional survey	Perceived community prejudice, internalized homonegativity (IH), experience of sexuality-related discrimination	Three outcomes for HIV testing were examined: testing for HIV in 2012; previously testing for HIV, but not in 2012; and never testing for HIV	1. Higher perceived sexuality prejudice with higher odds of HIV testing, but not associated with timing since last test; 2. IH was negatively associated with likelihood of testing for HIV; 3. No association between stigma and recency of HIV testing among YMSM who had tested in the past

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Michael A. Hoyt, et al. [42]	2012	Central Arizona	To investigate relationships between institutional mistrust, HIV risk behaviors, and HIV testing	394 MSM	Longitudinal study	Institutional Mistrust (systematic discrimination, organizational suspicion, conspiracy beliefs), perceived susceptibility to HIV	Sexual risk behaviors	1. Perceptions of systematic discrimination were related to lower likelihood of having received HIV testing; 2. Among minority, conspiracy beliefs impact HIV risk behaviors; 3. Higher levels of mistrust are more detrimental to minority MSM, resulting in increased risk-taking behavior, less testing
William L. Jeffries 4th, et al. [43]	2013	NYC and Philadelphia	To examine the association of the experience of homophobic and whether social integration level affects the association	1140 Black MSM	Cross-sectional	Homophobia; social integration	Sexual risk behaviors such as unprotected anal sex	1. People experienced homophobic events are more likely to have UAI than people did not; 2. For people not diagnosed of HIV positive before, being bullied increases their UAI; 3. For people diagnosed of HIV positive before, all type of homophobic events increase their HIV transmission; 4. Social integration cannot mitigate the association of homophobia and UAI

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Leslie E. Kooyman [44]	2008	South USA-Charlotte, North Carolina; South Carolina; and, Nashville, Tennessee	To examine the predictive value of peer norms, self-efficacy, stigma, social support, age, and recreational drug use on high-risk sexual behavior	576 gay and MSM	Cross-sectional	Stigma	High-risk sexual behaviors	1. Low peers' norms for safer sex, low self-efficacy, greater family, and community stigma, being younger in age, and greater drug use do predict higher risk sexual behavior; 2. Predictors might be interrelated
Jessica L. Maksut et al. [45]	2018	Southeast USA	1. To determine the extent of PrEP awareness among BMSM; 2. to examine whether perceived healthcare-related discrimination, disclosure of same-sex behavior to a healthcare provider; and participants' age were related to PrEP awareness among BMSM; and whether age moderated the relationship between perceived healthcare-related discrimination and PrEP awareness	147 BMSM	Cross-sectional	Perceived healthcare related discrimination, disclosure of same-sex behavior	PrEP awareness	1. Perceived healthcare related discrimination was significantly negatively associated with PrEP awareness; 2. Same sex behavior disclosure was significantly positively associated with PrEP awareness; 3. Older BMSM were significantly less aware of PrEP as an HIV prevention strategy than were their younger counterparts; 4. Age moderated the relationship between perceived healthcare related discrimination and PrEP awareness

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Henry F Raymond, et al. [28]	2011	San Francisco	To examine the association of negative life factors during adolescence and adult HIV status	521 MSM	Cross-sectional	Adolescent life course negative factors: disconnected, discriminated, harassed, uncomfortable	Adult HIV status	1. There were high level of ever being harassed, ever being discriminated, and ever feeling disconnected from community and being uncomfortable with sexuality [12–18yrs]; 2. Higher harassment experiences, higher discrimination, and higher discomfort at ages 12–18 are associated with HIV Neg status as adult; 3. Black MSM do not experience more negative life course factors that others
John E. Pachankis, et al. [47]	2016	NYC	To investigate migration-related motivations, experiences, health risks	273 YGBM	Cross-sectional	Hometown characteristics (size, USA or not, structural stigma, discrimination), experiences upon arrival (income, gay density, knew no one in NYC, recently arrived), migration motivations (escape, opportunity, work/school)	HIV transmission risk behavior; heavy drug use; alcohol use; mental health problems	1. Hometown interpersonal discrimination was strongly related to all assessed health risks, including HIV transmission risk, heavy substance use, alcohol use problems, and mental health problems, although hometown structural stigma climate was associated with lower odds of heavy drug use; 2. There is an inverse association between hometown structural stigma and substance use

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Catherine E. Oldenburg, et al. [46]	2016	Boston	To assess PrEP awareness, use, and intent to use among those who reported engaging in condom less anal intercourse in the context of stimulant and/or alcohol use	254 MSM	Cross-sectional	Substance use	PrEP awareness and use	1. Stimulant-using MSM reported engaging in higher risk sex more often than alcohol-using MSM; 2. For alcohol users, HIV stigma is a limiting factor in PrEP use; 3. Significant association between type of substance used and concern about HIV stigma; 5. Black MSM are more concerned of HIV stigma
Kellie Schueler, et al. [48]	2019	Chicago	1. To characterize HIV-positive index participants and the members of their potential transmission networks; 2. To understand how behavioral factors, PrEP use within networks, and experiences of stigma and community support are associated with awareness and use of PrEP among transmission network members	218 MSM	Cross-sectional	Stigma, support, HIV status, HIV test, HIV knowledge	PrEP awareness and PrEP use	1. Individuals who were aware of PrEP were more likely to identify as gay, be highly educated, engaged in health care, and have HIV-related social support; 2. PrEP users were more likely to know other PrEP users

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Ja'Nina J. Walker, et al. [49]	2015	NYC	To understand the ways in which racial and sexual identities may serve as buffers to risky sexual behavior	120 Black GBM	Cross-sectional	Racial identities, sexual identities	Risky sexual behavior	1. Racial identity was associated with sexual risk behavior; 2. There is no association of sexual identity and sexual risk behavior
Jennifer L. Walsh [50]	2019	Midwestern US	To explore factors associated with PrEP intentions and use	476 MSM	Cross-sectional	PrEP knowledge, PrEP attitudes, PrEP stigma, PrEP descriptive norms, PrEP subjective norms, PrEP self-efficacy	PrEP intention and use	1. Information (PrEP knowledge); motivation (PrEP attitudes, PrEP stigma, and PrEP descriptive norms); and behavioral skills (PrEP self-efficacy) all had associations with PrEP use; 2. PrEP knowledge was directly associated with PrEP use; 3. Latino MSM were less knowledgeable about PrEP than White and Black MSM; 4. Self-efficacy for PrEP use was positively associated with PrEP use and PrEP intention

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Sari L. Reisner, et al. [52]	2019	US	To assess PrEP indication and uptake as a means of primary HIV prevention	857 trans MSM	Cross-sectional	PrEP awareness, uptake, and persistence	PrEP indications	1. Majority heard of PrEP, but PrEP uptake was low and PrEP indications were high; 2. Higher perceived HIV risk was found to be associated with increased odds of PrEP indication; 3. Higher partner stigma was associated with increased odds of PrEP indications
Katie Wang, et al. [54]	2016	NYC	To investigate associations among gay-related rejection sensitivity, condom use self-efficacy, and condom less anal sex	63 MSM	Cross-sectional	Gay-related rejection sensitivity, safer sex self-efficacy	Condom less anal sex	1. Gay related rejection were positively associated with the number of condom less anal sex acts with casual partners; 2. Gay-related rejection sensitivity was associated with lower self-efficacy for condom use, which in turn predicted a higher number of condom less anal sex acts

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Erik D. Storholm, et al. [53]	2019	Dallas and Houston	To assess the mediating effects of gay pride/self-esteem, resilience, and social support on the relationship between stressful experiences of racism and homophobia, stimulant use, and sexual risk behavior	1817 YBMSM	Cross-sectional	Minority stress (experienced homophobia, experienced racism, internalized homophobia)	Sexual risk behavior	1. Minority stress was significantly and directly associated with sexual risk behavior; 2. Stimulant use was associated with sexual risk behavior; 3. There is no association between minority stress and stimulant use; 4. Minority stress was found to be negatively associated with sources of resilience

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Hirokazu Yoshikawa, et al. [55]	2004	Northeastern city, USA	To examine the influence of experiences of racism, homophobia, and anti-immigrant discrimination on depressive symptoms and HIV risk	192 Asian and Pacific Islander MSM	Cross-sectional	Experience of discrimination (racism, homophobia, anti-immigrant discrimination)	Depressive symptoms, HIV risk (UAI)	1. Experiences of discrimination and conversations about discrimination with family members were somewhat associated with both depression and HIV risk; 2. Conversations with gay friends and with family members about discrimination were associated with lower levels of UAI with primary partners; 3. High levels of discrimination + low levels of conversations with family about discrimination was associated with the highest levels of UAI; 4. Low levels of racism + low levels of family discussions was related to highest levels of secondary-partner UAI

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Sharon Mannheimer, et al. [51]	2014	Atlanta, GA; Boston, MA; New York, NY; Los Angeles, CA; San Francisco, CA; and Washington, D.C	To assess frequency and correlates of infrequent HIV testing and late diagnosis	1301 Black MSM	Cross-sectional	Internalized HIV stigma, employment status, seeing a health care provider	Late HIV diagnosis	1. Infrequent testing was associated with higher frequency of newly diagnosed HIV infection compared to that among BMSM tested in the prior 12 months and was not associated with lower CD4 or late diagnosis; 2. Unemployment, not seeing health care provider, high internalized HIV stigma are independently associated with infrequent testing
Qualitative studies Derek T. Dangerfield li, et al. [61]	2018	LA	To inform the development of an intervention for promoting HIV and STI testing, prevention, and treatment	24 Black MSM	5 Focus groups	Barriers and facilitators	HIV testing	1. Fear, stigma and drug use are barriers to HIV testing; 2. Symptoms, new relationships, perceptions of risk, community HIV prevalence and peer navigators are motivations to HIV testing

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Joseph P. De Santis, et al. [62]	2014	Florida	To describe the relationship of risky sexual behavior, substance abuse, and violence within the cultural context	20 Latino MSM	Focus group	Roots of risk: acculturation, culture, discrimination, economics, immigration issues, peer influences, unstable intimate relationships	Burden of violence, substance abusers as a buffer, negation of sexual risk	1. Acculturation to mainstream U.S. culture could be both a risk and protective factor for the acquisition of HIV infection; 2. Internal and external sources of discrimination resulted in stress that was mitigated by high-risk sexual behaviors and substance abuse, and sometimes IPV; 3. Economic factors, unstable intimate relationships and access to psychological support contributed to high-risk sex, substance abuse, and violence
Maria Knight Lapinski, et al. [67]	2010	Michigan	To address the functional role of stigma in human social systems and the nature of the Down Low phenomenon	32 for Interviews, Black MSM, 24 for focus group, BMSM,	Interview, focus groups	Stigma	Down low (closet), sexual risk	1. Organized religion was viewed as a source of expressing stigma around sex and sexuality; 2. Stigma and discrimination are linked to sexual risk behaviors, mainly in health information and information seeking

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
David J. Malebranche, et al. [68]	2004	NY State; Atlanta	To assess healthcare experiences of BMSM and the perceived influence of their race and sexuality on these experiences; (2) perceived barriers to healthcare utilization and (3) factors affecting adherence in this population	81 BMSM	8 Focus groups	Racial and sexual prejudice; external barriers (money, insurance, lack confidentiality, impersonal medical system); internal barriers (distrust, fear, discrimination)	Access to medical care	1. Experiences with societal and institutional racism, and the subsequent expectation of medical racism, impacts how open BMSM are with providers about their sexuality; 2. Internalized displacement makes healthcare access difficult
José Namin, et al. [63]	2009	NYC	To identify participants' experiences with and attitudes and other factors toward HIV testing	29 BMSM	Focus group	Fear, stigma, universality of messages, responsibility, sexuality, religion, race and class, knowledge, media influences	HIV Testing	1. How to overcome barriers to HIV testing: hiring and retention of competent testing personnel, use of more focused, competent, community relevant messages in HIV testing
Jennifer R. Pharr, et al. [64]	2015	Nevada	To identify barriers as well as facilitators to HIV testing so as to inform future interventions to increase testing among this group	11 YMSM	Semi-structured focus group	Barriers: lack of awareness and knowledge, fear, lack of self-esteem, access problems, stigma, unfriendly environment; Facilitators: fear about having HIV, access, friendly environment	HIV Testing	1. The greatest barrier is lack of awareness and knowledge and the perception of stigma is a major barrier; 2. Friendly environment is important facilitator

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Whitney S. Rice, et al. [65]	2019	Birmingham, Alabama	To explore perceptions of PrEP access among current and potential PrEP users; to assess the effects of stigma on PrEP uptake and adherence	44 MSM	Semi-structured interviews	Barriers and facilitators (approachability, availability and accommodation, affordability, appropriateness)	PrEP use	1. Barriers: lack of awareness particularly within communities of color; 2. Facilitators: PrEP-related information gathering and sharing, making PrEP more approachable, social support networks, cost assistance programs, and clinical support staff
Karolynn Siegel, et al. [66]	1989	NYC	To explore the motives of gay men for taking or not taking HIV test	120 MSM	Unstructured focused interviews	Motives	HIV Testing	To test: 1. To enable medical treatment for HIV infection and to inform sexual decision making; 2. To relieve the psychological distress associated with not knowing HIV status; To not test: 1. To avoid the adverse psychological impact of being positive and to avoid social discrimination
Thomas Alex Washington, et al. [25]	2015	LA	To explore the barriers and challenges to HIV testing uptake behavior	36 Black YMSM	Focus group	Barriers to HIV testing (lack of knowledge for HIV testing; anxiety and substance use; lack of peer support; stigma; perceptions about HIV testing and treatment facilities)	HIV testing	1. Young BMSM are drinking alcohol before and during sex, and as a result having condom less sex; thus, increasing their risk for HIV

Table 2 (continued)

Author(s)	Year of publication	Location	Aims/purpose	Sample size	Methodology	Exposure (s)	Outcome (s)	Key findings
Joseph P. Stokes, et al. [69]	1998	Atlanta and Chicago	To examine the relationship of negative attitudes toward homosexuality, self-esteem, and risk for HIV	76 Black MSM	Interview	Homophobia	HIV risk	1. Fear of being perceived as gay or bisexual can lead some men to avoid showing interest in information about HIV and AIDS or to avoid discussing using condoms

testing, and the psychological impact that the fear of a positive test result might also act as a barrier to HIV prevention measures [61, 66].

Among MSM with HIV, a total of eight studies addressed relationship between stigma and care continuum. Specifically, among older Black MSM in the South or elsewhere, medical care settings that are considered to be a safety net, were themselves a source of stigmatization [58–60]. The ability to manage their illness was impeded if individuals were structurally marginalized by the healthcare organizations. This was predominantly due to lower linkage to care, retention in care, adherence to antiretroviral therapy (ART), and inability to achieve viral suppression. Consequently, individuals usually weaken the care continuum by either missing the stages completely or by exiting the continuum altogether for a period of time. As a result, they revert back to an earlier stage in the HIV treatment cascade due to the fear of stigma and discrimination associated with HIV diagnosis. Since YMSM of color are disproportionately affected by HIV [35, 70], various domains of HIV stigma act differently in relation to care continuum outcomes, for example, internalized HIV stigma was negatively associated with viral load suppression [35] whereas perceived HIV stigma was a deterrent to engagement in care [70]. However, another form of HIV related stigma, disclosure of HIV status, was not found to be associated with either viral load suppression or medication adherence [35]. Depression was found to mediate the association between enacted and anticipated HIV related stigma and adherence to medications, but not between perceived HIV stigma and sexual risk behaviors [20, 31]. As compared to Hispanics, the persistence of discrimination due to race was higher specifically among Blacks, leading to an exacerbation of AIDS-related symptoms [30].

Discussion

The purpose of this review was to examine different types of stigma and how they affect HIV prevention, care, and treatment services among MSM in the United States. As evidenced by this review, HIV vulnerability generated through structural inequalities among MSM is fueled by social stigma and discrimination that influences their behaviors and health outcomes. Thus, the interplay between multiple stigmatized identities can severely intensify the negative detrimental health effects among MSM. Several important factors stood out during this review. First, since the advent of HAART is considered one of the historic achievements, we chose to examine this larger time frame within the context of stigma. While the treatment has definitely improved the prognosis for HIV positive individuals, we wanted to understand whether there were any studies concerning stigma and HIV risks or syndemic conditions in the pre-treatment era.

However, we did not find any studies that had been conducted in this regard. Second, the other significant gap that were reported in the literature was the lack of research among YMSM of color. These individuals experience disparities across the HIV care continuum and it has further been demonstrated that stigma impacts the willingness to use PrEP among YMSM regardless of where they live in the US [72]. Perceptions about PrEP use were challenged and determined by societal stigmas such as racism, homophobia, healthcare access along with individual factors such as age and employment. Thus, the disparities in HIV incidence among men of color are further increased due to their inability to discuss PrEP with a healthcare provider and lack of health coverage [73, 74]. As already established in the literature, knowledge about PrEP is directly related to its use and therefore the campaign by CDC about PrEP is very crucial, especially, within the non-White communities. However, while education raises awareness and improve knowledge, it is often not the primary factor in changing behavior. Structural interventions such as increasing access to PrEP and decreasing stigma associated with PrEP uptake/use is far more crucial by decreasing provider-patient stigma, increasing access to easy and free PrEP, and ensuring that those on PrEP are able to stay on PrEP. Therefore, to increase the PrEP care continuum among MSM, multilevel interventions, increased dialogue concerning sexuality and visibility with social groups and community groups are needed.

Third, Southern states have reported disproportionate number of new infections among MSM, however, few studies conducted in this region were focused on stigma. This is surprising, since it has already been established that transmission of HIV is mainly dependent on individual sexual networks and social conditions such as poverty, prejudice, and inequality. Studies have shown that within African American MSM communities, sexual networks are mostly closed and interconnected due to racism such that, if HIV is introduced, it is more likely to be transmitted to a large proportion of other African Americans than to outside groups [75–77]. Our review also revealed that none of these studies included MSM in rural areas, where stigma may be higher than urban areas [78]. In addition, the scant number of studies that have been carried out specifically among Hispanics may not be generalizable because many were conducted using qualitative research methodology. Furthermore, due to a lack of longitudinal studies, our ability to account for temporal ordering; that is, that stigma led to the inability to access components of HIV prevention or treatment services is limited. As most of these quantitative studies were cross-sectional in nature, any associations that have been observed, cannot be considered causal. A mixed-method approach should be employed among this population where participant's experiences would be grounded in quantitative findings.

Fourth, empirical findings from this study emphasize the need for future research and intervention studies to better understand and address intersectional stigma. Intersectional stigma continues to be a barrier to the uptake of HIV testing and evidence-based prevention interventions. The need to address intersectional stigma has been corroborated by the fact that these already marginalized groups due to one stigma are yet further stigmatized by membership in another stigmatized group based on their serostatus thus further exacerbating negative health outcomes. There is very limited research that has been conducted to understand and analyze intersectional stigma that may drive HIV vulnerability among MSM. Furthermore, interventions designed to address intersectional stigma in order to improve HIV prevention outcomes are notably absent from the literature. There is an urgent need to integrate an intersectionality lens by addressing the multi-level factors that frequently play a role in the experiences of marginalized populations. Science-based dissemination of measurement of intersectional stigma, along with HIV prevention and treatment strategies, would be crucial in mitigating this type of stigma. Future studies should focus more on the intricate co-existence and interactions between different types of stigma and concurrent health conditions.

Finally, the impact of syndemics among MSM on the increased risk for HIV infection have been clearly established as seen in the studies above. While prior work has established the deleterious impact on mental health, stigma not only increases their risk of infection but also has an additive impact on poor antiretroviral uptake, lower medication adherence and viral suppression [19, 79]. Thus, these synergistically acting syndemic factors should not be treated in isolation and instead they should be regularly screened for and treated as an essential step in HIV care continuum. Hence, applying a holistically integrated approach to HIV care among MSM is suggested.

There are several limitations to our scoping review. The scope of the review was restricted to only English peer reviewed based articles, thereby introducing a potential bias by not accounting for relevant studies that would have been published in other languages. We noted the individual study designs as described in the literature, however, as is typical for scoping reviews, we did not intend to assess the quality of the information analyzed. Thus, the conclusions of this review are based on the existence of studies rather than their quality. Due to the limited number of studies, our study was not able to measure the strength of association between one particular type of stigma and one type of HIV outcome. By conducting a scoping review, we intended to answer broader research questions. Our hope is that findings from our review will provide a blueprint for future research on this important topic such as conducting meta-analyses to answer more nuanced and specific research questions while

the literature continues to grow. Furthermore, this review provides a comprehensive overview of the existing research on stigma and its associated health outcomes suggesting that research attention to stigma is a field with more attention among MSM in the United States.

Therefore, to address the health disparities among this highly stigmatized populations, an ideal combination of stigma reduction interventions along with TasP would be required. Moreover, interventions will have to be tailored to be culturally specific, suitable, and appropriate to address the critical gap in the care continuum in this population. Finally, existing laws, programs and policies should be evaluated, and evidence-based intervention and policy changes should be made.

Conclusions

Although significant progress has been made in the field of HIV/AIDS, the greatest public health challenge in the fight against the HIV epidemic may still be stigma and discrimination. It is essential to disentangle the stigma associated with risk of acquisition of HIV and prevention efforts. MSM often hold multiple intersecting identities, and the stigma and discrimination they face related to these identities, can impact their health outcomes. Stigmatizing beliefs can severely influence an individual's decision to seek care and act as a barrier to testing, numerous intervention programs, healthcare access, and treatment adherence. This can lead to severe public health ramifications. There is an urgent need to bridge the gap in programmatic knowledge regarding stigma and the vulnerable risk categories. The integration of different measures of stigma approaches along with psychological and social supports should be incorporated into the national HIV response.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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