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A Review of Disparities in Cannabis Use and Cannabis Use Disorder Affecting Sexual and Gender Minority Populations and Evidence for Contributing Factors

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Abstract

Purpose of Review: Sexual and gender minorities (SGM) appear to be at elevated risk for cannabis use (CU) and cannabis use disorder (CUD) compared to cisgender heterosexuals. However, risk factors remain understudied among SGM. This review aims to summarize evidence for disparities in CU and CUD affecting SGM and factors contributing to these disparities.

Recent Findings: We found strong evidence that sexual minorities are at elevated risk for CU and CUD is elevated for sexual minority women. Evidence supports a concurrent association between minority stress and CUD symptoms. There is robust support for coping motives as a mechanism linking minority stress to subsequent CU and CUD. Studies also point to CU norms and contexts as potential risk factors.

Summary: SGM are at high risk for CU and CUD, and minority stress, CU norms, and contextual factors are implicated. Additional research is needed on CU among gender minorities, prospective effects of risk factors, and interventions for SGM.

Keywords

sexual and gender minority; cannabis use; cannabis use disorder; disparities; minority stress; contexts of cannabis use

Introduction

Sexual (e.g., lesbian/gay, bisexual, and queer individuals) and gender minority (i.e., individuals who do not identify with the gender associated with their sex assigned at birth) individuals (SGM) are at elevated risk for cannabis use (CU) and cannabis use disorder (CUD) compared to cisgender, heterosexual individuals, with the starkest disparities affecting bisexual women [1–4]. However, few studies have examined risk factors for CU and CUD among SGM, and until recently, these studies were exclusively cross-sectional. Two theories have proposed potential factors underlying SGM's elevated CU risk. Minority stress theory posits that stressors arising from the stigmatization of non-heterosexuality and

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gender diversity (e.g., discrimination, internalized stigma) contribute to elevated rates of CUD among SGM [5, 6]. Elevated rates of substance use among SGM have also been attributed to perceptions of substance use as common and accepted in SGM communities [7]. The current review will summarize existing research on disparities in CU and CUD affecting SGM and studies examining potential risk factors. The review will end with a discussion of the dearth of CUD interventions developed for SGM and the limitations of existing research. This review focuses on studies conducted in the past five years; however, given limited research on these topics, we incorporate some earlier studies.

Prevalence of CU

Population-based studies consistently find higher rates of CU among sexual minority (SM)[a] compared to heterosexual individuals [1–3, 8–12]. Disparities in CU are larger and more consistent for SM women than SM men [1–3, 11, 12], with the highest rates among bisexual women [1–3]. For example, in NSDUH (National Study on Drug Use and Health), lesbian (26.1%) and bisexual women (40.0%) reported significantly higher rates of past year CU compared to heterosexual women (10.3%), with the highest rates among bisexual women [1]. Gay (29.1%) and bisexual men (30.2%) also reported higher rates of past year CU compared to heterosexual men (17.0%), but gay and bisexual men did not differ from one another [1]. The disparity between bisexual and heterosexual women (OR = 2.89) was nearly double the size of disparities between gay men, bisexual men, lesbian women, and same-gender heterosexuals [OR = 1.29–1.49; 1]. Other studies have replicated this pattern of elevated disparities affecting bisexual women in a nationally representative sample of young adult Australian women [3] and with other CU variables [e.g., daily use; 2]. In contrast, two studies found similar rates of lifetime, past month, and daily CU among lesbian and bisexual women [12, 13]. Overall, results provide strong evidence for higher rates of CU among SM compared to heterosexuals and some evidence that rates of CU may be particularly elevated for bisexual women.

Changes in CU Disparities over Time—Rates of CU have increased in recent years in the US, and this has been attributed to the growth in legalization of CU [14, 15]. Three recent studies have tested whether these changing trends in CU prevalence differ by sexual orientation, but findings are mixed. In the Massachusetts YRBS, there were decreases in CU from 1999–2013 for heterosexual men, heterosexual women, and SM men, but no change in CU for SM women [16]. This resulted in decreases in disparities between SM and heterosexual men and increases in disparities among women [16]. Few changes in CU from 2006 to 2013 emerged in the National Study of Family Growth [17], with increases in CU only among heterosexual women and no evidence of changes in disparities. In contrast, increases in CU were found among heterosexual women, heterosexual men, and SM women from 2000–2015 in the National Alcohol Survey [18]. Disparities appeared stable among women, but decreased among men [18]. In sum, evidence remains mixed regarding differences in trends for CU by sexual identity and changes in disparities. Further research is needed to clarify whether rates of CU and disparities have changed since

[a]SGM is used to discuss samples that include sexual and gender minorities; sexual minority (SM) to discuss samples that include only sexual minorities.

the early 2000s and to identify factors that may contribute to increasing disparities (e.g., differential impact of CU legalization).

Developmental Differences in CU—The prevalence of CU varies as function of age in the general population [19, 20]. It is currently unclear whether these developmental trends in CU differ by sexual identity [10, 21, 22]. Studies generally indicate that SM have higher rates of CU than heterosexuals by age 13–14 [21, 22], and that SM experience steeper increases in CU as they move from adolescence into young adulthood [age 18–25; 10, 22], However, results are somewhat mixed with some studies indicating that disparities in CU are not present at age 13–14 [10] or that SM experience a slower increase in CU than heterosexuals during adolescence and early adulthood [21]. Notably, only one of these three studies examined sex or gender-specific trajectories, so it is unclear whether sexual orientation differences in CU trajectories vary for men and women.

Less research has examined developmental trends of CU in adulthood. Using a cross-sectional sample of adults, Schuler and colleagues [23] found higher rates of past year CU among bisexual women, lesbian women, and gay men compared to same-gender heterosexuals in young adulthood (18–25); however, disparities only persisted past age 25 for bisexual women. Uniquely, bisexual men's rates of CU were only elevated in the 35–49 age group. This suggests that CU is elevated for most SM in young adulthood, but this disparity may not persist into later developmental stages for lesbian/gay individuals. Population-based studies that oversample SGM and long-term longitudinal studies including both SGM and heterosexual cisgender individuals are needed to further understand potential sex, gender, and sexual identity differences in CU prevalence across development.

Racial/Ethnic Differences in Disparities—Very few studies have examined potential racial/ethnic differences in sexual identity disparities in CU. Two studies with population-based samples demonstrated divergent findings. One study found disparities in past year CU were larger for Black and Latina SM women compared to White SM women, while the other found disparities were larger for White SM women compared to SM women of color [24]. Only one examined differences in CU disparities for men, finding no racial/ethnic differences in disparities [25]. Notably, the study that found higher disparities for White SM women had a smaller sample of SM women and collapsed all racial/ethnic groups, which may have contributed to their divergent findings. Clearly, further research is needed to understand potential racial/ethnic differences in CU disparities. This highlights the need for nationally representative studies that oversample SM and racial/ethnic minorities to allow for the examination of intersectional differences.

CU Disparities Affecting Gender Minorities—Given that few population-based studies assess transgender status or include non-binary gender identity options, research on rates of CU among gender minorities has lagged behind research on SM. Two population-based studies of adolescents have demonstrated higher rates of lifetime and past month CU among gender minority compared to cisgender adolescents [26, 27]. Studies with convenience samples of SGM have also found higher rates of CU among transgender men than SM cisgender women [28, 29] and transgender women [30]. One study also demonstrated higher rates of CU among non-binary individuals assigned female at birth

compared to SM cisgender women [29], but another study did not replicate this difference [28]. There is currently no evidence for differences in CU between SM cisgender men and gender minorities assigned male at birth [28, 29, 31]. This extremely limited literature on CU among gender minorities highlights the urgent need for population-based studies to incorporate measures of gender minority status and expand gender identity options to further our understanding of disparities affecting gender minorities.

CUD Prevalence

In contrast to the larger literature on disparities in CU, we are aware of only three studies to have examined sexual identity differences in the prevalence of CUD. In the third wave of the National Epidemiologic Study on Alcohol and Related Conditions (NESARC), lesbian (6.79%) and bisexual women (8.59%) were more likely to have had CUD in the past year compared to heterosexual women [1.16%; 4]. However, no significant differences in CUD emerged between gay (3.10%), bisexual (9.65%), and heterosexual men (3.10%), despite a high point estimate for bisexual men. This pattern of results was replicated in NSDUH, but the point estimate for bisexual men was more similar to that for gay men (4.6% and 4.1%, respectively) [2]. Given the substantially larger number of bisexual men included in NSDUH (unweighted n = 1,221) compared to NESARC (unweighted n = 144), the NSDUH estimate may be more reliable. However, future research with large population-based samples should continue to probe whether there are disparities in CUD affecting bisexual men. Together, these studies provide initial evidence that rates of CUD are elevated among SM women but may not be elevated for SM men. Notably, several studies have examined sexual orientation disparities in the prevalence of drug use disorders without separately examining CUD, which has limited our understanding of disparities CUD [32–36]. Given the growing prevalence of CUD in heterosexual populations in recent years [14, 15], further attention to rates of CUD among SGM is necessary.

Only one study has examined racial/ethnic differences in sexual orientation disparities in CUD [37]. In the third wave of NESARC, CUD was significantly more prevalence among Black and Latinx SM compared to heterosexuals who shared their race or ethnicity, but differences in rates of CUD between White SM and White heterosexuals did not reach significance [37]. Comparisons of rates among SM indicate that White, Black, and Latinx SM did not have significantly different rates of CUD; however, examination of point estimates suggest that rates of CUD may be substantially higher among Black (12.67%) and Latinx SM (11.89%) than White SM [4.27%; 37]. This suggests that even a large population-based study may not be well powered to test for differences in rates of CUD by sexual orientation and race/ethnicity simultaneously. Supporting this, unweighted sample sizes for SM in this sample were small, particularly for SM of color (i.e., 622 White SM, 266 Black SM, and 216 Latinx SM). Thus, there is a need for population-based studies that over-recruit SGM and racial/ethnic minorities to allow for a more thorough understanding of intersectional disparities in CUD. Further research is also needed on sexual orientation and gender differences in annual trends in CUD, development trajectories of CUD, and CUD disparities affecting gender minorities, which remain unexamined.

Comorbid CUD, Internalizing Disorders, and Alcohol Use Disorder

In addition to experiencing elevated rates of CUD, SGM are also at higher risk for alcohol use disorder, mood and anxiety disorders, and post-traumatic stress disorder (PTSD) compared to cisgender heterosexuals [32]. While these disorders are often comorbid with CUD in the general population [38, 39], few studies have examined whether SGM are at elevated risk for CUD with comorbid conditions. Among individuals who have had alcohol use disorders in their lifetime, SM women and SM men are significantly more likely to have had comorbid CUD compared to heterosexuals, and this disparity is larger for SM women than men [40, 41]. There is also evidence from population-based studies that SM are at elevated risk for comorbid CUD and suicidal ideation compared to heterosexuals [42] and that bidirectional associations between internalizing symptoms and CU are stronger for SM compared to heterosexual adolescents [21]. These studies provide initial evidence that SM are more likely to have CUD with comorbid substance use and mental health conditions, but further research is needed to examine a wider range of comorbid conditions (e.g., mood, anxiety, and other drug use disorders). There is currently a dearth of research examining disparities in CUD and the comorbidity of CUD with other disorders affecting gender minorities.

Combined with evidence that SM use cannabis to cope with symptoms of anxiety, depression, and PTSD [43, 44], the comorbidity between internalizing disorders and CUD provides indirect support for the hypothesis that coping motives for CU act as a mechanism linking internalizing symptoms with CU/CUD among SM. In a more direct test of this hypothesis, SM women reported more PTSD symptoms than heterosexual women and together these elevated symptoms and coping motives for CU partially explained SM women's high CU frequency [45]. Notably, SM women continued to have higher rates of CU frequency after PTSD symptoms and coping motives were controlled for [45], suggesting that multiple mechanistic processes contribute to CU disparities. Studies with convenience samples of SM have also demonstrated cross-sectional associations between PTSD symptomology and CU frequency [46] and bi-directional associations between depressive symptoms and CU, providing further support for the intertwined nature of internalizing symptoms and CU among SM [47]. Research on the directionality of associations between internalizing symptomology and CU among SGM is in its infancy, and further research is needed to understand these associations and mechanisms that may help explain these effects.

Minority Stress and CU

Minority stress theory posits that stressors arising from the stigmatization of non-heterosexuality and gender diversity (e.g., discrimination, internalized stigma) contribute to higher rates of substance use and related disorders among SGM [5]. Hatzenbuehler [6] posits that these minority stressors drain adaptive coping resources, leading SGM to be more likely to use substances to cope with negative affect arising from these stressors. Coping motives for substance use are a known risk factor for more frequent use and development of substance use disorders [48], suggesting that minority stress may ultimately contribute to high rates of CUD among SGM. We will review three types of studies that have been used to test aspects of minority stress theory in relation to cannabis use.

A few population-based studies have examined associations between sexual orientation discrimination, bullying, hate crimes, structural stigma, and CU, producing mixed results. Among the SM sub-samples of NESARC II and III, sexual orientation discrimination was linked to higher risk for CUD among SM men, but not among SM women [4, 49]. In the National Alcohol Surveys, Drabble and colleagues [50] did not find evidence of differences in rates of CU among SM based on whether they lived in states with more or fewer policies protecting SGM rights. In adolescent population-based samples, homophobic bullying was not significantly linked with CU [51], while living in neighborhoods with more LGBT hate crimes was associated with more CU among SGM [52]. Together, these studies provide mixed evidence for a link between minority stress and CU among SMs, with more support for an association among SM men than SM women.

Studies with convenience samples of SGM have demonstrated cross-sectional associations between enacted stigma (i.e., biased treatment from others, including discrimination, victimization, microaggressions) and CU or CUD symptoms; however, the type of enacted stigma linked to CU varies across studies. In a sample of SM men, Feinstein and colleagues found SGM victimization, but not microaggressions was linked with higher CUD symptoms [53]. A study of SGM of color who were assigned female at birth demonstrated unique associations between SGM victimization, SGM microaggressions, racial discrimination, and higher CUD symptoms [54]. However, transgender discrimination was not significantly associated with CU in a sample of transgender individuals [30]. There is also evidence linking internalized stigma (i.e., internalized negative attitudes toward one's own gender or sexual identity) with CU among SM men and transgender women [30, 55]. Overall, these studies provide evidence of cross-sectional associations between minority stress and CU among SGM, although results are not entirely consistent across studies.

While cross-sectional studies have played an important role in understanding associations between minority stress and CU, semi-annual longitudinal (i.e., repeated assessments every 6–12 months) and daily diary studies (i.e., one or more assessments per day) are critical for understanding the temporality and directionality of these associations and for examining potential mechanisms. However, we are aware of only four semi-annual longitudinal studies and one daily diary study to examine associations between minority stress and CU [56–60]. Semi-annual longitudinal studies have provided evidence for concurrent associations between enacted stigma, CU frequency, and CUD symptoms among samples of young adult SGM [56, 58–60]. However, these studies provide limited evidence for concurrent associations between internalized stigma and CU, and three of the four semi-annual studies did not find evidence for prospective associations between minority stress and subsequent increases in CU or CUD symptoms [58–60]. The fourth study focused on bi+ individuals assigned female at birth (i.e., those with attractions to more than one gender) and found a prospective indirect effect of enacted bisexual-specific stigma on CUD symptoms via coping motives for CU [56]. The daily diary study similarly demonstrated prospective effects of enacted stigma on subsequent CU frequency and consequences via coping motives for use, but found limited evidence linking internalized stigma to CU [57]. Together, these findings provide strong evidence of concurrent associations between enacted stigma, CU, and CUD symptoms but suggest that prospective effects may be difficult to detect over longer periods.

Results provide strong support for coping motives as a mechanism linking enacted stigma with CU in both the short- and long-term.

Social Learning Theory and Contextual Factors

More permissive substance use norms in SGM communities has also been proposed to contribute to elevated rates of substance use among SGM [61]. The prevalence of alcohol-centric locations (e.g., bars and clubs) in socialization among SGM has been proposed to contribute to perceptions of alcohol and other substance use as normative among SGM [62]. Consistent with the idea that CU is perceived to be more common and accepted among SGM, SM adolescents reported perceiving their close friends as being more likely to use substances (including cannabis) and their friends and parents to be more approving of substance use than heterosexual adolescents [63]. In turn, these permissive norms helped to explain SM's higher rates of lifetime and recent CU [63]. Perceptions of CU as common and accepted among SGM have also been theorized to make using cannabis with other SGM a risk factor for heavier CU and more CUD symptoms than using cannabis with other groups [64]. A recent semi-annual longitudinal study of SM women and non-binary individuals assigned female at birth provided support for this hypothesis by demonstrating that CU with SM women and gender minorities was associated with subsequent increases in CUD symptoms, while CU with heterosexual men and women was not a risk factor [64]. Together, these two studies provide some initial support for the roles of CU norms and CU companions in CU among SGM, but substantially more research is needed to test other potential mechanisms linking permissive social norms among SGM communities to higher rates of CU and CUD.

Drinking contexts have been identified as important predictors of binge drinking and alcohol consequences in the general population [65–67], and a few studies have expanded this to CU contexts [68–70]. Contexts associated with hazardous substance use have generally been assumed to apply across populations, but this has not been empirically tested. One recent study of SGM assigned female at birth demonstrated that solitary CU (using cannabis while alone) is a risk factor for CUD symptoms in this population [71], as it is among the general population [70]. Further, this study demonstrated that using cannabis in multiple contexts is associated with elevated CUD symptoms [71]. Substantial additional research is needed to determine if other general population risk factors also apply to SGM. Identifying shared risk factors may help to determine which aspects of existing CUD interventions may be most effective in adapted interventions for SGM.

Interventions and Treatment

There is little research focused on CUD treatment utilization among SGM, despite evidence of profound disparities in CUD affecting this population. Research suggests that some SM, specifically gay men and bisexual women, are more likely to have received treatment for a substance use disorder [72] than heterosexuals. However, SM are no more likely than heterosexuals to have received treatment for CUD [73]. When they do receive treatment for substance use disorders, SM spend less time in recovery and are more likely to have co-occurring psychiatric disorders [73], which may be associated with poorer CUD treatment outcomes [74]. Further, SM report more barriers to obtaining substance

use treatment compared to heterosexuals, including expecting treatment to be ineffective and concerns about discrimination in treatment [75–77]. Bisexual individuals appear to experience disproportionate barriers to substance use treatment and are more likely to have previous failed recovery attempts [76]. Overall, the limited existing evidence suggests that SM may be more likely to seek out treatment for substance use disorders but may also be at elevated risk for poor treatment outcomes.

Given the unique risk factors for CUD experienced by SGM and concerns about experiencing discrimination in treatment, substance use interventions adapted for SGM populations are needed. Although this call has been repeated for more than a decade [62, 78], very few interventions address substance use among SGM [79]. Most existing substance use interventions for SGM focus on reducing HIV risk among SM men, with very few including SM women or taking a broader perspective on substance use [79]. Schwinn and colleagues developed a substance use intervention for SGM that aimed to reduce the use of substances [including cannabis; 80]. Despite producing reductions in some other substances, this intervention did not reduce CU [80]. We are not aware of any other interventions developed for SGM that address CU [79]. This highlights the need for interventions focused on CU and CUD that are tailored to SGM populations and address the unique risk factors they experience.

Limitations and Future Directions

Research on CU among SGM is in its infancy. Overall, disparities in the prevalence of CU is the only topic in this area containing more than a handful of studies. Further research is needed to advance our understanding of disparities in CUD and risk processes contributing to elevated rates of CU and CUD among SGM. Here we note a few of the largest gaps in research on CU among SGM. First, gender minorities have received substantially less research attention that SM. The omission of measures of transgender status and inclusive measures of gender identity has resulted in a near dearth of research on disparities affecting this population. It is critical that population-based studies incorporate these measures so that we can begin to understand and address what appear to be stark disparities in CU affecting gender minorities. Further, there are few studies focused on associations between gender minority stress and CU or CUD. While the inclusion of gender minorities into SGM samples is important for understanding the experiences of this broader population, further research is needed that examines the unique experiences of gender minorities. Second, very few studies have examined racial/ethnic differences in disparities or the impact of experiencing minority stress based on multiple identities on CU or CUD risk. Notably, existing population-based studies are not well powered to examine racial/ethnic differences in sexual orientation disparities, highlighting the need for population-based studies that oversample SGM and racial/ethnic minority populations. Third, there are very few longitudinal studies of risk factors for CU among SGM. This is problematic as such studies are necessary to understand the directionality of associations between theorized risk factors and CU and to identify mechanistic processes contributing to CU among SGM. Such information is critical for identifying modifiable risk factors to be targeted in CUD interventions for this high-risk population. Finally, there is a dearth of evidence-based CU interventions for SGM despite the profound disparities in CUD affecting

this population. To begin reducing disparities affecting SGM, it is necessary to develop and disseminate effective individual-level interventions that aim to reduce the impact of risk factors, like minority stress, on CU in this population. Population and system-level interventions to reduce minority stress and promote equity for individuals of all genders and sexual orientations are also needed to ultimately reduce the burden stigma places on SGM. There is much work yet to be done to advance our understanding of CU and CUD among SGM and begin addressing these disparities.

Conclusions

There is strong evidence that SM are at elevated risk for CU compared to heterosexuals and rates appear to be particularly high among bisexual women. A small but growing number of studies also suggest that CUD is more prevalent among SM women, but may not be elevated for SM men. The preponderance of evidence indicates that minority stress, particularly enacted stigma, is associated with concurrently elevated CU frequency and CUD symptoms, but there is limited evidence for long-term prospective effects of minority stress on CU. However, two methodologically robust prospective longitudinal studies provide support for the role of coping motives for CU in the association between enacted stigma and subsequent increases in CU frequency and CUD symptoms. While little research has examined the roles of CU norms and contexts among SGM, initial studies suggest that CU may be perceived to be more normative among SM and that CU with other SGM, using in multiple contexts, and solitary use are risk factors for heavier CU and CUD symptoms among SGM. Despite elevated rates of CU and CUD among SGM, particularly SM women, there is a dearth of evidence-based CUD interventions developed for this population. Given evidence of disparities in CU and CUD affecting SGM, more research is needed to identify risk factors for CU and CUD in this high-risk population and utilize this information to develop CU and CUD interventions tailored to SGM.

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