

Chapter 8

Global Epidemiology and Social-Ecological Determinants of Substance Use Disparities, Consequences of Use, and Treatment Options Among Sexual and Gender Minority Populations



Matthew J. Mimiaga, Lynn Klasko-Foster, Christopher Santostefano, Harry Jin, Taryn Wyron, Jackie White Hughto, and Katie Biello

8.1 Introduction

Substance use is entwined with individuals' overall well-being, and with mental health in particular. Comorbid mental health conditions are common among individuals who misuse substances. In the United States, 60% of adults with substance use disorders (SUDs) also suffer from another mental illness; rates of mental illness are similar among users of tobacco and alcohol (NIDA, 2018a, b). Sexual minority stress in addition to substance use can negatively impact self-care, lead to

M. J. Mimiaga (✉)

UCLA Center for LGBTQ+ Advocacy, Research & Health and Department of Epidemiology, UCLA Fielding School of Public Health, Los Angeles, CA, USA
e-mail: mmimiaga@ph.ucla.edu

L. Klasko-Foster

Department of Psychiatry and Human Behavior, Warren Alpert Medical School, Brown University, Providence, RI, USA
e-mail: lynne_klasko-foster@brown.edu

C. Santostefano

Center for Gerontology and Healthcare Research, School of Public Health, Brown University, Providence, RI, USA
e-mail: christopher_santostefano@brown.edu

H. Jin

Department of Epidemiology, School of Public Health, Brown University, Providence, RI, USA
e-mail: Harryjin10@gmail.com

T. Wyron

Department of Behavioral and Social Sciences, School of Public Health, Brown University, Providence, PA, USA
e-mail: twyron@reconstructingjudaism.org

© The Author(s) 2024

S. J. Hwahng, M. R. Kaufman (eds.), *Global LGBTQ Health*, Global LGBTQ Health, https://doi.org/10.1007/978-3-031-36204-0_8

internalized stigma, and increase sexual risk behavior (Brown & Pantalone, 2011; Johnson et al., 2008; Lehavot & Simoni, 2011; Scheer & Antebi-Gruszka, 2019; Stall et al., 2003).

In order to understand the impact of substance use and misuse, health services research, jointly funded by the US National Institutes of Health (NIH) and the US Department of State, addresses a range of addiction service development questions in low- and middle-income countries. Additionally, research on a variety of substance use disorders has been funded by the World Health Organization (WHO), and the US Substance Abuse and Mental Health Services Administration (SAMHSA) administers an annual survey of adolescents and adults in the United States with respect to substance use and misuse and health. Each category of substances generates a particular cluster of effects of the drug on the central nervous system and limbic system (NIDA, 2012). The long-term effects of misuse of the various categories of substances are outlined below.

Legal Substances Across the globe, many countries regulate the legal use of alcohol and tobacco by adults (ages vary by country). Effects of long-term alcohol use can include heart and liver disease, as well as fetal damage for pregnant women (NIDA, 2012). Tobacco use is associated with many cancers, along with lung and cardiovascular disease (NIDA, 2012).

Cannabinoids The legal status of marijuana is mixed according to country-specific and state laws, with patchwork legalization of medical marijuana use and recreational use (NASEM, 2017). Among all drugs, marijuana is used most commonly; 20.6 million people aged 12 or older in the United States used it in the past month (SAMHSA, 2018). In clinical research, cannabis has been noted to have therapeutic effects as a pain reliever but is also linked to cancers and respiratory disease (when smoked) (NASEM, 2017).

Tranquilizers It is not uncommon for individuals to misuse prescribed tranquilizers such as benzodiazepines. In 2017, 1.7 million people in the United States over the age of 12 reported illicit tranquilizer use in the past month (SAMSHA, 2018). These prescription sedatives work to calm or sedate a person by raising levels of the neurotransmitter GABA found in the brain (NIDA, 2018c).

J. W. Hughto

Department of Epidemiology, School of Public Health, Brown University, Providence, RI, USA

Department of Behavioral and Social Sciences, School of Public Health, Brown University, Providence, RI, USA

e-mail: jaclyn_hughto@brown.edu

K. Biello

Department of Behavioral and Social Sciences, School of Public Health, Brown University, Providence, RI, USA

e-mail: katie_biello@brown.edu

Narcotics The misuse of opioids, including prescription pain medication and illicit heroin use, has reached large-scale crisis in the United States, with more than 100 deaths daily due to opioid overdose. According to the National Survey on Drug Use and Health (NSDUH), “In 2017, an estimated 11.4 million people misused opioids in the past year, including 11.1 million pain reliever misusers and 886,000 heroin users” (SAMHSA, 2018, p. 18). Because opioid intoxication affects the brain stem, which controls heart rate, breathing, and sleeping, overdose carries a high risk of lethality (NIDA, 2018b).

Stimulants Cocaine, amphetamines, and methamphetamines are highly addictive and raise the risk of stroke, cardiac conditions, or seizures (NIDA, 2012). Over time, cocaine use depletes the levels of dopamine D2 receptors in the brain, which may affect users’ ability to exercise self-control (NIDA, 2018b).

Hallucinogens Lysergic acid diethylamide (LSD) is classified as a hallucinogen (inducing altered states of sensory perception), while phencyclidine (PCP) and Ketamine are identified primarily by their dissociative effects (causing users to feel separate from their bodies and/or the surrounding environment) (NIDA, 2012). Methylendioxyamphetamine (MDMA), more commonly known as ecstasy, affects the body’s processing of the neurotransmitter serotonin, which induces empathic feelings. It is classified as a club drug alongside Rohypnol and Gamma-hydroxybutyrate (GHB), which have strong sedative effects (NIDA, 2012).

Anabolic-Androgenic-Steroids The misuse of anabolic-androgenic steroids by adolescent boys and adult men with body image concerns—with higher rates of use among gay and bisexual men—has been found to cause cardiovascular and endocrine damage over the long term (Blashill & Safren, 2014; NIDA, 2017).

This chapter identifies current research findings on substance use and misuse for sexual and gender minority populations across the globe. It explicates some of the multi-dimensional health and social consequences that follow from substance misuse and that must be considered in the development of effective treatment for sexual and gender minority individuals (NIDA, 2018a). Given the members of sexual and gender minority communities embody tremendous heterogeneity, it is not possible to generalize all experiences of members of these varied groups. Rather, this summary will review current and emerging research trends focused on risk and protective factors for substance misuse and associated health concerns for sexual and gender minority individuals, with specific attention to the “social discrimination, personal and community social and behavioral risk factors, and certain unique medical conditions” that may emerge from individuals’ specific gender identities or sexual practices (Johnson et al., 2008, pp. 214–215).

8.2 Epidemiology

In 2017, 5.5% of the world’s population (ages 15–64) engaged in some form of substance use (UNODC, 2019). Estimates over the past 10 years show increasing use of opioids in Asia, Africa, Europe, and North America and increasing

use of cannabis in Asia, North America, and South America (UNODC, 2019). While cannabis use is the most widespread (188 million people reported using cannabis in 2017), global opioid use is rapidly increasing. In 2017, 53 million people reported use of opioids, an increase of over 50% from 2016 data (UNODC, 2019).

Sexual and gender minorities experience significantly elevated rates of substance use and substance use disorders compared to cisgender heterosexuals (Marshal et al., 2008; Schuler et al., 2018). Global research shows a pattern of higher rates of alcohol-related problems, alcohol-use disorders, and marijuana and illicit drug use among SMW compared to heterosexual women (Hughes et al., 2020).

And global surveillance suggests that non-binary individuals and transgender women (TGW) have greater odds of substance use than other gender groups (Connolly et al., 2020). In the United States, national survey findings show that compared to heterosexuals, sexual and gender minority individuals are more likely to be heavy tobacco smokers, smoke marijuana, use illicit drugs, and be heavy drinkers (Cochran et al., 2013; Gonzales et al., 2016; Roxburgh et al., 2016). There is also an indication that sexual minority individuals in the United States are more likely to misuse opioids compared to heterosexuals (Anderson-Carpenter & Rutledge, 2020; Capistrant & Nakash, 2019; Duncan et al., 2019; Girouard, 2018; Morgan et al., 2020) and are prescribed opioids at higher rates (Girouard et al., 2019; Robinson et al., 2020). This disparity in lifetime opioid misuse is consistent across population subgroups including military veterans (Anderson-Carpenter & Rutledge, 2020) and youth (Wilson et al., 2020). However, these results are likely underestimated as some national data systems, such as the NSDUH, have only begun collecting data on sexual orientation within the last 5 years. As increasing representativeness of data to include sexual and gender minority Americans is a national priority, the scope of drug and alcohol-related disparities will likely become clearer over the next decade.

There is generally a lack of sexual and gender minority population-level, country-specific data on the prevalence of substance use and misuse. Internationally, measurement issues exist in determining the incidence and prevalence of substance use among LGBT-GNC populations, as 70 countries criminalize same-sex behavior, which is a major deterrent to data capture (ILGA, 2019). For transgender population health research, survey items are not standardized and consistently operationalized, which limits both accurate surveillance and generalizability (Reisner et al., 2016a). Additionally, much of the focus of empirical research does not include sexual minority women (SMW), and the majority of research on SMW and substance use has been conducted in the United States (Hughes et al., 2020). In this section, we report on the epidemiology of substance use across Africa, Asia, the Americas, and Europe. We then provide an overview of the epidemiology of substance use and addiction by sexual and gender minority groups.

8.2.1 Epidemiology of Substance Use Among Sexual and Gender Minorities: Africa and the Middle East

Substance use data among sexual and gender minorities in Africa are very limited, with differences in availability of surveillance based on sexual orientation or gender identity. For some countries, such as Nigeria and Mozambique, more data are available for urban areas. For example, in Lagos, 15.4% of men who have sex with men (MSM) were reported to be current smokers (Odukoya et al. 2013). In terms of alcohol consumption, 34.1% of MSM in Lagos were current drinkers, and half of the current drinkers were described to have a drinking problem (Odukoya et al., 2017). Furthermore, 43.8% of MSM in Maputo were classified as problem drinkers (Sandfort et al., 2017). Cannabis use in the 12 months preceding the survey was reported by 11.8% of MSM in Maputo; less than 3% of MSM used other drugs (Sandfort et al., 2017). There has been a rapid increase in the number of studies on substance use as a risk factor for HIV/AIDS in sub-Saharan Africa; however, the majority of these studies have focused on heterosexuals (Hahn et al., 2011; Kalichman et al., 2007; Woolf-King & Maisto, 2011).

8.2.1.1 Sexual Minority Men

A systematic review of research focused on substance use and HIV among MSM in Africa found that, compared to African heterosexual men, MSM report more frequent alcohol consumption (Sandfort et al., 2017). The prevalence of alcohol use varies greatly by country among MSM – 50% in South Africa (McAdams-Mahmoud et al., 2014) to 100% in Kenya (King et al., 2013). Alcoholism is also prevalent in certain African countries. For example, one study found that 44.4% of Black MSM in South Africa were classified as hazardous drinkers based on the AUDIT scale (Sandfort et al., 2015), a simple and effective method of screening for unhealthy alcohol use, defined as risky or hazardous consumption or any alcohol use disorder. Additionally, the proportion of MSM categorized as hazardous drinkers ranged from 32.3% to 43.8% in Mozambique (Nala et al., 2015), and 22.7% of MSM in Kenya are estimated to be alcohol dependent (Muraguri et al., 2015). Cannabis is the most commonly used drug among MSM across the African continent (Sandfort et al., 2017). Approximately 8.2% of MSM used cannabis in the past 12 months (Chapman et al., 2011), and 29% reported ever using cannabis (Nyoni & Ross, 2013). The review also identified a study conducted in a health clinic in South Africa, which reported that 37% of their MSM patients reported having ever used crystal methamphetamine (Sandfort et al., 2017). Injection drug use (IDU) is a public health concern in certain African countries (Sandfort et al., 2017). The 3-month prevalence of injection drug use ranged from 1.4% of MSM in Kenya (Sanders et al., 2007) to 13.9% in Tanzania (Johnston et al., 2010).

8.2.1.2 Sexual Minority Women

Studies in southern Africa also indicate high prevalence of drug and alcohol use among SMW, but there is a lack of research focusing specifically on substance use among lesbian women compared to other groups (Muller & Hughes, 2016).

8.2.1.3 Transgender Populations

Studies enrolling gender minority participants in Middle Eastern countries had small sample sizes and use non-probability sampling techniques. Additionally, gender dysphoria diagnosis is often part of inclusion criteria; however, being transgender is not a medical condition, and many transgender individuals do not experience mental health distress associated with differences between their sex at birth and gender identity. As such, findings likely do not describe substance use among transgender individuals across the region. One study in Iran that included both transmen and transwomen with gender dysphoria ($n = 97$) recruited from outpatient sexual health clinics reported lower rates of substance use than the general population (Mazaheri Meybodi et al., 2014). A Turkish study similarly recruiting transgender individuals with gender dysphoria from psychiatric clinics ($n = 94$) indicated that transmen were more likely than transwomen to use tobacco (35% vs. 5%) and alcohol (27% vs. 11%; Başar et al., 2016).

8.2.2 Epidemiology of Substance Use Among Sexual and Gender Minorities: Asia and Australia

Alcohol and drug use is a serious problem in Asia and Australia among sexual and gender minorities, and more efforts need to be made to address this issue. However, for Asia, it is difficult to make country and city-specific comparisons when it comes to alcohol and drug use due to a lack of population-level data and varying ways of measuring data among sexual and gender minority populations. Data from Melbourne, Australia, shows that 22.0% of sexual minorities reported drinking that exceeds lifetime risk guidelines, and 38.0% reported drinking that exceeds single-occasion risk guidelines (Tantirattanakulchai & Hounnakklang, 2021). Additionally, 16% of lesbian, gay, and bisexual individuals in Melbourne reported smoking tobacco daily (Australian Institute of Health and Welfare, 2021). On average, the prevalence of any substance use over the prior year in Melbourne among this population is 40.0% (Tantirattanakulchai & Hounnakklang, 2021).

8.2.2.1 Sexual Minority Men

In terms of meeting diagnostic criteria for alcohol use disorder, the highest was seen in the Philippines with a prevalence of 24.7% among MSM whereas gay and bisexual men in the Philippines have a 71.3% prevalence of smoking (Manalastas, 2012). The body of research describing substance use among MSM in Asia is also growing. Illicit substances, particularly amphetamine-type stimulants (e.g., ecstasy, methamphetamine), have become more common in Asia and Southeast Asia (McKetin et al., 2008). A study in Indonesia found that approximately 15% of MSM reported using methamphetamine before having sex; however, the proportion of MSM who have done so is higher in major cities, such as Jakarta (31%) and Medan (25%) (Morineau et al., 2011). Similarly, a study in Thailand reported that of the 19.2% of their sample who used illicit drugs, 32.0% used methamphetamine, 50.0% used club drugs (e.g., ketamine, ecstasy), and 42.0% used sedatives/hypnotics in the past 3 months (Newman et al., 2012). Studies conducted in China reported that 40–77% of MSM used synthetic drugs (e.g., methamphetamine, mephedrone, poppers) (Luo et al., 2018).

An online cross-sectional study of 10,861 MSM across Asia reported that 16.7% of participants reported recreational drug use in the past 6 months, with ecstasy (8.1%) and Viagra (7.9%) being the most common recreational drugs (Wei et al., 2012). Another study of MSM in China found that 28.0% of 3830 participants reported recreational drug use in the past 6 months (Xu et al., 2014a, b). The most common recreational drug used was poppers, used by 26.5% of the sample in the past 6 months. Substance use among MSM in Japan is also common with approximately 65% self-reporting lifetime substance use (Hidaka et al., 2006). This study also found that substance use primarily involves poppers, with 63.2% of their sample reporting lifetime use.

8.2.2.2 Sexual Minority Women

Lesbian and bisexual women in the Philippines have a startlingly high prevalence of smoking, at 24.3%. This statistic is mirrored in Australian research, which has found that among lesbian and bisexual women, 30% percent were current smokers, including 48% of 16- to 24-year-olds (Deacon & Mooney-Somers, 2017). Also in this setting, lesbian and bisexual women, are more likely to partake in high-risk drinking and daily drinking, and to report ever having attended treatment than heterosexual women (Roxburgh et al., 2016). The Australian Longitudinal Study on Women's Health (ALSWH) further supports this finding (Hughes et al., 2010). From these data, we see that there is a need to address the issue of smoking and alcohol use among lesbian and bisexual women.

8.2.2.3 Transgender Populations

There are limited data available among transgender individuals at the population level. The data that are available reveal that 79.1% of transgender women and 75.1% of transgender men in Bangkok, Thailand reported using alcohol in the previous year (Wichaidit et al., 2021). In that same region, the data specific to smoking (i.e., using tobacco products) shows that 67.0% of transgender women and 56.9% of transgender men report having smoked in the previous year (Hiransuthikul et al., 2019). Specifically among transgender women in this same region, the prevalence of sexualized drug use was high, with 52.7% reporting this behavior in the prior 12 months (Newland & Kelly-Hanku, 2021); with respect to specific drugs, marijuana prevalence was 6.2% (versus 2.9% among their cisgender peers), kratom was 4.9%, and 1.9% reported crystal methamphetamine use (Hyde et al., 2013).

8.2.3 *Epidemiology of Substance Use Among Sexual and Gender Minorities: Central and South America*

8.2.3.1 Sexual Minority Men

Among an online sample of MSM covering all Latin American countries, 16% percent reported hazardous alcohol use, and 5.3% reported any hard drug use (e.g., methamphetamine, GHB, cocaine, etc.) in the past 30 days (Mimiaga et al., 2008a, b, c). In Chile, the prevalence of sexualized drug use is 24%, with cannabis, poppers, and Viagra most often used (Donoso & Ávila, 2020). In Peru, 58% of MSM reported problematic drinking in one study, which was significantly associated with risky sexual behavior (Deiss et al., 2013). Research conducted across Latin American countries concludes that MSM with histories of childhood trauma are more likely to engage in hazardous alcohol use (Wang et al., 2017),

8.2.3.2 Sexual Minority Women

SMW in Latin America and the Caribbean also report higher rates of tobacco and alcohol use than heterosexual women (Caceres et al., 2019). SMW in Mexico reported significantly more alcohol and tobacco use and more experiences of discrimination and violence than same-age heterosexual women, (Ortiz-Hernandez et al., 2009). In another study only sampling sexual minority Mexican women, 21% met the criteria for alcohol dependence (Ortiz-Hernández & García Torres, 2005). In Colombia, sexual minority adolescent girls reported sixfold greater illicit drug use compared to heterosexual youth (Díaz et al., 2005). Of 145 women recruited during Pride activities in Sao Paulo, Brazil, 62% reported frequent use of alcohol, 50% reported frequent use of tobacco, and 77% reported past year drug use, with 45% of these women reporting marijuana use and 16% reporting cocaine use (Pinto et al., 2005).

8.2.3.3 Transgender Populations

Findings from an online survey of over 200 Brazilian transgender youth indicated that cannabis and pain medication are frequently used by this population (Fontanari et al., 2019). A study assessing factors associated with viral suppression in 50 transwomen living with HIV in Peru reported high rates of problematic alcohol and drug use and associations between moderate to severe drug use and decreased likelihood of viral suppression (Rich et al., 2018).

8.2.4 *Epidemiology of Substance Use Among Sexual and Gender Minorities: North America*

Across the Americas, research indicates that alcohol and drug use is prevalent among gay, bisexual, and other MSM, and transgender women. According to Pakula et al., 26.2% of gay, bisexual, and other MSM reported drinking alcohol at least 3 days per week, and 10.6% were heavy drinkers. Meanwhile, marijuana was the drug most likely to be used (across New York, Chicago, San Francisco, and Denver, on average, 46.3% used), followed by 36.6% poppers (amyl nitrates), 24% hallucinogens, 19.3% cocaine and 12.9% crystal methamphetamine (Koblin et al., 2003). In addition, 10% of these MSM had recent injection drug use. In terms of transgender women, drug use did not vary much by US. city, with 11.2%, on average, having alcohol dependence and 15.2%, on average, having substance use dependence (Reisner et al., 2016b). Lastly, a study describing substance use among LGBTQ+ individuals in Mexico revealed that 94% reported current alcohol use, and 58% reported tobacco use (Zavala-Arciniega et al., 2020; Hoetger et al., 2020).

8.2.4.1 Sexual Minority Men

Alcohol use and binge drinking among gay men is a serious public health concern in both the United States and abroad (Bux, 1996; Irwin et al., 2006; Liu et al., 2016; Mimiaga et al., 2011, 2015). In the United States, the National HIV Behavioral Surveillance system, which recruits study participants from 20 US cities, estimates that approximately 85% of MSM are current drinkers and 59% binge drank at least once in the past month (Hess et al., 2015). Recent data from the National Health Interview Survey shows that MSM had increased odds of binge drinking and smoking tobacco compared to heterosexual men (Gonzales et al., 2016). A study conducted among MSM in San Francisco found that 67% reported binge drinking at least once in the past year compared to only 23.2% of heterosexual men (Center for Disease Control & Prevention, 2012). In comparing within the MSM category, one study found that bisexual men had higher rates of cigar use compared to gay men (Schuler & Collins, 2020).

8.2.4.2 Sexual Minority Women

Substance use among SMW does not closely resemble the behaviors of MSM since illicit drug use is uncommon. Among lesbian communities, heavy alcohol and tobacco use are the most pervasive health issues (Hughes, 2003). National Health Interview Survey data from the United States shows that compared to heterosexual women, sexual minority women have increased odds of heavy drinking (OR, 2.63; 95% CI, 1.54–4.50) and heavy smoking (OR, 2.29; 95% CI, 1.36–3.88) (Gonzales et al., 2016). In a primarily Black and Latina sample in the United States, SMW were more likely to have developed cocaine and/or crack dependency compared to heterosexual women (Ompad et al., 2011). These results have been confirmed by epidemiologic surveys at the state level (Aaron et al., 2001; Gruskin & Gordon, 2006). A meta-analysis of studies conducted in seven countries in North America, Europe, and Australasia found that the risk of past-year alcohol and other drug dependence was 4 times higher among SMW than heterosexual women for alcohol dependence and 3.5 times higher for drug dependence (King et al., 2008).

One study examining illicit drug use among SMW found that marijuana was the only commonly used illicit drug, with 33% of their sample having used marijuana in the past year (Corliss et al., 2006). Study participants also reported using other illicit drugs, such as stimulants (6.0%), methamphetamine (2.1%), tranquilizers (11.6%), and sedatives/hypnotics (8.0%).

Bisexual women may be at greater risk for substance use and substance use disorders compared to women who only have sex with women or who only have sex with men (Ford & Jasinski, 2006; Halkitis & Palamar, 2008; Tucker et al., 2008; Wilsnack et al., 2008), even when controlling for openness about sexual orientation (Thiede et al., 2003). Bisexual women are more likely to be heavy drinkers and smoke tobacco (Gonzales et al., 2016) and use illicit drugs (Paschen-Wolff et al., 2019) compared to heterosexual women. Among sexual minorities, bisexual women also had higher rates of substance use compared to lesbian/gay women (Schuler & Collins, 2020). One possible explanation for these disparities is lack of social capital and minority stress, as bisexuals experience prejudice and discrimination from homosexuals and heterosexuals (Balsam & Mohr, 2007; Fox, 2013).

8.2.4.3 Transgender Women

Although the body of research examining substance use disorders among transgender communities is still limited (Flentje et al., 2015), existing studies report that transgender women exhibit high rates of alcohol, marijuana, illicit drug, and non-medical prescription drug use (Benotsch et al., 2013; Cochran & Cauce, 2006; Garofalo et al., 2006; Hughes & Eliason, 2002; Peacock et al., 2015; Reisner & Murchison, 2016; Santos et al., 2014). In the United States, the majority of studies that focus on the health of transgender women have relied on convenience sampling since national surveys only recently began including gender identity-related questions that allow respondents to indicate they are transgender (Flentje et al., 2015).

A prospective cohort study of transgender women in New York City reported that 76.2% of their sample used any substances (e.g., alcohol, cannabis, cocaine, heroin, amphetamines, methamphetamines, LSD, etc.) within 6 months prior to enrolling in the study (Nuttbrock et al., 2014). When examining substance use at all study assessments (6, 12, 24, and 36 months), the range of period prevalence estimates were high for any substance use (72.8–78.2%), heavy alcohol use (48.4–60.4%), cannabis use (29.1–40.0%), and cocaine use (20.7–25.3%).

A respondent-driven sampling study examining the health of 314 transgender women in San Francisco reported similarly elevated rates of substance use (Santos et al., 2014). This study found that in the past 6 months, 58.0% of transwomen drank alcohol. Additionally, they found that in the past 12 months, 29.0% used marijuana, 20.1% used methamphetamine, 13.4% used crack cocaine, and 13.1% used club drugs (i.e., ecstasy, GHB, ketamine, poppers).

There is a lack on research of non-medical use of prescription drugs among transgender women; however, one study found that 24% of 104 transgender women sampled reported lifetime non-medical use of prescription drugs (i.e., analgesics, anxiolytics, stimulants, and sedatives) (Benotsch et al., 2016).

Substance use among adolescents in the general population of the United States has declined over the past decade; however, disparities with respect to substance use are widening between sexual and gender minority youth and their cisgender heterosexual counterparts (Homma et al., 2016; Hughes & Eliason, 2002). Transgender youth are more likely to begin using substances earlier than cisgender youth (Day et al., 2017), and there is growing evidence that transgender adolescents have greater odds of using alcohol, marijuana, and other illicit drugs compared to cisgender peers (Reisner et al., 2015). These results were consistent with other studies of adolescent transgender populations. A study reported that US transgender students had 2.5 times the odds of using cocaine or methamphetamine during their lifetime and more than 3 times the odds of using cigarettes at school compared to cisgender students (De Pedro et al., 2017). Another study of ethnic minority MTF transgender youth found that within the past year, 71% of their cohort used marijuana, 65% used alcohol, 23% used ecstasy, and 21% used cocaine (Garofalo et al., 2006).

Despite many studies reporting high rates of substance use among transgender women, there is a lack of evidence-based interventions and programming specifically designed to meet the healthcare and welfare needs of this population, further exacerbating the health disparities between the transgender and cisgender communities (Glynn & van den Berg, 2017).

8.2.4.4 Transgender Men

There has been a recent shift in the field of public health to prioritize research to better understand the health of transgender men and women; however, very few empirical, peer-reviewed studies focusing on the health of transgender men have been published (MacCarthy et al., 2015). One US-based study found that in the past 3 months, approximately 10% of the sample of 468 transgender men engaged in

regular heavy alcohol use, 10% binge drank, 31% used marijuana, and 11.5% used another illicit drug (Horvath et al., 2014). A study conducted among transgender men who were patients at a community health center in Boston, Massachusetts also found high rates of current substance use (Reisner, White, et al., 2014b). The authors reported that 65.2% of their sample of 23 transgender men drank 5+ alcoholic beverages a week, 17.4% were current marijuana users, 13.0% were current tobacco smokers, and 69.6% used any substance.

8.2.4.5 Racial and Ethnic Disparities

Social acceptability of drinking and drug use can be tied to both culture and gender, impacting use patterns (Hughes et al., 2016). As such, in countries that value traditional gender roles, whereby it is more acceptable for men to drink alcohol than women, alcohol use rates may diverge more for sexual minority women than men (Talley et al., 2014). National Youth Survey data from Mexico reports greater alcohol use among sexual minority women as compared to heterosexual women, but no difference between men based on sexual orientation (Ortiz-Hernández, 2005). An analysis of BRFSS data in the US state of Washington shows similar patterns for Hispanic sexual minority women compared to their Hispanic heterosexual counterparts (Kim & Fredriksen-Goldsen, 2012).

8.2.5 *Epidemiology of Substance Use Among Sexual and Gender Minorities: Europe*

Comparisons regarding alcohol and drug use across cities in Europe are challenging because not every city has disaggregated data among sexual and gender minorities, and the data that are measured and reported vary in terms of quantity, frequency, and severity of use versus a diagnosis of substance use disorder. Data that were available at the population level revealed that 35.4% of MSM in Dublin report current smoking, and in Copenhagen, 1 in 5 LGBT individuals smoke daily, and 25.0% of bisexual women smoke cannabis in this setting (Barrett et al., 2019; Hansen et al., 2018). In Glasgow and London, 15.0% of LGBT individuals report smoking every day; whereas 43.1% of MSM in Paris report using cigarettes or e-cigarettes daily (Bachmann & Gooch, 2018; Bridger et al., 2019; Park et al., 2018).

In Copenhagen, 16.0% of gay men exceed the high-risk limit (21 units of alcohol/week), and 17% of transgender individuals drink more than 17.5 units/week (Hansen et al., 2018). Among LGBT individuals in London and Glasgow, 16% and 14% report daily drinking, respectively (Bachmann & Gooch, 2018; Bridger et al., 2019). Among MSM in Dublin, 58% report binge-drinking in the last 12 months, whereas 46.7% of MSM in Paris report alcohol use (five or more drinks in one sitting) (Barrett et al., 2019; Park et al., 2018).

8.2.5.1 Sexual Minority Men

In terms of meeting diagnostic criteria for potential alcohol dependency, the highest was seen in Kyiv with a prevalence of 30.6% among MSM, followed by Berlin (22.1%), Vienna (21.8%), Brussels (18.0%), Lisbon (14.8%), Madrid (14.9%), Prague (14.4%), Amsterdam (13.5%), Milan (10.8%), and Athens (10.1%). In a study of over 1300 MSM in Moscow utilizing respondent-driven sampling, 32.4% endorsed hazardous drinking, and 20.3% endorsed alcohol dependence (Wirtz et al., 2016). Multivariate logistic regression analysis showed that the odds of inconsistent condom use, selling or buying sex, and recreational drug use were twofold for hazardous and dependent alcohol users relative to low-level drinkers. Alcohol dependence was also associated with fourfold odds of injection drug use (Wirtz et al., 2016).

While alcohol is among the most commonly used substances by MSM, illicit stimulant drugs have become more ubiquitous in gay communities. Researchers in England and Wales found that, compared to heterosexual men, gay and bisexual men were three times more likely to have used an illicit drug in the past 12 months and seven times more likely to have used illicit stimulants drugs (e.g., cocaine and ecstasy; Hunter et al., 2014). Among MSM in Paris and Dublin, 54.5% and 36.0%, respectively, have a prevalence of any current illicit substance use (Barrett et al., 2019; Park et al., 2018). Importantly, in terms of active use, 11% and 13% of LGBT individuals (18–24 years old) in Glasgow and London, respectively, report using drugs at least once a month (Bachmann & Gooch, 2018; Bridger et al., 2019). Among over 1500 sex workers in Amsterdam, MSM were more likely to use illicit drugs, including cocaine, nitrites, and erectile performance drugs, only during sex work compared to male sex workers with strictly female clients (40.5% of MSM compared to 20.0% MSW; Drückler et al., 2020). The most cited reasons for drug use during sex were “sex work becomes physically easier,” and “the client asked for it” (Drückler et al., 2020, p. 120).

8.2.5.2 Sexual Minority Women

There are no available studies that provide disaggregated data examining the substance use of sexual minority women in Europe nor comparing their substance use to that of their heterosexual counterparts.

8.2.5.3 Transgender Populations

In the same study of drug use behavior among sex workers in Amsterdam, trans-feminine sex workers were more likely to use drugs only during sex work compared to men who only had sex with female clients (40.0% compared to 20.0%, Drückler et al., 2020).

8.3 Social-Ecological Determinants

The root causes of increased substance use and substance use disorders among sexual and gender minorities are complex. As such, examination of factors beginning at the individual level and extending to social and structural factors is important to understanding the breadth of the problem and designing effective interventions to increase health equity. Below, we compile evidence-based explanations for sexual and gender minority substance use/abuse disparities, including minority stress and related mental health issues; social, interpersonal, and cultural factors; and structural/environmental factors.

8.3.1 Sexual and Gender Minority Stress Model: A Framework for Understanding Disparities

The minority stress model posits that sexual and gender minority populations experience stressors unique to their sexual orientation or gender identity. These stressors can be related to external experiences (e.g., discrimination), anticipated social stigma (e.g., hiding identity), or internalized/enacted homophobia/transphobia. Each of these experiences can create hostile and stressful social environments that increase the risk of poor mental health outcomes (Meyer, 2003). Minority stress compounded on top of stressors experienced by the general population is thought to put minorities at elevated risk for poor health outcomes (McCabe et al., 2010). Minority stress experienced by sexual and gender minority individuals is associated with an increase in the risk of substance use (Amadio, 2006; McCabe et al., 2010), which has been found to serve as a coping mechanism to mollify the effects of discrimination (Goldbach et al., 2014; Green & Halkitis, 2006; Mereish et al., 2014).

8.3.2 Psychosocial Factors that Potentiate Substance Use

Sexual and gender minority populations are more likely than cisgender heterosexuals to experience poor mental health (see Mental Health chapter, Chap. 3) (Lea et al., 2014). A recent meta-analysis found that compared to cisgender heterosexuals, sexual and gender minorities experienced more severe depressive symptoms, greater likelihood of reporting a suicide attempt, and greater odds of substance use (Marshall et al., 2008, 2011). Both mental health and substance use disparities between sexual and gender minorities and cisgender heterosexuals emerge early in adolescence and continue through adulthood (Bränström et al., 2016; Dermody et al., 2014; Marshall et al., 2008). A national longitudinal study of substance use and mental health among sexual minorities in the United States found that while these disparities manifest early in life, evidence suggests the disparities do not increase over time (Needham,

2012). Other studies also suggest that the severity of mental health issues and substance use can be elevated by minority stress and often co-occur among sexual and gender minorities (Pachankis, 2015; Pakula et al., 2016a; Rosario et al., 2009); however, research evaluating how substance use exacerbates mental health issues or vice versa among sexual and gender minorities is limited.

A compelling body of global research shows that sexual and gender minorities are more likely to experience victimization (see Victimization and Intentional Injury chapter, Chap. 9; Balsam et al., 2005; D'Augelli, 2003; Hughes et al., 2007) and substance use (Drabble et al., 2005; Omoto & Kurtzman, 2006) compared to cisgender heterosexuals. There is also research suggesting that sexual and gender minority populations who experience victimization are more likely to engage in substance use, possibly to temporarily cope with negative feelings elicited by sexual and gender minority-related victimization (Cooper et al., 1995; Holl et al., 2017; Mereish et al., 2014).

8.3.3 Social, Interpersonal, and Cultural Factors that Drive Use Among Sexual and Gender Minorities

It is hypothesized that the increased risk in substance use among sexual and gender minorities is due in part to a combination of social, interpersonal, and cultural factors (Demant et al., 2018; Green & Halkitis, 2006; Mereish et al., 2014; Meyer, 2003). Across the globe, affiliation with “gay culture” has been suggested to elevate substance use among sexual and gender minority communities (Green & Feinstein, 2012). Countries in the Global South, including Brazil, South Africa, and Thailand, have active cultural institutions for sexual and gender minorities, such as bars, saunas, bathhouses, massage parlors, etc. (see Community and Social Support chapter, Chap. 6; Shrestha et al., 2020; Hattingh & Bruwer, 2020). Researchers have hypothesized that the increase in the number of gay bars in particular may have increased substance use among sexual and gender minorities, especially gay men (Green & Feinstein, 2012). Several studies have found that frequent attendance at gay social venues (e.g., gay bars, bath houses) is associated with higher rates of substance use (Halkitis & Parsons, 2002; Kipke et al., 2007).

8.3.4 The Role of Contextual, Environmental, and Structural Factors in Substance Use Among Sexual and Gender Minorities

There are several documented barriers to accessing treatment services by sexual and gender minorities (Flentje et al., 2016). Sexual and gender minorities may encounter biases from providers within substance use programs that may result in poor

attendance or discontinuation of treatment (Cochran et al., 2007). Additionally, disparities in health insurance coverage also exist between sexual and gender minorities and cisgender heterosexuals, and as a result, sexual and gender minorities may be less likely to be able to afford substance use treatment (Buchmueller & Carpenter, 2010). Despite these barriers, sexual and gender minorities are more likely to seek substance use treatment compared to cisgender heterosexuals (McCabe et al., 2013).

8.4 Consequences of Use

Over time, substance use can cause harm to mental and physical well-being, have legal consequences, and injure or cause severance of social connections. These effects, however, are not standard. While many people experience negative social or health effects as a result of their substance use, some do not. The sequelae of substance misuse often further compound the effects of structural oppression, with negative social consequences of substance use – ranging from stigma to incarceration - carrying a larger impact for individuals who experience marginalization on multiple axes of identity (by both race and gender/sexual minority status, for instance) (McCauley & Brinkley-Rubinstein, 2017).

8.4.1 *HIV, Hepatitis C Virus, and Other Sexually Transmitted Infections*

Much of the literature on infectious disease within sexual and gender minority populations addresses the risk for HIV and other sexually transmitted infections (STIs) (see HIV chapter, Chap. 7), but no consensus exists on the specific causal link between substance use and HIV/STI transmission (Abdulrahim et al., 2016). Both non-injection and injection drug use (IDU) have been identified as factors that may increase lifetime risk for acquiring HIV, due in part to the correlation between substance use and unprotected anal intercourse (UAI), more casual sex partners, and other high-risk behaviors, such as transactional sex (Beyrer et al., 2007; Rosenberg et al., 2011). Among gay and bisexual men and other MSM in the United States, using multiple substances immediately before or during sex has demonstrated significantly increased likelihood for UAI (Mimiaga, Mayer, et al., 2008a). In southeast Asia, MSM who reported illicit drug use in the past 3 months had almost six times the odds of inconsistent condom use and nearly three times the odds of exchanging sex with other men for money (Yi et al., 2015). For sexual and gender minority people of color (POC) in the United States, recreational drug use in the context of sex was shown to be correlated with serodiscordant UAI (Mimiaga et al., 2010) and, in one epidemiological model, predictive of positive HIV serostatus (Wilton, 2008). Although stimulant abuse is typically responsive to targeted

psychosocial interventions, in the United States increased risk for HIV/STIs has been observed with the use of hallucinogens and inhalants as well (Koblin et al., 2003; Lambert et al., 2011; Ostrow et al., 2009). Excessive alcohol use is another correlate of hard drug use and high-risk sexual activity among MSM in the United States (Reisner et al., 2010), Latin America (Mimiaga et al., 2015), China (Liao et al., 2014), India (Mimiaga et al., 2011), and Russia (Wirtz et al., 2016).

Substance use may also increase sexual risk-taking by other LGBT and gender non-binary individuals. In the United States, illicit drug use in the past 3 months was identified as a statistically significant mediator of the association between life stress and sexual risk among transgender women (TGW), the majority of whom were POC (Hotton et al., 2013). For Asian/Pacific Islander TGW in the United States, recent use of alcohol or other recreational drugs was associated with greater odds of engagement in transactional sex (Operario & Nemoto, 2005), and further analyses among TGW have suggested that concurrent drug use during commercial sex work may be predictive of HIV incidence (Hoffman, 2014). Because STIs are perceived to be less commonly transmitted among SMW, this group often utilizes sexual health prophylaxis and screening at lower rates, leading to potential missed diagnoses (Estrich et al., 2014). However, in a large sample of Asian Americans, lesbian and bisexual women were about twice as likely as their heterosexual counterparts to have had sex under the influence or had more than one sex partner who may have engaged in transactional sex or IDU in the past 6 months, placing them at increased risk for HIV and other STIs (Lee & Hahm, 2012). Similarly, a national survey in Australia revealed that from 2004 to 2013, over half of SMW surveyed had been exposed to hepatitis C (Iversen et al., 2015). Bisexual women in this study, followed by lesbian women, had significantly greater odds than heterosexual women of transactional sex or needle sharing during IDU.

Several studies have identified women who have sex with women and men (WSWM) who use drugs to be at high risk for HIV. Among drug users in New York, one study found a higher prevalence of HIV in WSW, compared to both heterosexual women and heterosexual men. However, they attributed higher HIV prevalence to high-risk sexual behaviors rather than drug-using risk behaviors (Absalon et al., 2006). Similarly, a study of young Latinx people who inject drugs in Harlem found higher rates of HIV among WSW than heterosexual men (Diaz et al., 2001). A population-based survey in Northern California also found that WSWM were more likely to report high-risk sexual behavior, injection drug use, and serological markers for the hepatitis B and C viruses than women who had sex exclusively with men (Scheer et al., 2002). Poor health outcomes, including increased HIV risk, among drug-using WSWM are theorized to be the result of multiple marginalization due to their gender, sexuality, race, class, and status as illicit drug users (Ompad et al., 2011; Young et al., 2005). For example, compared to other young women, WSW were found to be more likely to have been institutionalized or homeless (Friedman et al., 2003; Ompad et al., 2011). WSW also report higher rates of violence victimization and lower rates of health care utilization (Ompad et al., 2011). Research has shown that many heroin-, crack-, and cocaine-using WSWM prefer women as their relational and sexual partners, but often trade sex with men out of economic

necessity (Bell et al., 2006; Friedman et al., 2003; Ompad et al., 2011; Scheer et al., 2002; Young et al., 2005).

In a qualitative interview study in the United States, many LGBT and gender non-conforming (GNC) people living with HIV (PLWH) reported stimulant or opioid use as a form of avoidance or self-medication to cope with the combined stigma of their disease status with their sexual identity/gender expression (Gonzalez et al., 2013; Semple et al., 2002). Those individuals who also used substances during sex experienced impaired memory and judgment as well as schedule disruptions, leading to missed therapeutic antiretroviral doses and suboptimal treatment, increasing potential HIV transmissibility to their sexual partners (Gonzalez et al., 2013; White et al., 2014). Likewise, over half (60%) of PLWH who sought drug and alcohol support services at a community-based organization in the United Kingdom reported decreased medication adherence while under the influence, and nearly all (90%) believed they had acquired HIV in a drug-using encounter (Stuart, 2013).

Co-infection of HIV with hepatitis C virus (HCV) is frequently seen in PWID, although few studies specific to the LGBT community analyze the determinants of HCV co-infection. Apparent correlates of increased infection risk include duration of drug use, needle sharing, and lack of awareness (Abadie et al., 2017). Even in more developed nations, knowledge and understanding of HCV, compared to other STIs, is fairly low (De Ryck et al., 2011; Iversen et al., 2015), which further isolates minority members. Australian individuals living with HCV described feeling marginalized from the LGBT community due to shared drug use but also ostracized from the PWID community due to their sexual orientation/gender identity, leaving them without support or resources (Deacon et al., 2013).

8.4.2 Chronic Disease

Variations in data collection and substance availability across countries create challenges in measuring the global burden of disease secondary to drug use; there is a notable scarcity of evidence evaluating newer synthetic drugs and prescription medication abuse. Conversely, non-illicit substances like tobacco and alcohol are known to contribute significantly to chronic disease prevalence, with health complications ranging from liver cirrhosis to cardiovascular disease and cancer, especially in high-income countries (see Non-Communicable Diseases chapters, Chaps. 4 and 5; Degenhardt & Hall, 2012; Rehm et al., 2009). Excessive drinking in the United States is more common in SMW and gay and bisexual men (GBM) than their heterosexual counterparts, with the highest rates observed among lesbian women (Fredriksen-Goldsen et al., 2013). Similarly, elevated smoking rates have been noted within the United States LGBT community (60–70% higher than national averages), with the highest among self-identified gay men of color (Greenwood & Gruskin, 2007; Tang et al., 2004) but with greater incidence and severity of lung disease in women (Pinkerton et al., 2015).

Research in the United States has suggested that tobacco use within minority communities may be due to an absence of cessation programs tailored to address sexual and gender minority-specific barriers, such as minority stress and a lack of engagement with health services (Gruskin et al., 2007; Matthews et al., 2013). This places LGBT and GNC people at increased risk for respiratory diseases, including lung cancer. Compared to other chronic conditions exacerbated by tobacco, the odds for asthma among SMW and GBM appear to differ more strongly by socioeconomic status than by sexuality (Dilley et al., 2010; Fredriksen-Goldsen et al., 2013), and a review of data on the incidence of chronic obstructive pulmonary disease in marginalized individuals was inconclusive (Clausen & Morris, 2017). Given that smoking and alcohol abuse are reciprocal risk factors, there is also overlap in the pathophysiology of their disease sequelae. Frequent tobacco and alcohol consumption predispose users to cardiovascular disease regardless of sexual orientation or gender identity, but there are noteworthy differences among minority subgroups: multiple US studies have identified an above-average prevalence of obesity among lesbian women, followed by bisexual and TGW (Boehmer et al., 2007; Fredriksen-Goldsen et al., 2013; Lim et al., 2014; Roberts et al., 2003). As such, SMW who drink heavily and smoke face increased odds for cardiac morbidity and early mortality over other LGBT persons (Conron et al., 2010; Dilley et al., 2010).

Substance use by sexual and gender minority individuals also has the potential to aggravate certain cancers. Most anal cancer tumors are secondary to human papillomavirus, which is more widespread among MSM who engage in receptive anal intercourse (Daling et al., 2004; Machalek et al., 2012). In an American Cancer Society study, smoking was observed to increase the odds of anal cancer development in MSM nearly fourfold (Daling et al., 2004); additionally, sexual risks under the influence, HIV co-infection (Frisch et al., 2003), and having multiple sex partners (Lim et al., 2014) appear to be associated with anal cancer incidence. Data on breast cancer in sexual minority women are inconclusive, but obesity and substance abuse have been cited as precursors to breast cancer among SMW (Fredriksen-Goldsen et al., 2013; Graham et al., 2011) – however, the risk for breast cancer mortality does not appear to differ by sexuality (Cochran & Mays, 2012; Lim et al., 2014).

Though there is a general lack of chronic health information focusing on bisexual individuals of any gender, population-based surveys in the United States revealed significantly elevated substance-related risk behaviors, including binge drinking, daily tobacco use, and recent illegal drug use among bisexual persons (Conron et al., 2010). Such chronic drug abuse practices have been correlated with increased odds for asthma, diabetes, and hypertension compared to exclusively lesbian women or gay men (Dilley et al., 2010). Bisexual adults in North America also use statistically fewer protective and preventive health services, compounding their likelihood of early mortality (Lim et al., 2014; Smalley et al., 2016). Along those lines, transgender individuals in the United States are 1.5 times as likely as the general population to smoke, even though nearly three-quarters of them want to quit (Grant et al., 2010). The National Transgender Discrimination Survey report in the United States estimated that, as of 2010, over a quarter (28%) of transgender persons avoided

medical care or rehabilitation due to experiences of discrimination, for which they used alcohol and drugs to cope, creating a vicious cycle of health inequity with “catastrophic consequences” (Grant et al., 2010; Lim et al., 2014).

8.4.3 Incarceration

Despite jail time serving as a punishment for illicit drug use, a 2007 European review observed prisons to be risk environments where many individuals may continue to use or even take drugs for the first time (Dolan et al., 2007). Additionally, in the United States, incident HIV cases tend to be disproportionately clustered in prisons where viral transmission is fostered by both drug-seeking and sexual-risk behaviors (Wohl et al., 2006). The intersection of substance abuse and infectious disease in the prison environment is particularly burdensome for LGBT and GNC individuals, most notably POC, who already face disparate social and legal hurdles placing them at greater lifetime risk for incarceration (McCauley & Brinkley-Rubinstein, 2017). Although there is a general lack of applied inquiry in the field of justice involvement, the dearth of social services tailored toward sexual and gender minority members with a substance use disorder may be a contributing factor to their overrepresentation in the prison environment (Reisner et al., 2014a).

Stimulants, like methamphetamine and cocaine, (Rawstorne et al., 2007) and IDU (Operario et al., 2011) are all correlates of unprotected sexual risk behaviors that are also common within prisons and among individuals with a history of incarceration for substance use (Cochran & Cauce, 2006). Past qualitative interviews with MSM and TGW inmates have revealed that, aside from drug intoxication, an absence of harm reduction resources (i.e., clean needles, condoms, counseling) in United States jails is a primary contributor to continued “unsafe” behaviors (Harawa et al., 2010). Meanwhile, countries such as Germany, Spain, and Switzerland have piloted needle exchange programs for prisoners without observing any increase in illicit drug use (Jürgens et al., 2009; Okie, 2007). Barriers to self-care and health maintenance in jail can also be particularly disruptive for PLWH who rely on daily antiretroviral therapy; in the absence of focused discharge planning and linkage to care upon release, these people may be at risk for an increased viral load subsequent to medication non-adherence and IDU dependence fostered during incarceration (Jürgens et al., 2009; Khan et al., 2019; Palepu et al., 2004).

Few studies have explored the nature of legal consequences associated with high-risk drug exchanges in sexual and gender minority populations. In 2018, a history of transactional sex, as a form of survival or to sustain an addiction in the absence of supportive therapy, showed an independent correlation with incarceration among both MSM (Philbin et al., 2018) and TGW in the United States (Hughto et al., 2018). Although data specific to transgender persons are fairly limited, in the United States, tobacco use and polysubstance use have been identified as comorbidities of criminal justice involvement in addition to negative consequences like sexual victimization while in jail and HIV infection (Brennan et al., 2012; Brown &

Jones, 2015; Reisner et al., 2014a, b). LGBT and non-binary POC in the United States are generally more likely to be imprisoned in relation to substance possession or dependence, compared to white LGBTQ people. In a large sample of Black MSM in the northeast United States, crack use during sex and IDU both increased the probability of a prior incarceration lasting longer than 90 days (Bland et al., 2012). Among a primarily Black and Latina female sample in the United States, WSW were more likely to have an illegal income source, sell drugs, trade sex for money or drugs, and have a history of incarceration compared to heterosexual women (Ompad et al., 2011). Another study demonstrated that the odds of incarceration were greatest among Black TGW compared to MSM when controlling for alcohol and drug use, which were both independently associated with jail time in the United States (Brewer et al., 2014). The phenomenon in the United States where high numbers of Hispanic and African American LGBT youth with drug problems also report criminal justice involvement is described as the “school-to-prison pipeline” (Knight & Wilson, 2016; Snapp et al., 2015). In these instances, young adult POC are either excessively disciplined for the outward expression of their sexuality/gender identity or are punished for defending themselves against their own victimization. Once introduced to the justice system at an early age, these adolescents face an increased risk for both substance abuse and re-incarceration (Hughto et al., 2018; McCarthy et al., 2016).

8.4.4 Social Isolation

A key consideration of substance use among sexual and gender minority individuals is that many use recreational drugs without experiencing any negative social consequences. This has fostered a communal culture in which illicit drug use may be highly visible, accessible, and acceptable in certain contexts (Abdulrahim et al., 2016; Bourne et al., 2014). Particularly among gay and bisexual males, “club drug” stimulants and inhalants are sometimes perceived to enhance sociability (Fazio et al., 2011; Race, 2015) and sexual pleasure (Hurley & Prestage, 2009; Palamar et al., 2014; Van Hout & Brennan, 2011) as well as are used to alleviate pain and fatigue (Semple et al., 2002). However, other individuals may find that using such drugs can take a serious toll not only physically but also on their interpersonal well-being; and there are well-established associations between illicit drug use, cognition, and certain adverse psychosocial outcomes (Homer et al., 2008).

Substance use is often driven by a “desire for socialization,” but prolonged consumption or injection can paradoxically lead to social isolation due to chemically impaired judgment and decreased mood (Homer et al., 2008). Similarly, hazardous drinking is both a precursor to and product of minority stress, particularly among SMW (Lewis et al., 2016) and TGW (Arayasirikul et al., 2018). Social isolation secondary to drug and alcohol abuse subsequently increases the risk for mental health problems (Chou et al., 2011; Frederick, 2014), and for many marginalized individuals this cycle is perpetuated by further experimentation with substances to

“numb the pain” (Weber, 2008). Alcohol and drugs are even hypothesized to deepen the internalized homophobia that gay men and lesbian women struggle to dissociate from in the public expression of their sexual orientation (Cabaj, 2000; Emslie et al., 2017; McDermott et al., 2008).

As mentioned, injection and stimulant drug use often take place in shared settings or in the context of sexual hook-ups (i.e., “Party and Play”). Although some LGBT individuals partake in recreational substances to facilitate intimacy (Race, 2015), others report feeling marginalized and increasingly unwelcome by both non-drug-using friends and drug-using peers. In a small sample of MSM living with HIV in the United States, nearly all (90%) said their relationships had been strained by their abuse of crystal methamphetamine (Mimiaga, Fair, et al., 2008c). These findings were similar among female and transgender individuals in Australia who reported facing a “loss of identity and chosen community” secondary to drug abuse (Deacon et al., 2013). The experience of being ostracized, at its most extreme, has been connected to high rates of suicidality within this population (Lea et al., 2014; Mereish et al., 2014). However, the specific mediating role of substance abuse varies depending on the sexual/gender subpopulation in question (Lea et al., 2014): SMW, TGW, and PLWH in particular tend to become most isolated and estranged, putting them at risk for healthcare avoidance (i.e., addiction treatment) (Lyons et al., 2015) and intimate partner violence (Andrasik et al., 2013; Lewis et al., 2012). Conversely, evidence from analyses of LGBT adolescents in the United States who use substances have demonstrated the protective effect of parental connection and acceptance against the social derogation of drug addiction (Goldbach et al., 2014; Padilla et al., 2010; Ryan et al., 2010). This suggests that sexual and gender minority adults not raised in an accepting family environment or who lack a home support base may be at greatest risk for the negative health sequelae of stress and depression.

8.5 Intervention and Treatment Options

While much of the research on the prevalence of substance use and misuse among sexual and gender minority populations is nascent, particularly in the Global South, some interventions have been tested with these populations with varying degrees of success.

8.5.1 Alcohol Use

A systematic review of interventions to reduce problematic alcohol use among MSM in the United States showed support for the use of motivational interviewing/motivational enhancement-based interventions (MI) and hybrid MI and cognitive-behavioral therapy (CBT) treatments for heavy drinking compared to no treatment (Wray et al., 2016). The authors concluded the most important finding from this

review, however, is that rigorously designed efficacy trials of treatment interventions guided by behavior change theories and specific to MSM and other sexual and gender minority groups are scant.

8.5.2 Smoking

Community-based smoking cessation treatment programs culturally tailored for LGBT smokers have yielded promising results. These programs are based on a more generalized intervention, the American Lung Association's Freedom from Smoking (ALA-FFS) program but utilize LGBT-specific innovative activities and smoking information (Eliason et al., 2012; Matthews et al., 2013). Compared to traditional smoking cessation programs, an LGBT community-based program was better at enrolling and retaining LGBT smokers, and quit rates were consistent with outcomes associated with general population results from the ALA-FFS program (Matthews et al., 2013). However, more rigorous testing through randomized clinical trials is recommended to determine the efficacy of a culturally tailored ALA-FFS program. In addition, evaluation of individual and group interventions, cessation messaging, and policy is necessary to understand if outcomes are moderated by sexual orientation and gender identity (Lee et al., 2014).

8.5.3 Stimulant Use Disorder

There is limited evidence to support the effectiveness of behavioral interventions for reducing crystal meth use among MSM (Carrico et al., 2014, 2015; Ling et al., 2014a; Phillips et al., 2014; Rajasingham et al., 2012). Cognitive behavioral therapy (CBT) and contingency management (CM) have been studied the most (Ling et al., 2014b; Phillips et al., 2014; Rajasingham et al., 2012) and co-occurring sexual risk-taking (Carrico et al., 2014; Carrico et al., 2015), but the results have been mixed (Hellem et al., 2015; Ling et al., 2014b; Rajasingham et al., 2012). While CM has been found to produce short-term reductions in stimulant use (McDonnell et al., 2013; Phillips et al., 2014; Shoptaw et al., 2005), it does not appear to be consistently maintained and dropout rates are high (Benishek et al., 2014; Ling et al., 2014b; Nyamathi et al., 2015). Carrico et al. (2015) did not observe any benefits of CM on crystal meth use or sexual risk-taking at the 6-month follow-up assessment, which has led to questioning the efficacy of CM as a long-term approach to treatment for MSM. Additionally, ideological differences among providers and financial considerations may prevent the implementation of CM in substance use treatment centers (Carroll, 2014). Therefore, more research needs to be done on developing evidence-based behavioral interventions to reduce crystal meth use among gay, bisexual, and other MSM.

Pharmacotherapies for stimulants use disorders are under study, which are designed to alter the effects of the drugs on the brain's appetitive systems, including assessments of antidepressants, antipsychotics, dopamine agonists, and anticonvulsants. Currently, there are no FDA-approved medications for the management of stimulant craving and use reductions or withdrawal symptoms. Findings from clinical trials evaluating the use of antidepressants, dopamine agonists, and antagonists to reduce stimulant use have been mixed; thus, more research is needed to develop effective pharmacotherapies for stimulant abuse in MSM. In a recent clinical trial to determine the efficacy of mirtazapine for treatment of methamphetamine use disorder and reduction in HIV risk behaviors, mirtazapine reduced the use of methamphetamine over 24 weeks of treatment and 12 weeks of follow-up after treatment was concluded. Mirtazapine also reduced several sexual HIV risk behaviors; both findings were consistent with a previous pilot study. As such, Mirtazapine is the first medication to demonstrate efficacy in treating methamphetamine use disorder, and this has been documented in two independent randomized clinical trials (Coffin et al., 2020).

Research has shown that gay, bisexual, and other MSM who use crystal meth report a decrease in their capacity to enjoy activities that do not involve drug use (Mimiaga et al., 2008a). This has led them to rely on crystal meth as the only source of pleasure and enjoyment. Further, problematic crystal meth use is a complex and difficult-to-treat issue. A likely reason for this may be that existing treatments lack adequate attention to replacement activities or to the role of depressed mood/anhedonia relapse trigger (Mimiaga et al., 2008a). To address this, researchers have developed Project IMPACT (Intervention with MSM to Prevent Acquisition of HIV through Crystal methamphetamine Treatment). This intervention combines sexual risk reduction counseling with behavioral activation, a cognitive behavior therapy for improving mood by emphasizing the importance of goal-oriented activities. In a pilot randomized controlled trial, participants who received the Project IMPACT intervention reported fewer condomless anal sex acts with men who were HIV living with HIV or of unknown HIV serostatus, as well as longer periods of continuous abstinence from crystal meth compared to those in the control group (Mimiaga et al., 2019). The efficacy of this promising intervention is currently being assessed through a larger randomized controlled trial in the US (Mimiaga et al., 2018) among adult gay, bisexual, and other MSM. This work is also being extended via a hybrid type 2 effectiveness-implementation trial among sexually active young gay, bisexual, and other men who have sex with men via the Adolescent Medicine Trials Network for HIV Interventions (ATN170).

8.5.4 Opioid Use Disorder

As with all individuals suffering from opioid addiction, globally, medication-assisted therapy (MAT), in combination with behavioral therapy, is the mainstay of treatment for LGBT people with opioid use disorder. Medications, including

buprenorphine (Suboxone[®], Subutex[®]), methadone, and extended-release naltrexone (Vivitrol[®]), are effective for the treatment of opioid use disorders. However, only licensed addiction-treatment programs (both office-based and inpatient treatments) and physicians who have completed specialized training in the area of opioid drugs and addiction medicine can administer opioids to treat opioid-use disorders. In addition, CBT has been shown to improve treatment outcomes for patients receiving MAT for opioid use disorder (Moore et al., 2016). In Canada, Australia, and the United Kingdom, MAT is available without a co-pay or at a subsidized price directly from a pharmacist, decreasing barriers to treatment (Calcaterra et al., 2019).

8.5.5 *Need for Integrated Services*

Substance use among sexual and gender minority individuals is of global concern and access to substance abuse treatment services is limited (Flores et al., 2017). For example, only 11% of a transcontinental survey of MSM reported high availability of treatment programs and only 5% reported utilizing them (Flores et al., 2017). Best practices for sexual and gender minority-affirming addiction treatment are being promulgated by health institutions specific to this populations overall care needs. Studies surveying LGBTQ+ alumni of substance use treatment have found that patients value an LGBTQ+-affirming culture among staff and in clinical spaces, as well as the absence of homophobia and transphobia (Lyons et al., 2015; Rowan et al., 2013). In the general population, inclusion practices such as LGBTQ+-affirming intake forms, restrooms, signs, and outreach materials can make a significant impact (Johnson et al., 2008). Institutions offering a specific sexual and gender minority focus are vital in addressing the need for Individualized interventions that uniquely address each person's drug-related medical, mental health, and social problems (NIDA, 2018b, p. 24).

Research has demonstrated that sexual and gender minorities are more likely to suffer from substance use disorders (SUDs) in combination with other mental health issues, such as depression and anxiety, and co-occurring health problems, like chronic pain. To effectively address the complexity of these cases, integrated models of behavioral health and primary care services must be developed. Integrated care models range from simple coordination among different medical facilities to fully merged practices. By utilizing these models, comprehensive programs can be created to address addiction and its associated health issues.

Fenway Health is a renowned LGBTQ+-focused health center, research institute, and advocacy organization located in Boston, Massachusetts. It offers a two-pronged approach to treating opioid use disorder that integrates addiction treatment with behavioral health and primary care services (Fenway Health, 2022). The Addictions and Wellness Program is a key component of this approach, providing individual and group therapy work that uses a minority stress framework. Additionally, the program combines with the Behavioral Health Department's Violence Recovery Program to leverage LGBTQ+ community solidarity as a source of resilience and

self-efficacy for partaking in addiction treatment. Finally, the Addictions and Wellness Program offers buprenorphine treatment in a weekly clinic staffed by a psychiatrist, with group therapy specifically for patients with trauma history and active addiction (Fenway Health, 2022). Given this, Fenway Health exemplifies an innovative, comprehensive model for treating opioid use disorder.

The second part of Fenway's model is conducted within Fenway's Primary Care Services. This program follows a harm-reduction model and is led by trained medical staff with years of experience; it requires few behavioral contingencies for ongoing buprenorphine management. Hence, patients at Fenway may seek whichever of the two buprenorphine treatment programs supports their sobriety from opioids the best, while taking advantage of real integration of behavioral health services into primary care. Notably, the integration of behavioral health services with primary care for LGBTQ+ patients with stimulant and/or opioid use disorder and other SUDs may offer many benefits, including bolstering patient acceptability of care, improving public health, and reducing costs to the patient and enhancing overall economic prosperity.

8.6 Conclusion

This chapter has documented that sexual and gender minority populations experience disparities in substance use across all geographical contexts. Globally, these disparities are exacerbated by sexual and gender minority-specific stressors (e.g., stigma, discrimination, harassment) at the individual, interpersonal, and environmental levels that may heighten one's vulnerability to substance use and substance use disorders compared to individuals not experiencing these stressors (Demant et al., 2016; McCabe et al., 2013; Medley et al., 2016). The chapter also details the research showing a disproportionate burden of substance use and resultant disease in sexual and gender minority individuals compared to both sexual majority groups and the general populations across geographic areas. In addition, there are individual (e.g., mental health), interpersonal (e.g., intimate partner violence), and contextual (e.g., health policy and the political climate) risk and protective factors that are unique to sexual and gender minority groups and should be considered when developing intervention approaches to curb use among these groups. For sexual and gender minority groups, treatment of substance use disorder must remain a priority among health care providers. By reducing substance use, we can have an impact on individual health outcomes, and subsequently reduce the burden of disease on a population level. We must continue with research efforts that develop and test novel strategies that are culturally tailored and address the specific factors driving their use. Furthermore, among providers, it is critical that we continue to assess our sexual and gender minority patients' substance use. Even though there are few effective treatments available for some substance use disorders, linkage to care should remain an important focus in caring for this vulnerable population.



China map showing major cities as well as the many bordering East Asian countries and neighboring seas. (Source: Central Intelligence Agency, 2021)

8.7 Case Study: Substance Use Among Men Who Have Sex with Men in China

In China, despite most studies being conducted in small regions or cities, literature has consistently demonstrated a high rate of substance use among men who have sex with men (MSM) compared to other population subgroups. Research on common substances used in China, such as alcohol and tobacco (Nehl et al., 2012; Yu et al., 2013), and more modern psychoactive/recreational drugs such as poppers/rush poppers, tryptamine, methamphetamine, and ecstasy (Li et al., 2021; Zhao et al., 2017), has highlighted use among MSM. For a variety of reported time frames (e.g., in the past 1 month, in the past 12 months), rates of alcohol use among Chinese MSM range from 56% to 62% (Liu et al., 2016; Lu et al., 2013; Xu et al., 2019). Nearly 44% of MSM in China report recent binge drinking (Xu et al., 2019), which is much higher than the 32% prevalence found in the general male population (Li et al., 2011). Young Chinese sexual minority males are significantly more likely to report moderate or heavy smoking when compared with general youth (Lian et al., 2015). The reported use of recreational drugs among MSM ranges from 21.3% to 31.2%, regardless of timeframe (during the past 3–12 months) (Chen et al., 2015; Wang et al., 2015; Xu et al., 2014a, b; Zhang et al., 2016).

8.7.1 *Social and Behavioral Aspects of Substance Use*

Previous research has documented how some MSM social environments and peer networks promote substance use (Duan et al., 2017; Egan et al., 2011). Along with the rapid economic development in China and the encouragement of social smoking and drinking in Chinese cultural norms (Xu et al., 2020), gay bars and nightclubs are expanding and rising in popularity in Chinese cities. While these venues allow sexual minority individuals to socialize in a safe public space, they often facilitate tobacco and alcohol use and may promote the emergence, use, and even popularity of modern club drugs (Chen et al., 2015; Liu et al., 2016).

Methamphetamine is the most commonly used addictive stimulant drug among MSM in China (Ding et al., 2013). Methamphetamines can increase sexual excitement, enable individuals to engage in sex longer, and impair judgment resulting in high-risk sexual practices (Anglin et al., 2000; Ding et al., 2013). Curiosity about methamphetamines and a lack of understanding that they are potentially addictive contribute to use initiation in China (Liu et al., 2018a).

Poppers, another fashionable recreational drug in China, has risen in popularity and use among MSM in recent years (Chen et al., 2015; Xu et al., 2014a, b). Poppers are cheap and easily accessible and, to date, are not defined as illicit or regulated by the Chinese government. The relaxing effect of poppers often facilitates anal sex, making them highly desirable among MSM in this context (Li et al., 2021; Xu et al., 2014a, b).

Attitudes towards sexual minorities in China also play a role in the prevalence of substance use; social attitudes toward homosexuality have become considerably more open but cannot yet be described as tolerant, with same-sex marriage not legally recognized. The prevalence of internalized homophobia among Chinese sexual minority men is also high (Xu et al., 2017). The minority stress model theorizes that substance use is sometimes used as a coping strategy for sexual minorities in stressful social contexts (Meyer, 2003); substance users understand that the specific effects of certain drugs relieve distress. In line with this theory, Chinese MSM who have sex with women out of perceived social obligations have been found to also sometimes engage in frequent excessive alcohol and other illicit drug use (Liao et al., 2011; Xu et al., 2019). This suggests substance use may be a coping response to the internal conflict between one's public identity as a heterosexual and one's private desires for same-sex encounters and/or relationships.

8.7.2 Substance Use Intervention Programs

To our knowledge, there are currently no substance use services specifically targeting MSM in China. The struggle to control the growing drug problem in this population is further compounded by social stress that surrounds homosexuality in the Chinese context. Such environments may lead MSM to hide their sexual orientation and perhaps turn to substances to cope with the secrecy.

Despite the lack of intervention programs targeting the MSM community, in 2003 China piloted a national harm reduction program for illicit drug users in the general population, which included methadone treatment for those using heroin. This program has shown some benefits, including for MSM, such as a significant decrease in injection drug use, overcoming addiction, and an increase in healthy physical outcomes (Liu et al., 2018a). Furthermore, comprehensive psychological and behavioral treatment interventions in conjunction with methadone maintenance treatment (MMT), such as psychotherapy, counseling, and social and family support, have improved patient retention to address substance use dependence (Chen et al., 2010; Pan et al., 2015; Zhang et al., 2009). In addition to MMT, buprenorphine, naloxone, and Chinese herbal medicines have also been applied in some cases (Sun et al., 2014). All of these intervention efforts, despite having a universal focus, have been beneficial for MSM populations.

8.7.3 Substance Use Policy

On the policy side, laws and regulations have been enacted or modified to reduce the supply and demand of drugs in China (Sun et al., 2014). While these policies are not specific to MSM, they have resulted in reduced substance use in some MSM communities as well as in the broader population (Duan et al., 2017; Liu et al., 2018a).

For instance, the Chinese government has made significant advancements from an old system of mandatory incarceration and punishment as treatment in recent years (Li et al., 2010; Wu et al., 2007). Currently, compulsory isolation treatment is commonly used for drug abuse treatment in China. Chinese drug law mandates that people with substance use disorders who refuse to receive community rehabilitation or fail to maintain sobriety, or those found by police as having a severe addiction to illicit drugs are sent for 2 years of compulsory isolation treatment managed by justice departments (State Council of the People's Republic of China, 2011). Treatments in these settings include detoxification, physical medical care, behavioral and psychological therapy, HIV treatment as indicated, and relapse prevention education (Yang et al., 2018). Central and local governments have also organized a variety of health education activities, especially for younger people, through manifold forms including television, the internet, and community events.

To some extent, enactment and implementation of drug policy vary in different regions in China. Despite a national law greatly expanding Chinese government reach, many provinces and municipalities, such as Shanghai, Guangdong, and Tianjin, have passed Smoking Control Regulation to create smoke-free public places (Wan et al., 2013; Alcorn, 2013). Another example is Shenzhen, which in recent years has carried out regulations on drug rehabilitation and cooperative drug control interventions with Hong Kong. The strict policy resulted in a lower illicit drug supply and use in Shenzhen. In terms of the connection between drug policy and MSM's substance use, researchers have found that, since the policy was passed, 12.7% of MSM in Shenzhen recently used at least one type of drug (Duan et al., 2017), which is lower than the rates in other cities (Chen et al., 2015; Wang et al., 2015; Xu et al., 2014a, b; Zhao et al., 2017). While none of the mentioned interventions specifically target MSM communities, they do seem to be having a beneficial impact by reducing substance use in that population.

In conclusion, research has highlighted significant substance use among the Chinese MSM community, especially the use of alcohol, methamphetamine, and poppers. Although strategies and interventions for people who use drugs more broadly have been successfully evaluated and applied in the Chinese context, a national system for treatment, prevention, and intervention of substance use targeted to high-risk drug user groups like MSM is also needed.

Acknowledgments We are grateful to Wenjian Xu, PhD, for contributing the case study on substance use among men who have sex with men in China accompanying this chapter.

References

- Aaron, D. J., Markovic, N., Danielson, M. E., Honnold, J. A., Janosky, J. E., & Schmidt, N. J. (2001). Behavioral risk factors for disease and preventive health practices among lesbians. *American Journal of Public Health, 91*(6), 972–975. <https://doi.org/10.2105/ajph.91.6.972>
- Abadie, R., Welch-Lazowitz, M., Khan, B., & Dombrowski, K. (2017). Social determinants of HIV/HCV co-infection: A case study from people who inject drugs in rural Puerto Rico. *Addictive Behaviors Reports, 5*, 29–32. <https://doi.org/10.1016/j.abrep.2017.01.004>

- Abdulahim, D., Whiteley, C., Moncrieff, M., & Bowden-Jones, O. (2016). *Club drug use among lesbian, gay, bisexual and trans (LGBT) people*. Novel Psychoactive Treatment UK Network (NEPTUNE).
- Absalon, J., Fuller, C. M., Ompad, D. C., Blaney, S., Koblin, B., Galea, S., & Vlahov, D. (2006). Gender differences in sexual behaviors, sexual partnerships, and HIV among drug users in New York City. *AIDS and Behavior, 10*(6), 707–715. <https://doi.org/10.1007/s10461-006-9082-x>
- Alcorn, T. (2013). Winds shift for tobacco control in China. *The Lancet Respiratory Medicine, 1*(9), 679–680. [https://doi.org/10.1016/S2213-2600\(13\)70236-4](https://doi.org/10.1016/S2213-2600(13)70236-4)
- Amadio, D. M. (2006). Internalized heterosexism, alcohol use, and alcohol-related problems among lesbians and gay men. *Addictive Behaviors, 31*(7), 1153–1162. <https://doi.org/10.1016/j.addbeh.2005.08.013>
- Anderson-Carpenter, K. D., & Rutledge, J. D. (2020). Prescription opioid misuse among heterosexual versus lesbian, gay, and bisexual military veterans: Evidence from the 2015–2017 national survey of drug use and health. *Drug and Alcohol Dependence, 207*, 107794. <https://doi.org/10.1016/j.drugalcdep.2019.107794>
- Andrasik, M. P., Valentine, S. E., & Pantalone, D. W. (2013). “Sometimes you just have to have a lot of bitter to make it sweet”: Substance abuse and partner abuse in the lives of HIV-positive men who have sex with men. *Journal of Gay & Lesbian Social Services, 25*(3), 287–305. <https://doi.org/10.1080/10538720.2013.807215>
- Anglin, M. D., Burke, C., Perrochet, B., Stamper, E., & Dawud-Noursi, S. (2000). History of the methamphetamine problem. *Journal of Psychoactive Drugs, 32*, 137–141. <https://doi.org/10.1080/02791072.2000.10400221>
- Arayasirikul, S., Pomart, W. A., Raymond, H. F., & Wilson, E. C. (2018). Unevenness in health at the intersection of gender and sexuality: Sexual minority disparities in alcohol and drug use among transwomen in the San Francisco Bay Area. *Journal of Homosexuality, 65*(1), 66–79. <https://doi.org/10.1080/00918369.2017.1310552>
- Australian Institute of Health and Welfare. (2021). *Alcohol, tobacco & other drugs in Australia*. Resource document. Accessed 20 Nov 2022. <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia>
- Bachmann, C. L., & Gooch, B. (2018). *LGBT in Britain: Health Report*. Stonewall. Accessed 20 Nov 2022. <https://www.stonewall.org.uk/lgbt-britain-health>
- Balsam, K. F., & Mohr, J. J. (2007). Adaptation to sexual orientation stigma: A comparison of bisexual and lesbian/gay adults. *Journal of Counseling Psychology, 54*(3), 306–319. <https://doi.org/10.1037/0022-0167.54.3.306>
- Balsam, K. F., Rothblum, E. D., & Beauchaine, T. P. (2005). Victimization over the life span: A comparison of lesbian, gay, bisexual, and heterosexual siblings. *Journal of Consulting and Clinical Psychology, 73*(3), 477–487. <https://doi.org/10.1037/0022-006X.73.3.477>
- Barrett, P., O'Donnell, K., Fitzgerald, M., Schmidt, A. J., Hickson, F., Quinlan, M., Keogh, P., O'Connor, L., McCartney, D., & Igoe, D. (2019). Drug use among men who have sex with men in Ireland: Prevalence and associated factors from a national online survey. *International Journal of Drug Policy, 64*, 5–12. <https://doi.org/10.1016/j.drugpo.2018.11.011>
- Başar, K., Öz, G., & Karakaya, J. (2016). Perceived discrimination, social support, and quality of life in gender dysphoria. *The Journal of Sexual Medicine, 13*(7), 1133–1141. <https://doi.org/10.1016/j.jsxm.2016.04.071>
- Bell, A. V., Ompad, D., & Sherman, S. G. (2006). Sexual and drug risk behaviors among women who have sex with women. *American Journal of Public Health, 96*(6), 1066–1072. <https://doi.org/10.2105/AJPH.2004.061077>
- Benishek, L. A., Dugosh, K. L., Kirby, K. C., Matejkowski, J., Clements, N. T., Seymour, B. L., & Festinger, D. S. (2014). Prize-based contingency management for the treatment of substance abusers: A meta-analysis. *Addiction, 109*(9), 1426–1436. <https://doi.org/10.1111/add.12589>
- Benotsch, E. G., Zimmerman, R., Cathers, L., McNulty, S., Pierce, J., Perrin, P. B., & Snipes D. (2013). Non-medical use of prescription drugs, polysubstance use, and mental health among transgender adults. *Drug and Alcohol Dependence, 132*, 391–394.

- Benotsch, E. G., Zimmerman, R. S., Cathers, L., Pierce, J., McNulty, S., Heck, T., et al. (2016). Non-medical use of prescription drugs and HIV risk behaviour in transgender women in the Mid-Atlantic region of the United States. *International Journal of STD & AIDS*, 27(9), 776–782. <https://doi.org/10.1177/0956462415595319>
- Beyrer, C., Baral, S. D., Van Griensven, F., Goodreau, S. M., Chariyaletsak, S., Wirtz, A. L., Bimbi, D. S., Palmadessa, N. A., & Parsons, J. T. (2007). Substance use and domestic violence among urban gays, lesbians, and bisexuals. *Journal of LGBT Health Research*, 3(2), 1–7. https://doi.org/10.1300/J463v03n02_01
- Bland, S. E., Mimiaga, M. J., Reisner, S. L., White, J. M., Driscoll, M. A., Isenberg, D., et al. (2012). Sentencing risk: History of incarceration and HIV/STD transmission risk behaviours among Black men who have sex with men in Massachusetts. *Culture, Health & Sexuality*, 14(3), 329–345. <https://doi.org/10.1080/13691058.2011.639902>
- Blashill, A. J., & Safren SA. (2014). Sexual orientation and anabolic-androgenic steroids in U.S. adolescent boys. *Pediatrics*, 133(3):469–475. <https://doi.org/10.1542/peds.2013-2768>
- Boehmer, U., Bowen, D. J., & Bauer, G. R. (2007). Overweight and obesity in sexual-minority women: Evidence from population-based data. *American Journal of Public Health*, 97(6), 1134–1140. <https://doi.org/10.2105/AJPH.2006.088419>
- Bourne, A., Reid, D., Hickson, F., Torres Rueda, S., & Weatherburn, P. (2014). *The Chemsex study: Drug use in sexual settings among gay and bisexual men in Lambeth, Southwark, and Lewisham*. Sigma Research, London School of Hygiene & Tropical Medicine. www.sigmaresearch.org.uk/chemsex
- Bränström, R., Hatzenbuehler, M. L., Pachankis, J. E., & Link, B. G. (2016). Sexual orientation disparities in preventable disease: A fundamental cause perspective. *American Journal of Public Health*, 106(6), 1109–1115. <https://doi.org/10.2105/AJPH.2016.303051>
- Brennan, J., Kuhns, L. M., Johnson, A. K., Belzer, M., Wilson, E. C., Garofalo, R., & Interventions, A. M. T. N. f. H. A. (2012). Syndemic theory and HIV-related risk among young transgender women: The role of multiple, co-occurring health problems and social marginalization. *American Journal of Public Health*, 102(9), 1751–1757.
- Brewer, R. A., Magnus, M., Kuo, I., Wang, L., Liu, T.-Y., & Mayer, K. H. (2014). The high prevalence of incarceration history among Black men who have sex with men in the United States: Associations and implications. *American Journal of Public Health*, 104(3), 448–454.
- Bridger, S., Snedden, M., Bachmann, C. L., & Gooch, B. (2019). *LGBT in Scotland: Health report*. Stonewall Scotland. Accessed 20 Nov 2022. <https://www.stonewallscotland.org.uk/our-work/stonewall-research/lgbt-scotland-%E2%80%93health-report>
- Brown, G. R., & Jones, K. T. (2015). Health correlates of criminal justice involvement in 4,793 transgender veterans. *LGBT Health*, 2(4), 297–305. <https://doi.org/10.1089/lgbt.2015.0052>
- Brown, L. S., & Pantalone, D. (2011). Lesbian, gay, bisexual, and transgender issues in trauma psychology: A topic comes out of the closet. *Traumatology*, 17(2), 1–3. <https://doi.org/10.1177/1534765611417763>
- Buchmueller, T., & Carpenter, C. S. (2010). Disparities in health insurance coverage, access, and outcomes for individuals in same-sex versus different-sex relationships, 2000–2007. *American Journal of Public Health*, 100(3), 489–495. <https://doi.org/10.2105/AJPH.2009.160804>
- Bux, D. A. (1996). The epidemiology of problem drinking in gay men and lesbians: A critical review. *Clinical Psychology Review*, 16(4), 277–298. [https://doi.org/10.1016/0272-7358\(96\)00017-7](https://doi.org/10.1016/0272-7358(96)00017-7)
- Cabaj, R. P. (2000). Substance abuse, internalized homophobia, and gay men and lesbians: Psychodynamic issues and clinical implications. *Journal of Gay & Lesbian Psychotherapy*, 3(3–4), 5–24. https://doi.org/10.1300/J236v03n03_02
- Caceres, B. A., Jackman, K. B., Ferrer, L., Cato, K. D., & Hughes, T. L. (2019). A scoping review of sexual minority women’s health in Latin America and the Caribbean. *International Journal of Nursing Studies*, 94, 85–97. <https://doi.org/10.1016/j.ijnurstu.2019.01.016>
- Calcaterra, S. L., Bach, P., Chadi, A., Chadi, N., Kimmel, S. D., Morford, K. L., et al. (2019). Methadone matters: What the United States can learn from the global effort to treat opioid addiction. *Journal of General Internal Medicine*, 34(6), 1039–1042. <https://doi.org/10.1007/s11606-018-4801-3>

- Capistrant, B. D., & Nakash, O. (2019). Lesbian, gay, and bisexual adults have higher prevalence of illicit opioid use than heterosexual adults: Evidence from the National Survey on Drug Use and Health, 2015–2017. *LGBT Health*, 6(6), 326–330. <https://doi.org/10.1089/lgbt.2019.0060>
- Carrico, A. W., Flentje, A., Gruber, V. A., Woods, W. J., Discepolo, M. V., Dilworth, S. E., et al. (2014). Community-based harm reduction substance abuse treatment with methamphetamine-using men who have sex with men. *Journal of Urban Health*, 91(3), 555–567. <https://doi.org/10.1007/s11524-014-9870-y>
- Carrico, A. W., Gomez, W., Siever, M. D., Discepolo, M. V., Dilworth, S. E., & Moskowitz, J. T. (2015). Pilot randomized controlled trial of an integrative intervention with methamphetamine-using men who have sex with men. *Archives of Sexual Behavior*, 44(7), 1861–1867. <https://doi.org/10.1007/s10508-015-0505-5>
- Carroll, K. M. (2014). Lost in translation? Moving contingency management and cognitive behavioral therapy into clinical practice. *Annals of the New York Academy of Sciences*, 1327(1), 94–111. <https://doi.org/10.1111/nyas.12501>
- Centers for Disease Control and Prevention. (2012). Vital signs: Binge drinking prevalence, frequency, and intensity among adults—United States, 2010. *MMWR: Morbidity and Mortality Weekly Report*, 61(1), 14–19.
- Central Intelligence Agency. (2021). China map showing major cities as well as the many bordering East Asian countries and neighboring seas. *The World Factbook*. Central Intelligence Agency. <https://www.cia.gov/the-world-factbook/>
- Chapman, J., Koleros, A., Delmont, Y., Pegurri, E., Gahire, R., & Binagwaho, A. (2011). High HIV risk behavior among men who have sex with men in Kigali, Rwanda: Making the case for supportive prevention policy. *AIDS Care*, 23(4), 449–455. <https://doi.org/10.1080/09540121.2010.507758>
- Chen, D., Liu, F., Peng, Y., Xiao, Y., Zhang, Q., Yu, J., et al. (2010). A pilot study on the structured problem-oriented cognitive behavioral group psychotherapy in relapse prevention. *Chinese Journal of Drug Dependence*, 19, 379–382.
- Chen, X., Li, X., Zheng, J., Zhao, J., He, J., Zhang, G., & Tang, X. (2015). Club drugs and HIV/STD infection: An exploratory analysis among men who have sex with men in Changsha, China. *PLoS One*, 10, e0126320. <https://doi.org/10.1371/journal.pone.0126320>
- Chou, K. L., Liang, K., & Sareen, J. (2011). The association between social isolation and DSM-IV mood, anxiety, and substance use disorders: Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *The Journal of Clinical Psychiatry*, 72(11), 1468–1476. <https://doi.org/10.4088/JCP.10m06019gry>
- Clausen, E., & Morris, A. (2017). The lesbian, gay, bisexual, and transgender community and respiratory health. In *Achieving respiratory health equality* (pp. 77–86). Springer.
- Cochran, B. N., & Cauce, A. M. (2006). Characteristics of lesbian, gay, bisexual, and transgender individuals entering substance abuse treatment. *Journal of Substance Abuse Treatment*, 30(2), 135–146. <https://doi.org/10.1016/j.jsat.2005.11.009>
- Cochran, S. D., & Mays, V. M. (2012). Risk of breast cancer mortality among women cohabiting with same sex partners: Findings from the National Health Interview Survey, 1997–2003. *Journal of Women's Health*, 21(5), 528–533. <https://doi.org/10.1089/jwh.2011.3134>
- Cochran, B. N., Peavy, K. M., & Cauce, A. M. (2007). Substance abuse treatment providers' explicit and implicit attitudes regarding sexual minorities. *Journal of Homosexuality*, 53(3), 181–207. https://doi.org/10.1300/J082v53n03_10
- Cochran, S. D., Bandiera, F. C., & Mays, V. M. (2013). Sexual orientation-related differences in tobacco use and secondhand smoke exposure among US adults aged 20 to 59 years: 2003–2010 National Health and Nutrition Examination Surveys. *American Journal of Public Health*, 103(10), 1837–1844. <https://doi.org/10.2105/AJPH.2013.301423>
- Coffin, P. O., Santos, G. M., Hern, J., Vittinghoff, E., Walker, J. E., Matheson, T., Santos, D., Colfax, G., & Batki, S. L. (2020). Effects of mirtazapine for methamphetamine use disorder among cisgender men and transgender women who have sex with men: A placebo-controlled

- randomized clinical trial. *JAMA Psychiatry*, 77(3), 246–255. <https://doi.org/10.1001/jamapsychiatry.2019.3655>
- Connolly, D., Davies, E., Lynskey, M., Barratt, M. J., Maier, L., Ferris, J., et al. (2020). Comparing intentions to reduce substance use and willingness to seek help among transgender and cis-gender participants from the global drug survey. *Journal of Substance Abuse Treatment*, 112, 86–91. <https://doi.org/10.1016/j.jsat.2020.03.001>
- Conron, K. J., Mimiaga, M. J., & Landers, S. J. (2010). A population-based study of sexual orientation identity and gender differences in adult health. *American Journal of Public Health*, 100(10), 1953–1960. <https://doi.org/10.2105/AJPH.2009.174169>
- Cooper, M. L., Frone, M. R., Russell, M., & Mudar, P. (1995). Drinking to regulate positive and negative emotions: A motivational model of alcohol use. *Journal of Personality and Social Psychology*, 69(5), 990–1005. <https://doi.org/10.1037//0022-3514.69.5.990>
- Corliss, H. L., Grella, C. E., Mays, V. M., & Cochran, S. D. (2006). Drug use, drug severity, and help-seeking behaviors of lesbian and bisexual women. *Journal of Women's Health*, 15(5), 556–568. <https://doi.org/10.1089/jwh.2006.15.556>
- D'Augelli, A. R. (2003). Lesbian and bisexual female youths aged 14 to 21: Developmental challenges and victimization experiences. *Journal of Lesbian Studies*, 7(4), 9–29. https://doi.org/10.1300/J155v07n04_02
- Daling, J. R., Madeleine, M. M., Johnson, L. G., Schwartz, S. M., Shera, K. A., Wurscher, M. A., et al. (2004). Human papillomavirus, smoking, and sexual practices in the etiology of anal cancer. *Cancer*, 101(2), 270–280. <https://doi.org/10.1002/cncr.20365>
- Day, J. K., Fish, J. N., Perez-Brumer, A., Hatzenbuehler, M. L., & Russell, S. T. (2017). Transgender youth substance use disparities: Results from a population-based sample. *Journal of Adolescent Health*, 61(6), 729–735. <https://doi.org/10.1016/j.jadohealth.2017.06.024>
- De Pedro, K. T., Gilreath, T. D., Jackson, C., & Esqueda, M. C. (2017). Substance use among transgender students in California public middle and high schools. *Journal of School Health*, 87(5), 303–309. <https://doi.org/10.1111/josh.12499>
- De Ryck, I., Vanden Berghe, W., Antonneau, C., & Colebunders, R. (2011). Awareness of hepatitis C infection among men who have sex with men in Flanders, Belgium. *Acta Clinica Belgica: International Journal of Clinical and Laboratory Medicine*, 66(1), 46–48. <https://doi.org/10.2143/ACB.66.1.2062513>
- Deacon, R. M., & Mooney-Somers, J. (2017). Smoking prevalence among lesbian, bisexual and queer women in Sydney remains high: Analysis of trends and correlates. *Drug and Alcohol Review*, 36(4), 546–554. <https://doi.org/10.1111/dar.12477>
- Deacon, R. M., Mooney-Somers, J., Treloar, C., & Maher, L. (2013). At the intersection of marginalised identities: Lesbian, gay, bisexual, and transgender people's experiences of injecting drug use and hepatitis C seroconversion. *Health & Social Care in the Community*, 21(4), 402–410. <https://doi.org/10.1111/hsc.12026>
- Degenhardt, L., & Hall, W. (2012). Extent of illicit drug use and dependence, and their contribution to the global burden of disease. *The Lancet*, 379(9810), 55–70. [https://doi.org/10.1016/S0140-6736\(11\)61138-0](https://doi.org/10.1016/S0140-6736(11)61138-0)
- Deiss, R. G., Clark, J. L., Konda, K. A., Leon, S. R., Klausner, J. D., Caceres, C. F., & Coates, T. J. (2013). Problem drinking is associated with increased prevalence of sexual risk behaviors among men who have sex with men (MSM) in Lima, Peru. *Drug and Alcohol Dependence*, 132(1–2), 134–139. <https://doi.org/10.1016/j.drugalcdep.2013.01.011>
- Demant, D., Hides, L., Kavanagh, D. J., White, K. M., Winstock, A. R., & Ferris, J. (2016). Differences in substance use between sexual orientations in a multi-country sample: Findings from the Global Drug Survey 2015. *Journal of Public Health*, 39(3), 532–541. <https://doi.org/10.1093/pubmed/fdw069>
- Demant, D., Hides, L., White, K. M., & Kavanagh, D. J. (2018). Effects of participation in and connectedness to the LGBT community on substance use involvement of sexual minority young people. *Addictive Behaviors*, 81, 167–174. <https://doi.org/10.1016/j.addbeh.2018.01.028>

- Dermody, S. S., Marshal, M. P., Cheong, J., Burton, C., Hughes, T., Aranda, F., & Friedman, M. S. (2014). Longitudinal disparities of hazardous drinking between sexual minority and heterosexual individuals from adolescence to young adulthood. *Journal of Youth and Adolescence*, 43(1), 30–39. <https://doi.org/10.1007/s10964-013-9905-9>
- Diaz, T., Vlahov, D., Greenberg, B., Cuevas, Y., & Garfein, R. (2001). Sexual orientation and HIV infection prevalence among young Latino injection drug users in Harlem. *Journal of Women's Health & Gender-Based Medicine*, 10(4), 371–380. <https://doi.org/10.1089/152460901750269698>
- Díaz, C. E., Cogollo, Z., Bánquez, J., Salcedo, L. L., Fontalvo, K., Puello, M. A., & Arias, A. C. (2005). Síntomas depresivos y la orientación sexual en adolescentes estudiantes: Un estudio transversal. *Medunab*, 8(3), 183–190.
- Dilley, J. A., Simmons, K. W., Boysun, M. J., Pizacani, B. A., & Stark, M. J. (2010). Demonstrating the importance and feasibility of including sexual orientation in public health surveys: Health disparities in the Pacific Northwest. *American Journal of Public Health*, 100(3), 460–467. <https://doi.org/10.2105/AJPH.2007.130336>
- Ding, Y., He, N., Zhu, W., & Detels, R. (2013). Sexual risk behaviors among club drug users in Shanghai, China: Prevalence and correlates. *AIDS and Behavior*, 17(7), 2439–2449. <https://doi.org/10.1007/s10461-012-0380-1>
- Dolan, K., Khoei, E. M., Brentari, C., & Stevens, A. (2007). *Prisons and drugs: A global review of incarceration, drug use and drug services*. Beckley Foundation. Accessed 20 Nov 2022. <https://www.beckleyfoundation.org/resource/prisons-drugs-a-global-review-of-incarceration-drug-use-and-drug-services/>
- Donoso, C. L., & Ávila, V. S. (2020). Aspects associated with sexualised drug use among gay men and other men who have sex with men: A cross-sectional study from the Latin America MSM Internet Survey 2018–Chile. *Sexual Health*, 17(6), 493–502. <https://doi.org/10.1071/SH20089>
- Drabble, L., Midanik, L. T., & Trocki, K. (2005). Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: Results from the 2000 National Alcohol Survey. *Journal of Studies on Alcohol*, 66(1), 111–120. <https://doi.org/10.15288/jsa.2005.66.111>
- Drückler, S., van Rooijen, M. S., & de Vries, H. J. (2020). Substance use and sexual risk behavior among male and transgender women sex workers at the prostitution outreach center in Amsterdam, the Netherlands. *Sexually Transmitted Diseases*, 47(2), 114–121. <https://doi.org/10.1097/OLQ.0000000000001096>
- Duan, C., Wei, L., Cai, Y., Chen, L., Yang, Z., Tan, W., et al. (2017). Recreational drug use and risk of HIV infection among men who have sex with men: A cross-sectional study in Shenzhen, China. *Drug and Alcohol Dependence*, 181, 30–36. <https://doi.org/10.1016/j.drugalcdep.2019.09.004>
- Duncan, D. T., Zweig, S., Hambrick, H. R., & Palamar, J. J. (2019). Sexual orientation disparities in prescription opioid misuse among US adults. *American Journal of Preventive Medicine*, 56(1), 17–26. <https://doi.org/10.1016/j.amepre.2018.07.032>
- Egan, J. E., Frye, V., Kurtz, S. P., Latkin, C., Chen, M. X., Tobin, K., et al. (2011). Migration, neighborhoods, and networks: Approaches to understanding how urban environmental conditions affect syndemic adverse health outcomes among gay, bisexual, and other men who have sex with men. *AIDS and Behavior*, 15(1), 35–50. <https://doi.org/10.1007/s10461-011-9902-5>
- Eliason, M. J., Dibble, S. L., Gordon, R., & Soliz, G. B. (2012). The last drag: An evaluation of an LGBT-specific smoking intervention. *Journal of Homosexuality*, 59(6), 864–878. <https://doi.org/10.1080/00918369.2012.694770>
- Emslie, C., Lennox, J., & Ireland, L. (2017). The role of alcohol in identity construction among LGBT people: A qualitative study. *Sociology of Health & Illness*, 39(8), 1465–1479. <https://doi.org/10.1111/1467-9566.12605>
- Estrich, C. G., Gratz, B., & Hotton, A. L. (2014). Differences in sexual health, risk behaviors, and substance use among women by sexual identity: Chicago, 2009–2011. *Sexually Transmitted Diseases*, 41(3), 194–199. <https://doi.org/10.1097/OLQ.0000000000000091>

- Fazio, A., Hunt, G., & Moloney, M. (2011). "It's one of the better drugs to use": Perceptions of cocaine use among gay and bisexual Asian American men. *Qualitative Health Research, 21*(5), 625–641. <https://doi.org/10.1177/1049732310385825>
- Fenway Health. (2022). *Mission & history*. Accessed 21 Nov 2022. <https://fenwayhealth.org/about/history/>
- Flentje, A., Bacca, C. L., & Cochran, B. N. (2015). Missing data in substance abuse research? Researchers' reporting practices of sexual orientation and gender identity. *Drug and Alcohol Dependence, 147*, 280–284. <https://doi.org/10.1016/j.drugalcdep.2014.11.012>
- Flentje, A., Livingston, N. A., & Sorensen, J. L. (2016). Meeting the needs of lesbian, gay, and bisexual clients in substance abuse treatment. *Counselor (Deerfield Beach), 17*(3), 54–59.
- Flores, J. M., Santos, G. M., Makofane, K., Arreola, S., & Ayala, G. (2017). Availability and use of substance abuse treatment programs among substance-using men who have sex with men worldwide. *Substance Use & Misuse, 52*(5), 666–673. <https://doi.org/10.1080/10826084.2016.1253744>
- Fontanari, A. M., Pase, P. F., Churchill, S., Soll, B. M., Schwarz, K., Schneider, M. A., et al. (2019). Dealing with gender-related and general stress: Substance use among Brazilian transgender youth. *Addictive Behaviors Reports, 9*, 100166. <https://doi.org/10.1016/j.abrep.2019.100166>
- Ford, J. A., & Jasinski, J. L. (2006). Sexual orientation and substance use among college students. *Addictive Behaviors, 31*(3), 404–413. <https://doi.org/10.1016/j.addbeh.2005.05.019>
- Fox, R. (2013). *Current research on bisexuality*. Routledge.
- Frederick, T. (2014). Diversity at the margins: The interconnections between homelessness, sex work, mental health, and substance use in the lives of sexual minority homeless young people. In *Handbook of LGBT communities, crime, and justice* (pp. 473–501). Springer.
- Fredriksen-Goldsen, K. I., Kim, H. J., Barkan, S. E., Muraco, A., & Hoy-Ellis, C. P. (2013). Health disparities among lesbian, gay, and bisexual older adults: Results from a population-based study. *American Journal of Public Health, 103*(10), 1802–1809. <https://doi.org/10.2105/AJPH.2012.301110>
- Friedman, S. R., Ompad, D. C., Maslow, C., Young, R., Case, P., Hudson, S. M., et al. (2003). HIV prevalence, risk behaviors, and high-risk sexual and injection networks among young women injectors who have sex with women. *American Journal of Public Health, 93*(6), 902–906. <https://doi.org/10.2105/ajph.93.6.902>
- Frisch, M., Smith, E., Grulich, A., & Johansen, C. (2003). Cancer in a population-based cohort of men and women in registered homosexual partnerships. *American Journal of Epidemiology, 157*(11), 966–972. <https://doi.org/10.1093/aje/kwg067>
- Garofalo, R., Deleon, J., Osmer, E., Doll, M., & Harper, G. W. (2006). Overlooked, misunderstood and at-risk: Exploring the lives and HIV risk of ethnic minority male-to-female transgender youth. *Journal of Adolescent Health, 38*(3), 230–236. <https://doi.org/10.1016/j.jadohealth.2005.03.023>
- Girouard, M. P. (2018). *Addressing opioid use disorder among LGBTQ populations*. National LGBT Health Education Center, The Fenway Institute. <https://www.lgbtqiahealtheducation.org/wp-content/uploads/2018/06/OpioidUseAmongLGBTQPopulations.pdf>
- Girouard, M. P., Goldhammer, H., & Keuroghlian, A. S. (2019). Understanding and treating opioid use disorders in lesbian, gay, bisexual, transgender, and queer populations. *Substance Abuse, 40*(3), 335–330. <https://doi.org/10.1080/08897077.2018.1544963>
- Glynn, T. R., & van den Berg, J. J. (2017). A systematic review of interventions to reduce problematic substance use among transgender individuals: A call to action. *Transgender Health, 2*(1), 45–59. <https://doi.org/10.1089/trgh.2016.0037>
- Goldbach, J. T., Tanner-Smith, E. E., Bagwell, M., & Dunlap, S. (2014). Minority stress and substance use in sexual minority adolescents: A meta-analysis. *Prevention Science, 15*(3), 350–363. <https://doi.org/10.1007/s1121-013-0393-7>
- Gonzales, G., Przedworski, J., & Henning-Smith, C. (2016). Comparison of health and health risk factors between lesbian, gay, and bisexual adults and heterosexual adults in the United

- States: Results from the National Health Interview Survey. *JAMA Internal Medicine*, 176(9), 1344–1351. <https://doi.org/10.1001/jamainternmed.2016.3432>
- Gonzalez, A., Mimiaga, M. J., Israel, J., Bedoya, C. A., & Safren, S. A. (2013). Substance use predictors of poor medication adherence: The role of substance use coping among HIV-infected patients in opioid dependence treatment. *AIDS and Behavior*, 17(1), 168–173. <https://doi.org/10.1007/s10461-012-0319-6>
- Graham, R., Berkowitz, B., Blum, R., Bockting, W., Bradford, J., de Vries, B., & Makadon, H. (2011). *The health of lesbian, gay, bisexual, and transgender people: Building a foundation for better understanding*. Institute of Medicine.
- Grant, J., Mottet, L., Tanis, J., Herman, J.L., Harrison, J., & Keisling, M. (2010). *National transgender discrimination survey report on health and health care: Findings of a study by the National Center for Transgender Equality and the National Gay and Lesbian Task Force*. Accessed 20 Nov 2022. https://cancer-network.org/wp-content/uploads/2017/02/National_Transgender_Discrimination_Survey_Report_on_health_and_health_care.pdf
- Green, K. E., & Feinstein, B. A. (2012). Substance use in lesbian, gay, and bisexual populations: An update on empirical research and implications for treatment. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 26(2), 265–278. <https://doi.org/10.1037/a0025424>
- Green, A. I., & Halkitis, P. N. (2006). Crystal methamphetamine and sexual sociality in an urban gay subculture: An elective affinity. *Culture, Health & Sexuality*, 8(4), 317–333. <https://doi.org/10.1080/13691050600783320>
- Greenwood, G. L., & Gruskin, E. P. (2007). LGBT tobacco and alcohol disparities. In *The health of sexual minorities* (pp. 566–583). Springer.
- Gruskin, E. P., & Gordon, N. (2006). Gay/lesbian sexual orientation increases risk for cigarette smoking and heavy drinking among members of a large Northern California health plan. *BMC Public Health*, 6, 241. <https://doi.org/10.1186/1471-2458-6-241>
- Gruskin, E. P., Greenwood, G. L., Matevia, M., Pollack, L. M., & Bye, L. L. (2007). Disparities in smoking between the lesbian, gay, and bisexual population and the general population in California. *American Journal of Public Health*, 97(8), 1496–1502. <https://doi.org/10.2105/AJPH.2006.090258>
- Hahn, J. A., Woolf-King, S. E., & Muyindike, W. (2011). Adding fuel to the fire: Alcohol's effect on the HIV epidemic in Sub-Saharan Africa. *Current HIV/AIDS Report*, 8(3), 172–180. <https://doi.org/10.1007/s11904-011-0088-2>
- Halkitis, P. N., & Palamar, J. J. (2008). Multivariate modeling of club drug use initiation among gay and bisexual men. *Substance Use & Misuse*, 43(7), 871–879. <https://doi.org/10.1080/10826080701801337>
- Halkitis, P. N., & Parsons, J. T. (2002). Recreational drug use and HIV-risk sexual behavior among men frequenting gay social venues. *Journal of Gay & Lesbian Social Services: Issues in Practice, Policy & Research*, 14(4), 19–38. https://doi.org/10.1300/J041v14n04_02
- Hansen, E. K., Samuelsen, A., Poulsen, S. P., Mikkelsen, B., Ammitzboll-Bille, S. E., Tornaes, U., Poulsen, T. L., Stojberg, I., Norby, E. T., Mercado, M., Riisager, M., Bock, M., & Ahlers, T. (2018). *Action plan to promote security, well-being, and equal opportunities for LGBTI people*. Ministry of Foreign Affairs of Denmark.
- Harawa, N. T., Sweat, J., George, S., & Sylla, M. (2010). Sex and condom use in a large jail unit for men who have sex with men (MSM) and male-to-female transgenders. *Journal of Health Care for the Poor and Underserved*, 21(3). <https://doi.org/10.1353/hpu.0.0349>
- Hattingh, C., & Bruwer, J. P. (2020). Cape Town's gay village: From “gaytrified” tourism Mecca to “heterosexualised” urban space. *International Journal of Tourism Cities*. <https://doi.org/10.1108/IJTC-10-2019-0193>
- Hellem, T. L., Lundberg, K. J., & Renshaw, P. F. (2015). A review of treatment options for co-occurring methamphetamine use disorders and depression. *Journal of Addictions Nursing*, 26(1), 14–23. <https://doi.org/10.1097/JAN.0000000000000058>

- Hess, K. L., Chavez, P. R., Kanny, D., DiNenno, E., Lansky, A., Paz-Bailey, G., & NHBS Study Group. (2015). Binge drinking and risky sexual behavior among HIV-negative and unknown HIV status men who have sex with men, 20 US cities. *Drug and Alcohol Dependence*, 147, 46–52. <https://doi.org/10.1016/j.drugalcdep.2014.12.013>
- Hidaka, Y., Ichikawa, S., Koyano, J., Urao, M., Yasuo, T., Kimura, H., et al. (2006). Substance use and sexual behaviours of Japanese men who have sex with men: A nationwide internet survey conducted in Japan. *BMC Public Health*, 6, 239. <https://doi.org/10.1186/1471-2458-6-239>
- Hiransuthikul, A., Janamnuaysook, R., Sungsing, T., Jantarapakde, J., Trachunthong, D., Mills, S., Vannakit, R., Phanuphak, P., & Phanuphak, N. (2019). High burden of chlamydia and gonorrhoea in pharyngeal, rectal, and urethral sites among Thai transgender women: Implications for anatomical site selection for the screening of STI. *Sexually Transmitted Infections*, 95(7), 534–539. <https://doi.org/10.1136/sextrans-2018-053835>
- Hoetger, C., Rabinovitch, A. E., Henry, R. S., Aguayo Arellis, A., Rabago Barajas, B. V., & Perrin, P. B. (2020). Characterizing substance use in a sample of lesbian, gay, bisexual, and transgender adults in Mexico. *Journal of Addictive Diseases*, 39(1), 96–104. <https://doi.org/10.1080/10550887.2020.1826102>
- Hoffman, B. R. (2014). The interaction of drug use, sex work, and HIV among transgender women. *Substance Use & Misuse*, 49(8), 1049–1053. <https://doi.org/10.3109/10826084.2013.855787>
- Holl, J., Wolff, S., Schumacher, M., Höcker, A., Arens, E. A., Spindler, G., et al. (2017). Substance use to regulate intense posttraumatic shame in individuals with childhood abuse and neglect. *Development and Psychopathology*, 29(3), 737–749. <https://doi.org/10.1017/S0954579416000432>
- Homer, B. D., Solomon, T. M., Moeller, R. W., Mascia, A., DeRaleau, L., & Halkitis, P. N. (2008). Methamphetamine abuse and impairment of social functioning: A review of the underlying neurophysiological causes and behavioral implications. *Psychological Bulletin*, 134(2), 301–310. <https://doi.org/10.1037/0033-2909.134.2.301>
- Homma, Y., Saewyc, E., & Zumbo, B. D. (2016). Is it getting better? An analytical method to test trends in health disparities, with tobacco use among sexual minority vs. heterosexual youth as an example. *International Journal for Equity in Health*, 15, 79. <https://doi.org/10.1186/s12939-016-0371-3>
- Horvath, K. J., Iantaffi, A., Swinburne-Romine, R., & Bockting, W. (2014). A comparison of mental health, substance use, and sexual risk behaviors between rural and non-rural transgender persons. *Journal of Homosexuality*, 61(8), 1117–1130. <https://doi.org/10.1080/00918369.2014.872502>
- Hotton, A. L., Garofalo, R., Kuhns, L. M., & Johnson, A. K. (2013). Substance use as a mediator of the relationship between life stress and sexual risk among young transgender women. *AIDS Education and Prevention*, 25(1), 62–71. <https://doi.org/10.1521/aeap.2013.25.1.62>
- Hughes, T. L. (2003). Lesbians' drinking patterns: Beyond the data. *Substance Use & Misuse*, 38(11–13), 1739–1758. <https://doi.org/10.1081/ja-120024239>
- Hughes, T. L., & Eliason, M. (2002). Substance use and abuse in lesbian, gay, bisexual, and transgender populations. *Journal of Primary Prevention*, 22(3), 263–298. <https://doi.org/10.1023/a:1013669705086>
- Hughes, T. L., Johnson, T. P., Wilsnack, S. C., & Szalacha, L. A. (2007). Childhood risk factors for alcohol abuse and psychological distress among adult lesbians. *Child Abuse & Neglect*, 31(7), 769–789. <https://doi.org/10.1016/j.chiabu.2006.12.014>
- Hughes, T. L., Szalacha, L. A., & McNair, R. (2010). Substance abuse and mental health disparities: Comparisons across sexual identity groups in a national sample of young Australian women. *Social Science & Medicine*, 71(4), 824–831. <https://doi.org/10.1016/j.socscimed.2010.05.009>
- Hughes, T. L., Wilsnack, S. C., & Kantor, L. W. (2016). The influence of gender and sexual orientation on alcohol use and alcohol-related problems: Toward a global perspective. *Alcohol Research: Current Reviews*, 38(1), 121–132.

- Hughes, T. L., Veldhuis, C. B., Drabble, L. A., & Wilsnack, S. C. (2020). Research on alcohol and other drug (AOD) use among sexual minority women: A global scoping review. *PLoS One*, *15*(3), e0229869. <https://doi.org/10.1371/journal.pone.0229869>
- Hughto, J. M., Reisner, S. L., Kershaw, T. S., Altice, F. L., Biello, K. B., Mimiaga, M. J., et al. (2018). A multisite, longitudinal study of risk factors for incarceration and impact on mental health and substance use among young transgender women in the USA. *Journal of Public Health*, *41*(1), 100–109. <https://doi.org/10.1093/pubmed/fdy031>
- Hunter, L. J., Dargan, P. I., Benzie, A., White, J. A., & Wood, D. M. (2014). Recreational drug use in men who have sex with men (MSM) attending UK sexual health services is significantly higher than in non-MSM. *Postgraduate Medical Journal*, *90*(1061), 133–138. <https://doi.org/10.1136/postgradmedj-2012-131428>
- Hurley, M., & Prestage, G. (2009). Intensive sex partying amongst gay men in Sydney. *Culture, Health & Sexuality*, *11*(6), 597–610. <https://doi.org/10.1080/13691050902721853>
- Hyde, Z., Doherty, M., Tilley, P. J., McCaul, K. A., Rooney, R., & Jancey, J. (2013). *The first Australian national trans mental health study: Summary of results*. Curtin University. https://d3n8a8pro7vhmxc.cloudfront.net/lgbtihealth/pages/600/attachments/original/1587965652/bw0288_the-first-australian-national-trans-mental-health-study%2D%2D-summary-of-results.pdf?1587965652
- International Lesbian, Gay, Bisexual, Trans, and Intersex Association. (2019). *State-sponsored homophobia 2019*. ILGA.
- Irwin, T. W., Morgenstern, J., Parsons, J. T., Wainberg, M., & Labouvie, E. (2006). Alcohol and sexual HIV risk behavior among problem drinking men who have sex with men: An event level analysis of timeline followback data. *AIDS and Behavior*, *10*(3), 299–307. <https://doi.org/10.1007/s10461-005-9045-7>
- Iversen, J., Dolan, K., Ezard, N., & Maher, L. (2015). HIV and hepatitis C virus infection and risk behaviors among heterosexual, bisexual, and lesbian women who inject drugs in Australia. *LGBT Health*, *2*(2), 127–134. <https://doi.org/10.1089/lgbt.2014.0116>
- Johnson, C. V., Mimiaga, M. J., & Bradford, J. (2008). Health care issues among lesbian, gay, bisexual, transgender and intersex (LGBTI) populations in the United States: Introduction. *Journal of Homosexuality*, *54*(3), 213–224. <https://doi.org/10.1080/00918360801982025>
- Johnston, L. G., Holman, A., Dahoma, M., Miller, L. A., Kim, E., Mussa, M., et al. (2010). HIV risk and the overlap of injecting drug use and high-risk sexual behaviours among men who have sex with men in Zanzibar (Unguja), Tanzania. *International Journal of Drug Policy*, *21*(6), 485–492. <https://doi.org/10.1016/j.drugpo.2010.06.001>
- Jürgens, R., Ball, A., & Verster, A. (2009). Interventions to reduce HIV transmission related to injecting drug use in prison. *The Lancet: Infectious Diseases*, *9*(1), 57–66. [https://doi.org/10.1016/S1473-3099\(08\)70305-0](https://doi.org/10.1016/S1473-3099(08)70305-0)
- Kalichman, S. C., Simbayi, L. C., Kaufman, M., Cain, D., & Jooste, S. (2007). Alcohol use and sexual risks for HIV/AIDS in sub-Saharan Africa: Systematic review of empirical findings. *Prevention Science*, *8*(2), 141–151. <https://doi.org/10.1007/s11121-006-0061-2>
- Khan, M. R., McGinnis, K. A., Grov, C., Scheidell, J. D., Hawks, L., Edelman, E. J., et al. (2019). Past year and prior incarceration and HIV transmission risk among HIV-positive men who have sex with men in the US. *AIDS Care*, *31*(3), 349–356. <https://doi.org/10.1080/09540121.2018.1499861>
- Kim, H. J., & Fredriksen-Goldsen, K. I. (2012). Hispanic lesbians and bisexual women at heightened risk for [corrected] health disparities. *American Journal of Public Health*, *102*(1), e9–e15. <https://doi.org/10.2105/AJPH.2011.300378>
- King, M., Semlyen, J., Tai, S. S., Killaspy, H., Osborn, D., Popelyuk, D., et al. (2008). A systematic review of mental disorder, suicide, and deliberate self-harm in lesbian, gay and bisexual people. *BMC Psychiatry*, *8*(1), 70. <https://doi.org/10.1186/1471-244X-8-70>
- King, R., Barker, J., Nakayiwa, S., Katuntu, D., Lubwama, G., Bagenda, D., et al. (2013). Men at risk: A qualitative study on HIV risk, gender identity and violence among men who have

- sex with men who report high risk behavior in Kampala, Uganda. *PLoS One*, 8(12), e82937. <https://doi.org/10.1371/journal.pone.0082937>
- Kipke, M. D., Weiss, G., & Wong, C. F. (2007). Residential status as a risk factor for drug use and HIV risk among young men who have sex with men. *AIDS and Behavior*, 11(6 Suppl), 56–69. <https://doi.org/10.1007/s10461-006-9204-5>
- Knight, C., & Wilson, K. (2016). LGBT people as offenders within the criminal justice system. In *Lesbian, gay, bisexual and trans people (LGBT) and the criminal justice system* (pp. 85–111). Springer.
- Koblin, B. A., Chesney, M. A., Husnik, M. J., Bozeman, S., Celum, C. L., Buchbinder, S., et al. (2003). High-risk behaviors among men who have sex with men in 6 US cities: Baseline data from the EXPLORE study. *American Journal of Public Health*, 93(6), 926–932. <https://doi.org/10.2105/ajph.93.6.926>
- Lambert, G., Cox, J., Hottes, T., Tremblay, C., Frigault, L., Alary, M., et al. (2011). Correlates of unprotected anal sex at last sexual episode: Analysis from a surveillance study of men who have sex with men in Montreal. *AIDS and Behavior*, 15(3), 584–595. <https://doi.org/10.1007/s10461-009-9605-3>
- Lea, T., de Wit, J., & Reynolds, R. (2014). Minority stress in lesbian, gay, and bisexual young adults in Australia: Associations with psychological distress, suicidality, and substance use. *Archives of Sexual Behavior*, 43(8), 1571–1578. <https://doi.org/10.1007/s10508-014-0266-6>
- Lee, J., & Hahm, H. C. (2012). HIV risk, substance use, and suicidal behaviors among Asian American lesbian and bisexual women. *AIDS Education and Prevention*, 24(6), 549–563. <https://doi.org/10.1521/aeap.2012.24.6.549>
- Lee, J. G., Matthews, A. K., McCullen, C. A., & Melvin, C. L. (2014). Promotion of tobacco use cessation for lesbian, gay, bisexual, and transgender people: A systematic review. *American Journal of Preventive Medicine*, 47(6), 823–831. <https://doi.org/10.1016/j.amepre.2014.07.051>
- Lehavot, K., & Simoni, J. M. (2011). The impact of minority stress on mental health and substance use among sexual minority women. *Journal of Consulting and Clinical Psychology*, 79(2), 159–170. <https://doi.org/10.1037/a0022839>
- Lewis, R. J., Milletich, R. J., Kelley, M. L., & Woody, A. (2012). Minority stress, substance use, and intimate partner violence among sexual minority women. *Aggression and Violent Behavior*, 17(3), 247–256. <https://doi.org/10.1016/j.avb.2012.02.004>
- Lewis, R. J., Mason, T. B., Winstead, B. A., Gaskins, M., & Irons, L. B. (2016). Pathways to hazardous drinking among racially and socioeconomically diverse lesbian women: Sexual minority stress, rumination, social isolation, and drinking to cope. *Psychology of Women Quarterly*, 40(4), 564–581. <https://doi.org/10.1177/0361684316662603>
- Li, J., Ha, T. H., Zhang, C., & Liu, H. (2010). The Chinese government's response to drug use and HIV/AIDS: A review of policies and programs. *Harm Reduction Journal*, 7(4), 1–6. <https://doi.org/10.1186/1477-7517-7-4>
- Li, Y., Jiang, Y., Zhang, M., Yin, P., Wu, F., & Zhao, W. (2011). Drinking behaviour among men and women in China: The 2007 China chronic disease and risk factor surveillance. *Addiction*, 106(11), 1946–1956. <https://doi.org/10.1111/j.1360-0443.2011.03514.x>
- Li, L., Zhou, C., Li, X., Wang, X., & Wu, Z. (2021). Psychoactive substances use in men who have sex with men in China: An internet-based survey. *Zhonghua Liu Xing Bing Xue Za Zhi*, 42(4), 690–694. <https://doi.org/10.3760/cma.j.cn112338-20200615-00842>
- Lian, Q., Zuo, X., Lou, C., Gao, E., & Cheng, Y. (2015). Sexual orientation and smoking history: Results from a community-based sample of youth in Shanghai, China. *Environmental Health and Preventive Medicine*, 20(3), 179–184. <https://doi.org/10.1007/s12199-015-0444-8>
- Liao, M., Kang, D., Jiang, B., Tao, X., Qian, Y., Wang, T., et al. (2011). Bisexual behavior and infection with HIV and syphilis among men who have sex with men along the east coast of China. *AIDS Patient Care and STDs*, 25(11), 683–691. <https://doi.org/10.1089/apc.2010.0371>
- Liao, M., Kang, D., Tao, X., Bouey, J. H., Aliyu, M. H., Qian, Y., et al. (2014). Alcohol use, stigmatizing/discriminatory attitudes, and HIV high-risk sexual behaviors among men who have sex with men in China. *BioMed Research International*, 2014, 143738. <https://doi.org/10.1155/2017/143738>

- Lim, F. A., Brown, D. V., Jr., & Kim, S. M. (2014). Addressing health care disparities in the lesbian, gay, bisexual, and transgender population: A review of best practices. *The American Journal of Nursing*, *114*(6), 24–34. <https://doi.org/10.1097/01.NAJ.0000450423.89759.36>
- Ling, W., Chang, L., Hillhouse, M., Ang, A., Striebel, J., Jenkins, J., et al. (2014a). Sustained-release methylphenidate in a randomized trial of treatment of methamphetamine use disorder. *Addiction*, *109*(9), 1489–1500. <https://doi.org/10.1111/add.12608>
- Ling, W., Mooney, L., & Haglund, M. (2014b). Treating methamphetamine abuse disorder: Experience from research and practice. *Current Psychiatry*, *13*(9), 36–42.
- Liu, Y., Ruan, Y., Strauss, S. M., Yin, L., Liu, H., Amico, K. R., Zhang, C., Shao, Y., Qian, H. Z., & Vermund, S. H. (2016). Alcohol misuse, risky sexual behaviors, and HIV or syphilis infections among Chinese men who have sex with men. *Drug and Alcohol Dependence*, *168*, 239–246. <https://doi.org/10.1016/j.drugalcdep.2016.09.020>
- Liu, L., Chui, W. H., & Chai, X. (2018a). A qualitative study of methamphetamine initiation among Chinese male users: Patterns and policy implications. *International Journal of Drug Policy*, *62*, 37–42. <https://doi.org/10.1016/j.drugpo.2018.08.017>
- Liu, P., Song, R., Zhang, Y., Liu, C., Cai, B., Liu, X., et al. (2018b). Educational and behavioral counseling in a methadone maintenance treatment program in China: A randomized controlled trial. *Frontiers in Psychiatry*, *9*, 113. <https://doi.org/10.3389/fpsy.2018.00113>
- Lu, H., Han, Y., He, X., Sun, Y., Li, G., Li, X., et al. (2013). Alcohol use and HIV risk taking among Chinese MSM in Beijing. *Drug and Alcohol Dependence*, *133*(2), 317–323. <https://doi.org/10.1016/j.drugalcdep.2013.06.013>
- Luo, W., Hong, H., Wang, X., McGoogan, J. M., Rou, K., & Wu, Z. (2018). Synthetic drug use and HIV infection among men who have sex with men in China: A sixteen-city, cross-sectional survey. *PLoS One*, *13*(7), e0200816. <https://doi.org/10.1371/journal.pone.0200816>
- Lyons, T., Shannon, K., Pierre, L., Small, W., Krüsi, A., & Kerr, T. (2015). A qualitative study of transgender individuals' experiences in residential addiction treatment settings: Stigma and inclusivity. *Substance Abuse Treatment, Prevention, and Policy*, *10*(1), 17. <https://doi.org/10.1186/s13011-015-0015-4>
- MacCarthy, S., Reisner, S. L., Nunn, A., Perez-Brumer, A., & Operario, D. (2015). The time is now: Attention increases to transgender health in the United States but scientific knowledge gaps remain. *LGBT Health*, *2*(4), 287–291. <https://doi.org/10.1089/lgbt.2014.0073>
- Machalek, D. A., Poynten, M., Jin, F., Fairley, C. K., Farnsworth, A., Garland, S. M., et al. (2012). Anal human papillomavirus infection and associated neoplastic lesions in men who have sex with men: A systematic review and meta-analysis. *The Lancet Oncology*, *13*(5), 487–500. [https://doi.org/10.1016/S1470-2045\(12\)70080-3](https://doi.org/10.1016/S1470-2045(12)70080-3)
- Manalastas, E. J. (2012). Cigarette smoking among lesbian, gay, and bisexual Filipino youth: Findings from a national sample. *Silliman Journal*, *53*(1), 71–87.
- Marshal, M. P., Friedman, M. S., Stall, R., King, K. M., Miles, J., Gold, M. A., et al. (2008). Sexual orientation and adolescent substance use: A meta-analysis and methodological review. *Addiction*, *103*(4), 546–556. <https://doi.org/10.1111/j.1360-0443.2008.02149.x>
- Marshal, M. P., Dietz, L. J., Friedman, M. S., Stall, R., Smith, H. A., McGinley, J., Thoma, B. C., Murray, P. J., D'Augelli, A. R., & Brent, D. A. (2011). Suicidality and depression disparities between sexual minority and heterosexual youth: A meta-analytic review. *The Journal of Adolescent Health*, *49*(2), 115–123. <https://doi.org/10.1016/j.jadohealth.2011.02.005>
- Matthews, A. K., Li, C. C., Kuhns, L. M., Tasker, T. B., & Cesarino, J. A. (2013). Results from a community-based smoking cessation treatment program for LGBT smokers. *Journal of Environmental and Public Health*, *2013*, 984508. <https://doi.org/10.1155/2013/984508>
- Mazaheri Meybodi, A., Hajebi, A., & Ghanbari Jolfaei, A. (2014). Psychiatric axis I comorbidities among patients with gender dysphoria. *Psychiatry Journal*, *2014*, 971814. <https://doi.org/10.1155/2014/971814>
- McAdams-Mahmoud, A., Stephenson, R., Rentsch, C., Cooper, H., Arriola, K. J., Jobson, G., et al. (2014). Minority stress in the lives of men who have sex with men in Cape Town, South Africa. *Journal of Homosexuality*, *61*(6), 847–867. <https://doi.org/10.1080/00918369.2014.870454>

- McCabe, S. E., Bostwick, W. B., Hughes, T. L., West, B. T., & Boyd, C. J. (2010). The relationship between discrimination and substance use disorders among lesbian, gay, and bisexual adults in the United States. *American Journal of Public Health, 100*(10), 1946–1952. <https://doi.org/10.2105/AJPH.2009.163147>
- McCabe, S. E., West, B. T., Hughes, T. L., & Boyd, C. J. (2013). Sexual orientation and substance abuse treatment utilization in the United States: Results from a national survey. *Journal of Substance Abuse Treatment, 44*(1), 4–12. <https://doi.org/10.1016/j.jsat.2012.01.007>
- McCarthy, E., Myers, J. J., Reeves, K., & Zack, B. (2016). Understanding the syndemic connections between HIV and incarceration among African American men, especially African American men who have sex with men. In *Understanding the HIV/AIDS epidemic in the United States* (pp. 217–240). Springer.
- McCauley, E., & Brinkley-Rubinstein, L. (2017). Institutionalization and incarceration of LGBT individuals. In *Trauma, resilience, and health promotion in LGBT patients* (pp. 149–161). Springer.
- McDermott, E., Roen, K., & Scourfield, J. (2008). Avoiding shame: Young LGBT people, homophobia, and self-destructive behaviours. *Culture, Health & Sexuality, 10*(8), 815–829. <https://doi.org/10.1080/13691050802380974>
- McDonell, M. G., Srebnik, D., Angelo, F., McPherson, S., Lowe, J. M., Sugar, A., et al. (2013). A randomized controlled trial of contingency management for stimulant use in community mental health patients with serious mental illness. *The American Journal of Psychiatry, 170*(1), 94–101. <https://doi.org/10.1176/appi.ajp.2012.11121831>
- McKetin, R., Kozel, N., Douglas, J., Ali, R., Vicknasingam, B., Lund, J., & Li, J. H. (2008). The rise of methamphetamine in southeast and East Asia. *Drug and Alcohol Review, 27*(3), 220–228. <https://doi.org/10.1080/09595230801923710>
- Medley, G., Lipari, R. N., Bose, J., Cribb, D. S., Kroutil, L. A., & McHenry, G. (2016). *Sexual orientation and estimates of adult substance use and mental health: Results from the 2015 National Survey on Drug Use and Health*. SAMHSA.
- Mereish, E. H., O’Cleirigh, C., & Bradford, J. B. (2014). Interrelationships between LGBT-based victimization, suicide, and substance use problems in a diverse sample of sexual and gender minorities. *Psychology, Health & Medicine, 19*(1), 1–13. <https://doi.org/10.1080/1354856.2013.780129>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Mimiaga, M. J., Mayer, K. H., Reisner, S. L., Gonzalez, A., Dumas, B., Vanderwarker, R., Novak, D. S., & Bertrand, T. (2008a). Asymptomatic gonorrhea and chlamydial infections detected by nucleic acid amplification tests among Boston area men who have sex with men. *Sexually Transmitted Diseases, 35*(5), 495–498. <https://doi.org/10.1097/OLQ.0b013e31816471ae>
- Mimiaga, M. J., Reisner, S. L., Vanderwarker, R., Gaucher, M. J., O’Connor, C. A., Medeiros, M. S., & Safren, S. A. (2008b). Polysubstance use and HIV/STD risk behavior among Massachusetts men who have sex with men accessing Department of Public Health mobile van services: Implications for intervention development. *AIDS Patient Care and STDs, 22*(9), 745–751. <https://doi.org/10.1089/apc.2007.0243>
- Mimiaga, M. J., Fair, A. D., Mayer, K. H., Koenen, K., Gortmaker, S., Tetu, A. M., et al. (2008c). Experiences and sexual behaviors of HIV-infected MSM who acquired HIV in the context of crystal methamphetamine use. *AIDS Education and Prevention, 20*(1), 30–41. <https://doi.org/10.1521/aeap.2008.20.1.30>
- Mimiaga, M. J., Reisner, S. L., Fontaine, Y. M., Bland, S. E., Driscoll, M. A., Isenberg, D., et al. (2010). Walking the line: Stimulant use during sex and HIV risk behavior among Black urban MSM. *Drug and Alcohol Dependence, 110*(1–2), 30–37. <https://doi.org/10.1016/j.drugalcdep.2010.01.017>

- Mimiaga, M., Thomas, B., Mayer, K., Reisner, S., Menon, S., Swaminathan, S., et al. (2011). Alcohol use and HIV sexual risk among MSM in Chennai, India. *International Journal of STD & AIDS*, 22(3), 121–125. <https://doi.org/10.1258/ijsa.2009.009059>
- Mimiaga, M. J., Biello, K. B., Robertson, A. M., Oldenburg, C. E., Rosenberger, J. G., O’Cleirigh, C., et al. (2015). High prevalence of multiple syndemic conditions associated with sexual risk behavior and HIV infection among a large sample of Spanish-and Portuguese-speaking men who have sex with men in Latin America. *Archives of Sexual Behavior*, 44(7), 1869–1878. <https://doi.org/10.1007/s10508-015-0488-2>
- Mimiaga, M. J., Pantalone, D. W., Biello, K. B., Glynn, T. R., Santostefano, C. M., Olson, J., Pardee, D. J., Hughto, J., Garcia Valles, J., Carrico, A. W., Mayer, K. H., & Safren, S. A. (2018). A randomized controlled efficacy trial of behavioral activation for concurrent stimulant use and sexual risk for HIV acquisition among MSM: Project IMPACT study protocol. *BMC Public Health*, 18(1), 914. <https://doi.org/10.1186/s12889-018-5856-0>
- Mimiaga, M. J., Pantalone, D. W., Biello, K. B., Hughto, J., Frank, J., O’Cleirigh, C., Reisner, S. L., Restar, A., Mayer, K. H., & Safren, S. A. (2019). An initial randomized controlled trial of behavioral activation for treatment of concurrent crystal methamphetamine dependence and sexual risk for HIV acquisition among men who have sex with men. *AIDS Care*, 31(9), 1083–1095. <https://doi.org/10.1080/09540121.2019.1595518>
- Moore, B. A., Fiellin, D. A., Cutter, C. J., Buono, F. D., Barry, D. T., Fiellin, L. E., et al. (2016). Cognitive behavioral therapy improves treatment outcomes for prescription opioid users in primary care buprenorphine treatment. *Journal of Substance Abuse Treatment*, 71, 54–57. <https://doi.org/10.1016/j.jsat.2016.08.016>
- Morgan, E., Feinstein, B. A., & Dyar, C. (2020). Disparities in prescription opioid misuse affecting sexual minority adults are attenuated by depression and suicidal ideation. *LGBT Health*, 7(8), 431–438. <https://doi.org/10.1089/lgbt.2020.0220>
- Morineau, G., Nugrahini, N., Riono, P., Nurhayati, Girault, P., Mustikawati, D. E., & Magnani, R. (2011). Sexual risk taking, STI and HIV prevalence among men who have sex with men in six Indonesian cities. *AIDS Behavior*, 15(5), 1033–1044. <https://doi.org/10.1007/s10461-009-9590-6>
- Muller, A., & Hughes, T. L. (2016). Making the invisible visible: A systematic review of sexual minority women’s health in Southern Africa. *BMC Public Health*, 16, 307. <https://doi.org/10.1186/s12889-016-2980-6>
- Muraguri, N., Tun, W., Okal, J., Broz, D., Raymond, H. F., Kellogg, T., et al. (2015). HIV and STI prevalence and risk factors among male sex workers and other men who have sex with men in Nairobi, Kenya. *Journal of Acquired Immune Deficiency Syndrome*, 68(1), 91–96. <https://doi.org/10.1097/QAI.0000000000000368>
- Nala, R., Cummings, B., Horth, R., Inguane, C., Benedetti, M., Chissano, M., et al. (2015). Men who have sex with men in Mozambique: Identifying a hidden population at high-risk for HIV. *AIDS Behavior*, 19(2), 393–404. <https://doi.org/10.1007/s10461-014-0895-8>
- Needham, B. L. (2012). Sexual attraction and trajectories of mental health and substance use during the transition from adolescence to adulthood. *Journal of Youth and Adolescence*, 41(2), 179–190. <https://doi.org/10.1007/s10964-011-9729-4>
- Nehl, E. J., Wong, F. Y., He, N., Huang, Z. J., & Zheng, T. (2012). Prevalence and correlates of alcohol use among a sample of general MSM and money boys in Shanghai, China. *AIDS Care*, 24(3), 324–330. <https://doi.org/10.1080/09540121.2011.608792>
- National Academies of Sciences, Engineering, and Medicine; Health and Medicine Division; Board on Population Health and Public Health Practice; Committee on the Health Effects of Marijuana: An Evidence Review and Research Agenda. The Health Effects of Cannabis and Cannabinoids: The Current State of Evidence and Recommendations for Research. Washington (DC): National Academies Press (US); 2017 Jan 12. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK423845/doi:10.17226/24625>

- Newland, J., & Kelly-Hanku, A. (2021). *A qualitative scoping review of sexualized drug use (including Chemsex) of men who have sex with men and transgender women in Asia*. APCOM. http://fileserver.idpc.net/library/Report_SDU-in-Asia_20210202_v6.pdf
- Newman, P. A., Lee, S. J., Roungrakphon, S., & Tepjan, S. (2012). Demographic and behavioral correlates of HIV risk among men and transgender women recruited from gay entertainment venues and community-based organizations in Thailand: Implications for HIV prevention. *Prevention Science, 13*(5), 483–492. <https://doi.org/10.1007/s11121-012-0275-4>
- NIDA. (2012). *Commonly abused drugs*. Accessed 1 July 2019. <https://www.drugabuse.gov/sites/default/files/cadchart.pdf>
- NIDA. (2017). *Substance use and SUDs in LGBT populations*. Accessed 1 July 2019. <https://www.drugabuse.gov/related-topics/substance-use-suds-in-lgbt-populations>
- NIDA. (2018a). *Drugs, brains, and behavior: The science of addiction*. Accessed 1 July 2019. <https://www.drugabuse.gov/publications/drugs-brains-behavior-science-addiction>
- NIDA. (2018b). *Principles of drug addiction treatment: A research-based guide* (3rd, ed). Accessed 1 July 2019. <https://www.drugabuse.gov/publications/principles-drug-addiction-treatment-research-based-guide-third-edition>
- Nuttbrock, L., Bockting, W., Rosenblum, A., Hwahng, S., Mason, M., Macri, M., & Becker, J. (2014). Gender abuse, depressive symptoms, and substance use among transgender women: A 3-year prospective study. *American Journal of Public Health, 104*(11), 2199–2206. <https://doi.org/10.2105/AJPH.2014.302106>
- Nyamathi, A., Reback, C. J., Shoptaw, S., Salem, B. E., Zhang, S., & Yadav, K. (2015). Impact of tailored interventions to reduce drug use and sexual risk behaviors among homeless gay and bisexual men. *American Journal of Men's Health, 11*(2), 208–220. <https://doi.org/10.1177/1557988315590837>
- Nyoni, J. E., & Ross, M. W. (2013). Condom use and HIV-related behaviors in urban Tanzanian men who have sex with men: A study of beliefs, HIV knowledge sources, partner interactions and risk behaviors. *AIDS Care, 25*(2), 223–229. <https://doi.org/10.1080/09540121.2012.699671>
- Odukoya, O. O., Odeyemi, K. A., Oyeyemi, A. S., & Upadhyay R. P. (2013). Determinants of smoking initiation and susceptibility to future smoking among school-going adolescents in Lagos State, Nigeria. *Asian Pacific Journal of Cancer Prevention, 14*(3):1747–1753. <https://doi.org/10.7314/apjcp.2013.14.3.1747>
- Odukoya, O. O., Sekoni, A. O., Alagbe, S. O., & Odeyemi, K. (2017). Tobacco and alcohol use among a sample of men who have sex with men in Lagos state, Nigeria. *Annals of Medical & Health Sciences Research, 7*(1), 30–36.
- Okie, S. (2007). Sex, drugs, prisons, and HIV. *New England Journal of Medicine, 356*(2), 105–108. <https://doi.org/10.1056/NEJMp068277>
- Omoto, A. M., & Kurtzman, H. S. (2006). *Sexual orientation and mental health: Examining identity and development in lesbian, gay, and bisexual people*. American Psychological Association.
- Ompad, D., Friedman, S., Hwahng, S. J., Nandi, V., Fuller, C., & Vlahov, D. (2011). HIV risk behaviors among young drug using women who have sex with women (WSWs) in New York City. *Substance Use and Misuse, 46*(2–3), 274–284. <https://doi.org/10.31009/10826084.2011.523284>
- Operario, D., & Nemoto, T. (2005). Sexual risk behavior and substance use among a sample of Asian Pacific Islander transgendered women. *AIDS Education & Prevention, 17*(5), 430–443. <https://doi.org/10.1521/aeap.2005.17.5.430>
- Operario, D., Smith, C. D., Arnold, E., & Kegeles, S. (2011). Sexual risk and substance use behaviors among African American men who have sex with men and women. *AIDS and Behavior, 15*(3), 576–583. <https://doi.org/10.1007/s10461-009-0588-0>
- Ortiz-Hernández, L. (2005). Influencia de la opresión internalizada sobre la salud mental de bisexuales, lesbianas y homosexuales de la Ciudad de México. *Salud Mental, Ciudad de México, 28*(4), 49–65.
- Ortiz-Hernández, L., & García Torres, M. I. (2005). Effects of violence and discrimination on the mental health of bisexuals, lesbians, and gays in Mexico City. *Cadernos De Saude Publica, 21*(3), 913–925. <https://doi.org/10.1590/s0102-311x2005000300026>

- Ortiz-Hernandez, L., Tello, B. L., & Valdes, J. (2009). The association of sexual orientation with self-rated health, and cigarette and alcohol use in Mexican adolescents and youths. *Social Science & Medicine*, 69(1), 85–93. <https://doi.org/10.1016/j.socscimed.2009.03.028>
- Ostrow, D. G., Plankey, M. W., Cox, C., Li, X., Shoptaw, S., Jacobson, L. P., & Stall, R. C. (2009). Specific sex-drug combinations contribute to the majority of recent HIV seroconversions among MSM in the MACS. *Journal of Acquired Immune Deficiency Syndromes*, 51(3), 349–355. <https://doi.org/10.1097/QAI.0b013e3181a24b20>
- Pachankis, J. E. (2015). A transdiagnostic minority stress treatment approach for gay and bisexual men's syndemic health conditions. *Archives of Sexual Behavior*, 44(7), 1843–1860. <https://doi.org/10.1007/s10508-015-0480-x>
- Padilla, Y. C., Crisp, C., & Rew, D. L. (2010). Parental acceptance and illegal drug use among gay, lesbian, and bisexual adolescents: Results from a national survey. *Social Work*, 55(3), 265–275. <https://doi.org/10.1093/sw/55.3.265>
- Pakula, B., Carpiano, R. M., Ratner, P. A., & Shoveller, J. A. (2016a). Life stress as a mediator and community belonging as a moderator of mood and anxiety disorders and co-occurring disorders with heavy drinking of gay, lesbian, bisexual, and heterosexual Canadians. *Social Psychiatry and Psychiatric Epidemiology*, 51(8), 1181–1192. <https://doi.org/10.1007/s00127-016-1236-1>
- Pakula, B., Marshall, B. D., Shoveller, J. A., Chesney, M. A., Coates, T. J., Koblin, B., Mayer, K., Mimiaga, M., & Operario, D. (2016b). Gradients in depressive symptoms by socioeconomic position among men who have sex with men in the EXPLORE study. *Journal of Homosexuality*, 63(8), 1146–1160. <https://doi.org/10.1080/00918369.2016.1150056>
- Palamar, J. J., Kiang, M. V., Storholm, E. D., & Halkitis, P. N. (2014). A qualitative descriptive study of perceived sexual effects of club drug use in gay and bisexual men. *Psychology & Sexuality*, 5(2), 143–160. <https://doi.org/10.1080/19419899.2012.679363>
- Palepu, A., Tyndall, M. W., Chan, K., Wood, E., Montaner, J., & Hogg, R. S. (2004). Initiating highly active antiretroviral therapy and continuity of HIV care: The impact of incarceration and prison release on adherence and HIV treatment outcomes. *Antiviral Therapy*, 9(5), 713–720.
- Pan, S., Jiang, H., Du, J., Chen, H., Li, Z., Ling, W., & Zhao, M. (2015). Efficacy of cognitive behavioral therapy on opiate use and retention in methadone maintenance treatment in China: A randomised trial. *PLoS One*, 10, e0127598. <https://doi.org/10.1371/journal.pone.0127598>
- Park, S. H., Yazan, A. A., Palamar, J. J., Goedel, W. C., Estreet, A., Elbel, B., Sherman, S. E., & Duncan, D. T. (2018). Financial hardship and drug use among men who have sex with men. *Substance Abuse Treatment, Prevention, and Policy*, 13, 19. <https://doi.org/10.1186/s13011-018-0159-0>
- Paschen-Wolff, M. M., Kelvin, E., Wells, B. E., et al. (2019). Changing trends in substance use and sexual risk disparities among sexual minority women as a function of sexual identity, behavior, and attraction: Findings from the National Survey of Family Growth, 2002–2015. *Archives of Sexual Behavior*, 48, 1137–1158. <https://doi.org/10.1007/s10508-018-1333-1>
- Peacock, E., Andrinopoulos, K., & Hembling, J. (2015). Binge drinking among men who have sex with men and transgender women in San Salvador: Correlates and sexual health implications. *Journal of Urban Health*, 92(4), 701–716. <https://doi.org/10.1007/s11524-014-9930-3>
- Philbin, M. M., Kinnard, E. N., Tanner, A. E., Ware, S., Chambers, B. D., Ma, A., & Fortenberry, J. D. (2018). The association between incarceration and transactional sex among HIV-infected young men who have sex with men in the United States. *Journal of Urban Health*, 95(4), 576–583. <https://doi.org/10.1007/s11524-018-0247-5>
- Phillips, K. A., Epstein, D. H., & Preston, K. L. (2014). Psychostimulant addiction treatment. *Neuropharmacology*, 87, 150–160. <https://doi.org/10.1016/j.neuropharm.2014.04.002>
- Pinkerton, K. E., Harbaugh, M., Han, M. K., Jourdan Le Saux, C., Van Winkle, L. S., Martin, W. J., et al. (2015). Women and lung disease: Sex differences and global health disparities. *American Journal of Respiratory and Critical Care Medicine*, 192(1), 11–16. <https://doi.org/10.1164/rccm.201409-1740PP>

- Pinto, V. M., Tancredi, M. V., Neto, A. T., & Buchalla, C. M. (2005). Sexually transmitted disease/HIV risk behaviour among women who have sex with women. *AIDS*, *19*(4), S64–S69. <https://doi.org/10.1097/01.aids.0000191493.43865.2a>
- Race, K. (2015). 'Party and play': Online hook-up devices and the emergence of PNP practices among gay men. *Sexualities*, *18*(3), 253–275. <https://doi.org/10.1177/1363460714550913>
- Rajasingham, R., Mimiaga, M. J., White, J. M., Pinkston, M. M., Baden, R. P., & Mitty, J. A. (2012). A systematic review of behavioral and treatment outcome studies among HIV-infected men who have sex with men who abuse crystal methamphetamine. *AIDS Patient Care and STDs*, *26*(1), 36–52. <https://doi.org/10.1089/apc.2011.0153>
- Rawstorne, P., Digiusto, E., Worth, H., & Zablotska, I. (2007). Associations between crystal methamphetamine use and potentially unsafe sexual activity among gay men in Australia. *Archives of Sexual Behavior*, *36*(5), 646–654. <https://doi.org/10.1007/s10508-007-9206-z>
- Rehm, J., Mathers, C., Popova, S., Thavorncharoensap, M., Teerawattananon, Y., & Patra, J. (2009). Global burden of disease and injury and economic cost attributable to alcohol use and alcohol-use disorders. *The Lancet*, *373*(9682), 2223–2233. [https://doi.org/10.1016/S0140-6736\(09\)60746-7](https://doi.org/10.1016/S0140-6736(09)60746-7)
- Reisner, S. L., & Murchison, G. R. (2016). A global research synthesis of HIV and STI biobehavioural risks in female-to-male transgender adults. *Global Public Health*, *11*(7–8), 866–887. <https://doi.org/10.1080/17441692.2015.1134613>
- Reisner, S. L., Mimiaga, M. J., Bland, S., Skeer, M., Cranston, K., Isenberg, D., et al. (2010). Problematic alcohol use and HIV risk among Black men who have sex with men in Massachusetts. *AIDS Care*, *22*(5), 577–587. <https://doi.org/10.1080/09540120903311482>
- Reisner, S. L., Bailey, Z., & Sevelius, J. (2014a). Racial/ethnic disparities in history of incarceration, experiences of victimization, and associated health indicators among transgender women in the US. *Women & Health*, *54*(8), 750–767. <https://doi.org/10.1080/03630242.2014.932891>
- Reisner, S. L., White, J. M., Mayer, K. H., & Mimiaga, M. J. (2014b). Sexual risk behaviors and psychosocial health concerns of female-to-male transgender men screening for STDs at an urban community health center. *AIDS Care*, *26*(7), 857–864. <https://doi.org/10.1080/0954012.1.2013.855701>
- Reisner, S. L., Greytak, E. A., Parsons, J. T., & Ybarra, M. L. (2015). Gender minority social stress in adolescence: Disparities in adolescent bullying and substance use by gender identity. *Journal of Sex Research*, *52*(3), 243–256. <https://doi.org/10.1080/00224499.2014.886321>
- Reisner, S. L., Biello, K. B., White Hughto, J. M., Kuhns, L., Mayer, K. H., Garofalo, R., & Mimiaga, M. J. (2016a). Psychiatric diagnoses and comorbidities in a diverse, multicity cohort of young transgender women: Baseline findings from project LifeSkills. *JAMA Pediatrics*, *170*(5), 481–486. <https://doi.org/10.1001/jamapediatrics.2016.0067>
- Reisner, S. L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., et al. (2016b). Global health burden and needs of transgender populations: A review. *The Lancet*, *388*(10042), 412–436. [https://doi.org/10.1016/S0140-6736\(16\)00684-X](https://doi.org/10.1016/S0140-6736(16)00684-X)
- Rich, K. M., Wickersham, J. A., Valencia Huamaní, J., Kiani, S. N., Cabello, R., Elish, P., et al. (2018). Factors associated with HIV viral suppression among transgender women in Lima, Peru. *LGBT Health*, *5*(8), 477–483. <https://doi.org/10.1089/lgbt.2017.0186>
- Roberts, S. A., Dibble, S. L., Nussey, B., & Casey, K. (2003). Cardiovascular disease risk in lesbian women. *Women's Health Issues*, *13*(4), 167–174. [https://doi.org/10.1016/s1049-3867\(03\)00041-0](https://doi.org/10.1016/s1049-3867(03)00041-0)
- Robinson, K. A., Duncan, S., Austrie, J., Fleishman, A., Tobias, A., Hopwood, R. A., & Brat, G. (2020). Opioid consumption after gender-affirming mastectomy and two other breast surgeries. *Journal of Surgical Research*, *251*, 33–37. <https://doi.org/10.1016/j.jss.2019.12.043>
- Rosario, M., Schrimshaw, E. W., & Hunter, J. (2009). Disclosure of sexual orientation and subsequent substance use and abuse among lesbian, gay, and bisexual youths: Critical role of disclosure reactions. *Psychology of Addictive Behaviors*, *23*(1), 175–184. <https://doi.org/10.1037/a0014284>
- Rosenberg, E. S., Sullivan, P. S., DiNenno, E. A., Salazar, L. F., & Sanchez, T. H. (2011). Number of casual male sexual partners and associated factors among men who have sex with men:

- Results from the National HIV Behavioral Surveillance system. *BMC Public Health*, 11(1), 189. <https://doi.org/10.1186/1471-2458-11-189>
- Rowan, N. L., Jenkins, D. A., & Parks, C. A. (2013). What is valued in gay and lesbian specific alcohol and other drug treatment? *Journal of Gay and Lesbian Social Services*, 25(1), 56–76. <https://doi.org/10.1080/10538720.2012.751765>
- Roxburgh, A., Lea, T., de Wit, J., & Degenhardt, L. (2016). Sexual identity and prevalence of alcohol and other drug use among Australians in the general population. *International Journal of Drug Policy*, 28, 76–82. <https://doi.org/10.1016/j.drugpo.2015.11.005>
- Ryan, C., Russell, S. T., Huebner, D., Diaz, R., & Sanchez, J. (2010). Family acceptance in adolescence and the health of LGBT young adults. *Journal of Child and Adolescent Psychiatric Nursing*, 23(4), 205–213. <https://doi.org/10.1111/j.1744-6171.2010.00246.x>
- Sanders, E. J., Graham, S. M., Okuku, H. S., van der Elst, E. M., Muhaari, A., Davies, A., et al. (2007). HIV-1 infection in high-risk men who have sex with men in Mombasa, Kenya. *AIDS*, 21(18), 2513–2520. <https://doi.org/10.1097/QAD.0b013e3282f2704a>
- Sandfort, T. G., Lane, T., Dolezal, C., & Reddy, V. (2015). Gender expression and risk of HIV infection among Black South African men who have sex with men. *AIDS Behavior*, 19(12), 2270–2279. <https://doi.org/10.1007/s10461-015-1067-1>
- Sandfort, T. G., Knox, J. R., Alcala, C., El-Bassel, N., Kuo, I., & Smith, L. R. (2017). Substance use and HIV risk among men who have sex with men in Africa: A systematic review. *Journal of Acquired Immune Deficiency Syndrome*, 76(2), e34–e46. <https://doi.org/10.1097/QAI.0000000000001462>
- Santos, G. M., Rapues, J., Wilson, E. C., Macias, O., Packer, T., Colfax, G., & Raymond, H. F. (2014). Alcohol and substance use among transgender women in San Francisco: Prevalence and association with human immunodeficiency virus infection. *Drug Alcohol Review*, 33(3), 287–295. <https://doi.org/10.1111/dar.12116>
- Scheer, J. R., & Antebi-Gruszka, N. (2019). A psychosocial risk model of potentially traumatic events and sexual risk behavior among LGBTQ individuals. *Journal of Trauma & Dissociation*, 20(5), 603–615. <https://doi.org/10.1080/15299732.2019.1597815>
- Scheer, S., Peterson, I., Page-Shafer, K., Delgado, V., Gleghorn, A., Ruiz, J. D., et al. (2002). Sexual and drug use behavior among women who have sex with both women and men: Results of a population-based survey. *American Journal of Public Health*, 92(7), 1110–1112. <https://doi.org/10.2105/ajph.92.7.1110>
- Schuler, M. S., Rice, C. E., Evans-Polce, R. J., & Collins, R. L. (2018). Disparities in substance use behaviors and disorders among adult sexual minorities by age, gender, and sexual identity. *Drug Alcohol Dependence*, 189, 139–146. <https://doi.org/10.1016/j.drugalcdep.2018.05.008>
- Schuler, M. S., & Collins, R. L. (2020). Sexual minority substance use disparities: Bisexual women at elevated risk relative to other sexual minority groups. *Drug Alcohol Dependence*, 206, 107755. <https://doi.org/10.1016/j.drugalcdep.2019.107755>
- Semple, S. J., Patterson, T. L., & Grant, I. (2002). Motivations associated with methamphetamine use among HIV men who have sex with men. *Journal of Substance Abuse Treatment*, 22(3), 149–156. [https://doi.org/10.1016/s0740-5472\(02\)002233-4](https://doi.org/10.1016/s0740-5472(02)002233-4)
- Shoptaw, S., Reback, C. J., Peck, J. A., Yang, X., Rotheram-Fuller, E., Larkins, S., et al. (2005). Behavioral treatment approaches for methamphetamine dependence and HIV-related sexual risk behaviors among urban gay and bisexual men. *Drug and Alcohol Dependence*, 78(2), 125–134. <https://doi.org/10.1016/j.drugalcdep.2004.10.004>
- Shrestha, M., Boonmongkon, P., Peerawaranun, P., Samoh, N., Kanchawee, K., & Guadamuz, T. E. (2020). Revisiting the “Thai gay paradise”: Negative attitudes toward same-sex relations despite sexuality education among Thai LGBT students. *Global Public Health*, 15(3), 414–423. <https://doi.org/10.1080/17441692.2019.1684541>
- Smalley, K. B., Warren, J. C., & Barefoot, K. N. (2016). Differences in health risk behaviors across understudied LGBT subgroups. *Health Psychology*, 35(2), 103–114. <https://doi.org/10.1037/hea0000231>
- Snapp, S. D., Hoenig, J. M., Fields, A., & Russell, S. T. (2015). Messy, butch, and queer: LGBTQ youth and the school-to-prison pipeline. *Journal of Adolescent Research*, 30(1), 57–82. <https://doi.org/10.1177/0743558414557625>

- Stall, R., Mills, T. C., Williamson, J., Hart, T., Greenwood, G., Paul, J., et al. (2003). Association of co-occurring psychosocial health problems and increased vulnerability to HIV/AIDS among urban men who have sex with men. *American Journal of Public Health, 93*(6), 939–942. <https://doi.org/10.2105/ajph.93.6.939>
- State Council of the People's Republic of China. (2011). *Regulation on drug rehabilitation*. Ministry of Public Security.
- Stuart, D. (2013). Sexualised drug use by MSM: Background, current status and response. *HIV Nursing, 13*(1), 6–10.
- Substance Abuse and Mental Health Services Administration. (2019). *Key substance use and mental health indicators in the United States: Results from the 2018 National Survey on Drug Use and Health* (HHS Publication No. PEP19-5068, NSDUH Series H-54). Rockville, MD: Center for Behavioral Health Statistics and Quality, Substance Abuse and Mental Health Services Administration. Retrieved from <https://www.samhsa.gov/data/>
- Sun, H. Q., Bao, Y. P., Zhou, S. J., Meng, S. Q., & Lu, L. (2014). The new pattern of drug abuse in China. *Current Opinion in Psychiatry, 27*(4), 251–255. <https://doi.org/10.1097/YCO.0000000000000073>
- Talley, A. E., Hughes, T. L., Aranda, F., Birkett, M., & Marshal, M. P. (2014). Exploring alcohol-use behaviors among heterosexual and sexual minority adolescents: Intersections with sex, age, and race/ethnicity. *American Journal of Public Health, 104*(2), 295–303. <https://doi.org/10.2105/AJPH.2013.301627>
- Tang, H., Greenwood, G. L., Cowling, D. W., Lloyd, J. C., Roeseler, A. G., & Bal, D. G. (2004). Cigarette smoking among lesbians, gays, and bisexuals: How serious a problem? *Cancer Causes & Control, 15*(8), 797–803. <https://doi.org/10.1023/B:CACO.0000043430.32410.69>
- Tantirattanakulchai, P., & Hounnaklang, N. (2021). Perceived social support and its relationship with depression among Bangkok's trans women. *Journal of Health Research, 36*(2), 365–375. <https://doi.org/10.1108/JHR-05-2020-0165>
- Thiede, H., Valleroy, L. A., MacKellar, D. A., Celentano, D. D., Ford, W. L., Hagan, H., et al. (2003). Regional patterns and correlates of substance use among young men who have sex with men in 7 US urban areas. *American Journal of Public Health, 93*(11), 1915–1921. <https://doi.org/10.2105/ajph.93.11.1915>
- Tucker, J. S., Ellickson, P. L., & Klein, D. J. (2008). Understanding differences in substance use among bisexual and heterosexual young women. *Women's Health Issues, 18*(5), 387–398. <https://doi.org/10.1016/j.whi.2008.04.004>
- United Nations Office of Drugs and Crime. (2019). *World drug report*. UN Division for Policy Analysis and Public Affairs. Accessed 20 Nov 2022. https://wdr.unodc.org/wdr2019/pre-launch/WDR19_Booklet_1_EXECUTIVE_SUMMARY.pdf
- Van Hout, M. C., & Brennan, R. (2011). “Bump and grind”: An exploratory study of Mephedrone users' perceptions of sexuality and sexual risk. *Drugs and Alcohol Today, 11*(2), 93–103. <https://doi.org/10.1108/17459261111174046>
- Wan, X., Stillman, F., Liu, H., Spires, M., Dai, Z., Tamplin, S., et al. (2013). Development of policy performance indicators to assess the implementation of protection from exposure to secondhand smoke in China. *Tobacco Control, 22*, S9–S15. <https://doi.org/10.1136/tobaccocontrol-2012-050890>
- Wang, Z., Li, D., Lau, J. T., Yang, X., Shen, H., & Cao, W. (2015). Prevalence and associated factors of inhaled nitrites use among men who have sex with men in Beijing, China. *Drug and Alcohol Dependence, 149*, 93–99. <https://doi.org/10.1016/j.drugalcdep.2015.01.021>
- Wang, K., Hughto, J. M., Biello, K. B., O'Cleirigh, C., Mayer, K. H., Rosenberger, J. G., et al. (2017). The role of distress intolerance in the relationship between childhood sexual abuse and problematic alcohol use among Latin American MSM. *Drug and Alcohol Dependence, 175*, 151–156. <https://doi.org/10.1016/j.drugalcdep.2017.02.004>
- Weber, G. (2008). Using to numb the pain: Substance use and abuse among lesbian, gay, and bisexual individuals. *Journal of Mental Health Counseling, 30*(1), 31–48. <https://doi.org/10.17744/mehc.30.1.2585916185422570>
- Wei, C., Guadamuz, T. E., Lim, S. H., Huang, Y., & Koe, S. (2012). Patterns and levels of illicit drug use among men who have sex with men in Asia. *Drug and Alcohol Dependence, 120*(1–3), 246–249. <https://doi.org/10.1016/j.drugalcdep.2011.07.016>

- White, J. M., Gordon, J. R., & Mimiaga, M. J. (2014). The role of substance use and mental health problems in medication adherence among HIV-infected MSM. *LGBT Health, 1*(4), 319–322. <https://doi.org/10.1089/lgbt.2014.0020>
- Wichaidit, W., Assanangkornchai, S., & Chongsuvivatwong, V. (2021). Disparities in behavioral health and experience of violence between cisgender and transgender Thai adolescents. *PLoS One, 16*(5), e0252520. <https://doi.org/10.1371/journal.pone.0252520>
- Wilsnack, S. C., Hughes, T. L., Johnson, T. P., Bostwick, W. B., Szalacha, L. A., Benson, P., et al. (2008). Drinking and drinking-related problems among heterosexual and sexual minority women. *Journal of Studies on Alcohol and Drugs, 69*(1), 129–139. <https://doi.org/10.15288/jsad.2008.69.129>
- Wilson, J. D., Sumetsky, N. M., Coulter, R. W., Liebschutz, J., Miller, E., & Mair, C. F. (2020). Opioid-related disparities in sexual minority youth, 2017. *Journal of Addiction Medicine, 14*(6), 475–479. <https://doi.org/10.1097/ADM.0000000000000628>
- Wilton, L. (2008). Correlates of substance use in relation to sexual behavior in black gay and bisexual men: Implications for HIV prevention. *Journal of Black Psychology, 34*(1), 70–93. <https://doi.org/10.1177/0095798407310536>
- Wirtz, A., Zelaya, C. E., Latkin, C., Stall, R., Peryshkina, A., Galai, N., et al. (2016). Alcohol use and associated sexual and substance use behaviors among men who have sex with men in Moscow, Russia. *AIDS and Behavior, 20*(3), 523–536. <https://doi.org/10.1007/s10461-015-1066-2>
- Wohl, D. A., Rosen, D., & Kaplan, A. H. (2006). HIV and incarceration: Dual epidemics. *The AIDS Reader, 16*(5), 247–250.
- Woolf-King, S. E., & Maisto, S. A. (2011). Alcohol use and high-risk sexual behavior in Sub-Saharan Africa: A narrative review. *Archives of Sexual Behavior, 40*(1), 17–42. <https://doi.org/10.1007/s10508-009-9516-4>
- Wray, T. B., Grin, B., Dorfman, L., Glynn, T. R., Kahler, C. W., Marshall, B. D., et al. (2016). Systematic review of interventions to reduce problematic alcohol use in men who have sex with men. *Drug Alcohol Rev, 35*(2), 148–157. <https://doi.org/10.1111/dar.12271>. Epub 2015 Apr 13. PMID: 25866929; PMCID: PMC4604011.
- Wu, Z., Sullivan, S. G., Wang, Y., Rotheram-Borus, M. J., & Detels, R. (2007). Evolution of China's response to HIV/AIDS. *The Lancet, 369*(9562), 679–690. [https://doi.org/10.1016/S0140-6736\(07\)60315-8](https://doi.org/10.1016/S0140-6736(07)60315-8)
- Xu, J. J., Qian, H. Z., Chu, Z. X., Zhang, J., Hu, Q. H., Jiang, Y. J., et al. (2014a). Recreational drug use among Chinese men who have sex with men: A risky combination with unprotected sex for acquiring HIV infection. *BioMed Research International, 2014*, 725361.
- Xu, J. J., Zhang, C., Hu, Q. H., Chu, Z. X., Zhang, J., Li, Y. Z., et al. (2014b). Recreational drug use and risks of HIV and sexually transmitted infections among Chinese men who have sex with men: Mediation through multiple sexual partnerships. *BMC Infectious Diseases, 14*, 642. <https://doi.org/10.1186/s12879-014-0642-9>
- Xu, W., Zheng, L., Xu, Y., & Zheng, Y. (2017). Internalized homophobia, mental health, sexual behaviors, and outness of gay/bisexual men from Southwest China. *International Journal for Equity in Health, 16*, 36. <https://doi.org/10.1186/s12939-017-0530-1>
- Xu, W., Zheng, Y., Wiginton, J. M., & Kaufman, M. R. (2019). Alcohol use and binge drinking among men who have sex with men in China: Prevalence and correlates. *Drug and Alcohol Dependence, 202*, 61–68. <https://doi.org/10.1016/j.drugalcdep.2019.04.006>
- Xu, W., Tang, W., Zhang, J., Shi, X., Zheng, Y., & Kaufman, M. R. (2020). Cigarette smoking and its associations with substance use and HIV-related sexual risks among Chinese men who have sex with men. *International Journal of Environmental Research and Public Health, 17*(5), 1653. <https://doi.org/10.3390/ijerph17051653>
- Yang, M., Huang, S. C., Liao, Y. H., Deng, Y. M., Run, H. Y., Liu, P. L., et al. (2018). Clinical characteristics of poly-drug abuse among heroin dependents and association with other psychopathology in compulsory isolation treatment settings in China. *International Journal of Psychiatry in Clinical Practice, 22*(2), 129–135. <https://doi.org/10.1080/13651501.2017.1383439>

- Yi, S., Tuot, S., Chhoun, P., Pal, K., Tith, K., & Brody, C. (2015). Factors associated with inconsistent condom use among men who have sex with men in Cambodia. *PLoS One*, *10*(8), e0136114. <https://doi.org/10.1371/journal.pone.0136114>
- Young, R. M., Friedman, S. R., & Case, P. (2005). Exploring an HIV paradox: An ethnography of sexual minority women injectors. *Journal of Lesbian Studies*, *9*(3), 103–116. https://doi.org/10.1300/J155v09n03_10
- Yu, F., Nehl, E. J., Zheng, T., He, N., Berg, C. J., Lemieux, A. F., et al. (2013). A syndemic including cigarette smoking and sexual risk behaviors among a sample of MSM in Shanghai, China. *Drug and Alcohol Dependence*, *132*, 265–270. <https://doi.org/10.1016/j.drugalcdep.2013.02.016>
- Zavala-Arciniega, L., Reynales-Shigematsu, L. M., Levy, D. T., Lau, Y. K., Meza, R., Gutiérrez-Torres, D. S., et al. (2020). Smoking trends in Mexico, 2002–2016: Before and after the ratification of the WHO’s Framework Convention on Tobacco Control. *Tobacco Control*, *29*(6), 687–691. <https://doi.org/10.1136/tobaccocontrol-2019-055153>
- Zhang, G., Zhu, Q., Ming, J., Tang, F., Feng, X., & Huang, J. (2009). Effect of psychological-behavioral intervention on the quality of life of the patients on methadone maintenance treatment. *Chinese Journal of Drug Dependence*, *18*(2), 136–139.
- Zhang, H., Teng, T., Lu, H., Zhao, Y., Liu, H., Yin, L., et al. (2016). Poppers use and risky sexual behaviors among men who have sex with men in Beijing, China. *Drug and Alcohol Dependence*, *160*, 42–48. <https://doi.org/10.1016/j.drugalcdep.2015.11.037>
- Zhao, P., Tang, S., Wang, C., Zhang, Y., Best, J., Tangthanakup, T. M., et al. (2017). Recreational drug use among Chinese MSM and transgender individuals: Results from a national online cross-sectional study. *PLoS One*, *12*(1), e0170024. <https://doi.org/10.1371/journal.pone.0170024>

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter’s Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter’s Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

