



Review

Alcohol research with transgender populations: A systematic review and recommendations to strengthen future studies

Paul A. Gilbert^{a,*}, Lauren E. Pass^a, Alex S. Keuroghlian^{b,c,d}, Tom K. Greenfield^e, Sari L. Reisner^{d,f,g}^a Department of Community and Behavioral Health, The University of Iowa, Iowa City, IA, USA^b Department of Psychiatry, Massachusetts General Hospital, Boston, MA, USA^c Harvard Medical School, Boston, MA, USA^d The Fenway Institute, Fenway Health, Boston, MA, USA^e Alcohol Research Group, Public Health Institute, Emeryville, CA, USA^f Division of General Pediatrics, Boston Children's Hospital, Harvard Medical School, Boston, MA, USA^g Department of Epidemiology, Harvard T.H. Chan School of Public Health, Boston, MA, USA

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ABSTRACT

Background: There is a recent and growing research literature on alcohol use and related harms among transgender and other gender minority populations; however, current definitions and measures of hazardous drinking do not consider the complexity of physiological sex characteristics and socially constructed gender, raising doubts regarding their validity, applicability, and use with these populations. To address this, we reviewed current research on alcohol-related outcomes in transgender populations and critically summarized key issues for consideration in future research.

Methods: We conducted a systematic review of transgender alcohol research in English language, peer-reviewed journals, published 1990–2017, and extracted key details (e.g., sample composition, alcohol measures, results). **Results:** Forty-four studies met all inclusion criteria for the review, the majority of which were conducted in the United States. The prevalence of hazardous drinking was high; however, estimates varied widely across studies. We noted frequent methodological weaknesses, including few attempts to differentiate sex and gender, poor attention to appropriate definitions of hazardous drinking, and reliance on cross-sectional study designs and non-probability sampling methods.

Conclusion: Given findings that suggest high need for ongoing public health attention, we offer recommendations to improve future alcohol studies with transgender and other gender minority populations, such as being explicit as to whether and how sex and/or gender are operationalized and relevant for the research question, expanding the repertoire of alcohol measures to include those not contingent on sex or gender, testing the psychometric performance of established screening instruments with transgender populations, and shifting from descriptive to analytic study designs.

1. Introduction

Gender minority populations, including transgender, gender non-binary, genderqueer, and other gender non-conforming people (hereafter referred to as transgender)¹ have gained unprecedented attention in recent years. For instance, in 2010 the Institute of Medicine (IOM) commissioned the largest comprehensive synthesis by a US federal body

to date of knowledge about sexual and gender minority population health. The final report found important knowledge gaps and recommended that the National Institutes of Health prioritize transgender health within a rigorous LGBT-focused research program (Institute of Medicine, 2011). Subsequently, in October 2016, the National Institute on Minority Health and Health Disparities designated sexual and gender minorities as health disparity populations for research, recognizing the

* Corresponding author at: Department of Community and Behavioral Health, University of Iowa College of Public Health, 145 N. Riverside Drive, N414 CPBH, Iowa City, IA, USA.

E-mail address: paul-gilbert@uiowa.edu (P.A. Gilbert).

¹ Transgender individuals have a gender identity different than the sex assigned to them at birth, which is often based on visible indications of biological sex. (e.g., genitalia). This is in contrast to cisgender individuals, whose current gender identity aligns with their natal sex. Non-binary refers to an array of gender identities that fall outside the male/female and masculine/feminine dichotomies. Nonbinary individuals may identify as both male and female (e.g., bi-gender), have a mix of different genders not exclusively or in addition to male and/or female (e.g., pangender), they may feel without a gender (e.g., agender; neutrois), or they may feel fluid in their gender (e.g., genderfluid). Similarly, genderqueer and gender non-conforming describe individuals whose identity and expression differs from dominant gender norms. Following American Psychological Association (2015) guidelines, we use transgender as an umbrella term that is inclusive of the diversity of gender minority populations.

paucity of data on health outcomes for transgender persons (Perez-Stable, 2016). Transgender and sexual minority populations are also noted as priority populations in the National Institute on Alcohol Abuse and Alcoholism 2017–2020 Strategic Plan; however, at present, there are no related action steps under the plan's goals and objectives (National Institute on Alcohol Abuse and Alcoholism, 2017). Most recently, the *American Journal of Public Health* devoted its February 2017 issue to transgender topics, publishing papers on population estimates and survey sampling, HIV prevention, and inclusive and affirming clinical practices. In a commentary in that issue, Landers and Kapadia (2017) noted the considerable progress over the last 15 years but also highlighted ongoing knowledge gaps and called for more research on the health status and needs of transgender populations.

There are indications that alcohol use is an important behavioral health problem among transgender populations. Reviewing the extant evidence, the IOM report (2011) concluded that alcohol misuse was highly prevalent in transgender populations, particularly in early to middle adulthood. More recently, the 2015 US Transgender Survey, the largest assessment of transgender health status and needs to date, found a high prevalence of binge drinking overall, with binge drinking levels much higher in transgender communities of color than in white non-Hispanic peers (James et al., 2016). Those results were congruent with several observational studies with smaller samples of transgender participants that also found a high prevalence of binge drinking (Coulter et al., 2015b; Keuroghlian et al., 2015; Scheim et al., 2016) as well as alcohol use disorder (Keuroghlian et al., 2015; Reisner et al., 2016). We caution that these findings should be interpreted in light of contextual factors. Transgender individuals are not ipso facto “risky” populations; rather, the discrimination and stigma that gender minorities face likely create psychosocial conditions leading to higher risk of problematic alcohol use (Hatzenbuehler et al., 2013). Indeed, minority stress models (Clark et al., 1999; Meyer, 1995, 2003) posit that members of some social groups experience excess stress (i.e., above and beyond expected levels) because of their minority status, which in turn may be associated with maladaptive coping behaviors, including substance use. Focusing on gender minorities, Hendricks and Testa (2012) have identified relevant processes of stigma, discrimination, and internalised negative attitudes based on gender identity and presentation, and several recent studies have found an association between transgender-related discrimination and alcohol use (Nuttbrock et al., 2014; Reisner et al., 2015b; Rowe et al., 2015).

Transgender populations may also experience greater secondary harms related to alcohol use than cisgender peers. For example, alcohol use has been associated with interpersonal violence (Crane et al., 2016; Foran and O'Leary, 2008). Transgender individuals appear to be at increased risk of being targeted for violence, such as sexual and physical assault (Coulter et al., 2016; Tupler et al., 2017). There is recent evidence that heavy drinking is associated with victimization, including verbal abuse and sexual assault (Coulter et al., 2015a). Additionally, transgender populations may face an increased risk of harms due to others' drinking. Namely, the combination of alcohol-induced disinhibition and anti-transgender bias may exacerbate the likelihood of perpetrating violence against transgender persons.

Despite growing attention and interest, transgender substance use research has been hampered by several methodological challenges. Foremost, it has been difficult to identify transgender respondents in general population research. Past work has suffered from poorly operationalized definitions of study populations, including non-standardized definitions of transgender that do not allow systematic comparisons across studies. In response, panels of experts have produced recommended measures of gender identity for use with both adolescents and adults (Temkin et al., 2017; The GenIUSS Group, 2014). Unfortunately, surveillance surveys have yet to adopt such measures uniformly. For example, the Behavioral Risk Factor Surveillance System (BRFSS) optional module on sexual orientation and gender identity was only adopted by a minority ($n = 21$) of states in the 2015 survey, thus

limiting US national surveillance of transgender health disparities, including alcohol use.

Most relevant for this paper, there are currently no standards for ascertaining alcohol use patterns in transgender populations other than general population guidelines, which make no distinction between transgender and cisgender populations. Thus, the guidelines do not clarify their use or applicability for research on transgender individuals' alcohol use (National Institute on Alcohol Abuse and Alcoholism, 2012). In response, this paper focuses on methodological challenges, with a special emphasis on measuring at-risk alcohol use for research with transgender populations. The overarching aim is to draw attention to essential issues, review and summarize current research practices, and make recommendations to improve the rigor of future work to characterize hazardous drinking in transgender populations.

2. How sex and gender matter for alcohol use research

Alcohol use is associated with a continuum of behaviors that may have negative physiological, psychological, or social consequences. For example, high quantity and frequent drinking increases risk of short-term impairment, such as acute intoxication, likelihood of longer-term health problems, such as gastrointestinal disease, cancers, stroke, and cognitive decline (Boffetta and Hashibe, 2006; Greenfield and Martinez, 2017; Meyerhoff et al., 2005; Thakker, 1998), and often leads to indirect harm through associated behaviors, such as interpersonal violence or drunk driving (Blomberg et al., 2009; Hingson and Winter, 2003; Lipsky et al., 2005; Peck et al., 2008; Testa et al., 2003). An ongoing challenge for alcohol research is to accurately assess behavior and classify the risk of alcohol-related harm, such as differentiating low- versus high-risk drinking (Greenfield and Kerr, 2008).

Sex and gender are inherent in drinking classifications, yet their roles are rarely made explicit. For example, the current recommended limits in the US for low-risk drinking are no more than four drinks per day for men or three drinks per day for women, and no more than 14 drinks in a week for men or seven drinks in a week for women (US Department of Health and Human Services and US Department of Agriculture, 2015). Whether the different heavy drinking criteria are based on physiological sex characteristics or socially constructed gender is not stated. In an exception, sex has been taken into account by the National Institute on Alcohol Abuse and Alcoholism to define binge drinking. Focusing on high-quantity consumption that will increase blood alcohol concentration to at least 0.08%, a binge episode is defined as five or more drinks for men, or four or more drinks for women, within about a two hour period (National Institute on Alcohol Abuse and Alcoholism, 2012). Although grounded in processes of ethanol metabolism, the definition's basis in physiological sex characteristics is rarely acknowledged. Further, the definition has not been without controversy. For example, the “in about two hours” measure has been found less predictive of negative consequences than the standard four-plus/five-plus binge definition without a time frame (Corbin et al., 2014). Additionally, there has been an ongoing criticism of the definition's shifting conceptual foundation (Berridge et al., 2009), low correspondence to clinical issues (Pearson et al., 2016), and potential misclassification of risk (Perkins et al., 2001).

Sex and gender are key—and complicating—factors in assessing alcohol-related risk. Although often considered together, even interchangeably, they are distinct constructs. In simple terms, sex refers to the physiological structures and processes inherent in a body, which is often assigned at birth as male or female but can include intersex variation. It is well established that biological factors, such as hormone profiles, fat and muscle composition, and body water content differ by sex, which in turn affects alcohol metabolism and the attendant risk of negative consequences (Kwo et al., 1998; Sutker et al., 1983; Thomasson, 1995). Additionally, it is important to note that physiological sex characteristics can shift for many transgender individuals, particularly for those who medically affirm their genders, such as

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