Comparing intentions to reduce substance use and willingness to seek help among transgender and cisgender participants from the Global Drug Survey

Dr Dean Connolly MA MBBS MSc[a,b]

Dr Emma Davies MSc PhD[c]

Professor Michael Lynskey MSc PhD[a]

Dr Monica J. Barratt PhD[d,e]

Dr Larissa Maier PhD[f,g]

Associate Professor Jason Ferris PhD[h]

Professor Adam Winstock MD MRCPsych[i,j]

Professor Gail Gilchrist BA (Hons) PhD[a]

[a]Addictions Sciences Building, Institute of Psychiatry, Psychology and Neuroscience, King's College London, UK.

[b]Newham University Hospital, Barts Health NHS Trust, London, UK.

[c]Faculty of Health and Life Sciences, Oxford Brookes University, UK.

[d]Social and Global Studies Centre, RMIT University, Melbourne, Vic, Australia.

[e]National Drug and Alcohol Research Centre, UNSW Sydney, NSW, Australia.

[f]Department of Clinical Pharmacy at the University of California, San Francisco, US.

[g]Early Postdoc Mobility Grantee, Swiss National Science Foundation, Bern, Switzerland.

[h]Centre for Health Services Research, Faculty of Medicine, The University of Queensland, Australia.

[i]University College London, UK.

[j]Global Drug Survey, UK.

Correspondence: Dean Connolly – dean.connolly1@nhs.net

1. Introduction

Gender identity describes one's psychological understanding of themselves as female, male, both, or neither (American Psychological Association, 2015). Transgender (trans) people are those whose gender identity or presentation is incongruent with the typical gender constructs of their birth-assigned sex (American Psychological Association, 2015; Bockting, 2009; Bockting, Miner, Swinburne Romine, Hamilton, & Coleman, 2013; Hendricks & Testa, 2012; Mayer et al., 2008). While many trans people identify with one of two orthogonal gender groups (trans men and trans women), an increasing number of people identify somewhere between the female and male poles of the gender identity spectrum and may describe themselves as non-binary, genderqueer, androgynous or two-spirit (American Psychological Association, 2015; Carroll, Gilroy, & Ryan, 2002; Eyler, 2007; Hendricks & Testa, 2012).

Few studies have sought to measure the population prevalence of trans identity—those that have provide estimates for the United Kingdom (UK) (0.3–0.76%; Glen & Hurrell, 2012; Government Equalities Office, 2018), Belgium (0.6%; Van Caenegem et al., 2015), New Zealand (1.2%; Clark et al., 2014), the Netherlands (0.9%; Kuyper & Wijsen, 2014), and the United States (U.S.) (0.4–0.6%; Conron, Scott, Stowell, & Landers, 2012; Meerwijk & Sevelius, 2017; Reisner et al., 2016). Extrapolation from the lower end of these estimates (0.5%) suggests that there are as few as 25 million trans people worldwide (Winter et al., 2016). Consequently, trans people experience high levels of stigma, which typically manifests as peer or familial rejection alongside any combination of verbal, sexual or physical violence (Flores, Herman, Gates, & Brown, 2016; Kidd, Veltman, Gately, Chan, & Cohen, 2011; Stieglitz, 2010; Stotzer, 2009).

Rates of transphobic violence appear to be increasing. In the UK, the number of transphobic hate crimes reported annually has tripled since 2014 and a survey of trans youth in Scotland found that 73% of respondents reported experiencing at least one type of specifically transphobic emotionally abusive behavior from a current or ex-partner (LGBT Youth Scotland & Equality Network, 2010; Marsh, Mohdin, & McIntyre, n.d.). Similarly, in the U.S.,

up to an estimated 89% of trans people are at risk of gender-based violence (Wirtz, Poteat, Malik, & Glass, 2018). Prior research has strongly associated surviving violence of this nature with increased rates of alcohol (Arayasirikul, Wilson, & Raymond, 2017; Chakrapani, Newman, Shunmugam, Logie, & Samuel, 2017; Nuttbrock et al., 2014) and illicit drug use (Budhwani et al., 2017; Scheim, Bauer, & Shokoohi, 2017; Shah et al., 2018), as well as nonmedical use of prescription drugs (Benotsch et al., 2013).

This heightened risk for substance use is compounded by stigmatizing and frequently cisnormative substance misuse treatment systems that contribute to up to 50% of trans people delaying or avoiding seeking treatment (Cochran & Cauce, 2006; Eliason, 2000; Lombardi & van Servellen, 2000; Nuttbrock, 2012; Sperber, Landers, & Lawrence, 2005). One qualitative study describes how treatment dropout was common among trans participants because providers restricted them to facilities congruent with their natal-assigned sex and tolerated both threats of and acted-upon transphobic violence (Lyons et al., 2015). Further, surveys have demonstrated that only 5% of substance misuse service providers have formal education about the needs of trans clients and service providers have often made the incorrect assumption that “all transgender people are gay.” Therefore, poor care likely results from a lack of knowledge among nonspecialist services providers (Cochran, Peavy, & Cauce, 2007; Eliason, 2000; Rachlin, Green, & Lombardi, 2008).

Almost 20 years ago there was a call for the development of specialist substance misuse services so that gender and sexual minorities could circumvent the stigma and discrimination faced in general treatment services (Lombardi & van Servellen, 2000). However, a recent systematic review found evidence of only two such interventions, both of which were narrowly aimed at trans women in the U.S., with a primary aim of human immunodeficiency virus (HIV) risk reduction (Glynn & van den Berg, 2017).

In light of the long-standing barriers faced by trans people seeking substance misuse healthcare, this study used a large, international, cross-sectional dataset to compare intentions to reduce substance use and seek help across five gender groups (cis women, cis

men, trans women, trans men, and non-binary people). This paper builds on previous work with similar methodology that was limited because it considered the needs of only cisgender people (Davies, Maier, Winstock, & Ferris, 2019).

2. Methods

2.1. Study design

Data collected from the 2018 and 2019 Global Drug Surveys (GDS), conducted between November 8, 2017 and December 30, 2018; and between October 29, 2018 and December 30, 2018, respectively, were used for this analysis. The GDS is the world's largest annual, self-administered, internet-based survey designed to evaluate existing and emerging patterns of substance use; it is developed by an international committee of multidisciplinary substance use experts (Barratt et al., 2017).

The GDS uses a nonprobabilistic technique, purposive sampling, to recruit its participants through extensive collaboration with partners such as *The Guardian*, Fairfax media, Mixmag, and global social media networks such as Facebook and Twitter. The 2018 and 2019 versions of the survey were available in 19 languages, reached more than 40 countries and on each occasion more than 120,000 participants were recruited. A thorough account of GDS recruitment techniques and methodology is discussed elsewhere (Barratt et al., 2017).

The focus of this paper is comparing the intention to reduce substance use and to seek help between trans and cis GDS respondents. The 2018 and 2019 datasets were pooled to increase the sample of trans respondents, and in turn the power of these analyses. To minimize the chance of duplicate entries, all GDS 2019 participants who responded "yes" or were missing on the item "Have you taken part in the GDS before?" were deleted from the 2019 dataset prior to merging. To provide context, findings from a forthcoming paper are also presented. The aforementioned five gender groups are compared on a) last 12-month use of a range of substances and b) self-reported probable dependence on those

substances. However, these latter findings are derived from GDS 2018 only because substance dependence (Severity of Dependence Scale) was not measured in GDS 2019 (Gossop et al., 1995).

Ethical approval was received from University College London 11671/001: Global Drug Survey, The University of New South Wales (HREC HC17769), and University of Queensland (No: 2017001452) Research Ethics Committees.

2.2. Variables

2.2.1. Gender

Gender was assessed using a two question approach (Bauer, Braimoh, Scheim, & Dharma, 2017; Sausa, Sevelius, Keatley, Iniguez, & Reyes, 2009). The first question concerns gender assigned at birth and participants could choose between “male” and “female”. The second focused on each participant’s current gender identity and included the following response options: male, female, non-binary, or different identity. While the meaning of “different identity” was not pre-specified, we assumed that respondents were most likely to endorse this option if their gender did not fit within either orthogonal gender category and was described with a term other than “non-binary”. As such, non-binary and different identity groups were combined, to create a group that encompasses the many gender identities between the male and female poles of the gender identity spectrum. Each participant’s responses to these questions were combined, which resulted in their assignment to one of five gender groups: cis woman, cis man, trans woman, trans man, or non-binary. The final sample across the two years included 2,579 trans participants. The criteria for each group are summarized in Table 1. Participants were considered trans if their answers to questions one and two were different, marked with an asterisk in Table 1 (Bauer et al., 2017).

[INSERT TABLE 1]

2.2. Substances considered and help-seeking variables

The pooled GDS dataset included data on the use of nine substances: alcohol, cannabis, ecstasy/3,4-methylenedioxymethamphetamine (MDMA), cocaine, amphetamine powder, amphetamine paste, methamphetamine, ketamine, and synthetic cannabinoids. If participants endorsed use of any of these substances they were asked, “Would you like to use less [substance] over the next 12 months?” and “Would you like help to use less [substance] over the next 12 months?”

The incidence of alcohol and cannabis use far exceeded that of other substances. As such, composite “illicit drugs” variables were created, where responses to the above questions were combined for all substances except alcohol and cannabis (which were considered individually and separately)[i]. For each question, a positive endorsement for one or more of the component substances was sufficient to positively endorse the composite variable.

2.3. Statistical analyses

All analyses were conducted using IBM SPSS Statistics software, version 25 (International Business Machines Corporation, 2018).

Using the GDS 2018 dataset, separate binary logistic regression models generated odds ratios for the association between gender and last 12-month substance use and substance dependence, where cis women were the reference group. For each of the help-seeking variables in the combined GDS 2018 and 2019 dataset, the number of participants in each gender group who responded “yes” was reported as a count and as a percentage of the total number of participants who responded to that question. Likelihood-ratio Chi-square analyses were applied as an omnibus test for differences in help-seeking variables across all five gender groups. Z-tests with Bonferroni correction were then applied to test for differences between each individual gender group at the level $p<0.05$.

3. Results

3.1. Sample composition

The total number of participants that responded to both gender questions was 185,055 (2,579; 1.4% trans) in the pooled dataset and 126,648 (1,710; 1.35%) in GDS 2018. The distribution of these participants across the five gender groups is summarized in Table 1. In the pooled sample, the largest group of respondents originated from Germany (n=66,977, 36.2%), followed by Denmark (n=17,708, 9.6%), the U.S. (n=11,494, 6.2%), New Zealand (n=7,630, 4.1%), and Poland (n=7,492, 4.0%). Nearly half (49.5%) of this sample was <25 years old. Sexual orientation was reported by only 66.3% (122,655) of the pooled sample. The low response rate is likely because the sexual orientation question was among the final questions, when some respondents had already ended their participation. Among cis responses, heterosexual was most common (83.7%), followed by bisexual (10.8%), homosexual (4.4%), and “other” (1.2%). Trans respondents were most likely to report a bisexual orientation (39.8%), followed by “other” (25.7%), heterosexual (19.7%), then homosexual (14.9%).

3.2. Psychoactive substance use and help-seeking analyses

Comparative analyses of substance use and dependence among cis and trans GDS 2018 respondents demonstrated increased risk among trans respondents. Specifically, non-binary participants, the highest risk gender group, reported the greatest odds of last 12-month use of all illicit substances (OR 1.66–2.93, relative to cis women) and the greatest odds of dependence on cannabis (OR 2.39) and alcohol (OR 3.28). Trans women had greater odds of reporting dependence on “novel psychoactive substances” (mephedrone, ketamine, and synthetic cannabinoids) than any other gender group (OR 4.60). These analyses will be presented in full in a forthcoming paper.

In the help-seeking analyses using the combined GDS 2018 and 2019 dataset (presented in Table 2), cis men were significantly more likely than cis women to report wanting to use less alcohol (34.0% vs 30.8%) and cannabis (30.9% vs 26.5%) in the next 12 months. However, trans men, trans women, and non-binary people did not differ significantly from any group on these measures. There were no significant differences between any gender groups on the composite measure assessing the desire to use illicit drugs less.

For both alcohol and cannabis, non-binary people had the greatest percentage of help-seekers among those wanting to use less (14.0% and 21.3% respectively). The proportion of help-seeking among non-binary people was significantly higher than among cis men and cis women but not significantly different from trans men or trans women.

For illicit drugs, trans women had the greatest percentage of help-seekers among those wanting to use less (30%). This was significantly higher than among cis men (9.6%) and cis women (10.4%), but not significantly different from trans men (12.5%) or non-binary people (16.3%).

[INSERT TABLE 2]

4. Discussion

4.1. Key findings

This study found that there were no significant differences between trans and cis participants on the desire to reduce psychoactive substance use in the subsequent 12 months. However, on the variable, “Would you like help to use less [substance] over the next 12 months?”, there were statistically, and potentially clinically meaningful, differences observed between trans and cis participants. Analysis of this variable was divided into three categories: alcohol, cannabis, and illicit drugs. In two of these analyses (cannabis and alcohol), non-binary people reported the greatest need for help; and in the third (illicit drugs), trans women

reported the greatest need for help. In addition, there appeared to be a trend of increasing risk, where cis women were the lowest risk groups and escalating risk was observed in cis men, followed by trans men, trans women, and non-binary people as the highest risk group.

4.2. Findings in context

Considering these findings in context, there is a nascent literature that demonstrates an increased risk for binge drinking (Messman & Leslie, 2019; Scheim, Bauer, & Shokoohi, 2016), harmful drinking (Staples, Neilson, George, Flaherty, & Davis, 2018; Tupler et al., 2017), and illicit drug use (Hebbar, Nagaraj, & Singh, 2018; Scheim et al., 2017) among trans people, relative to cis counterparts. This literature is in keeping with the substance use and dependence analyses from GDS 2018 and could explain the differences in the desire for help to reduce substance use observed in the GDS samples. These differences may also be a function of the barriers to treatment described above (Cochran & Cauce, 2006; Eliason, 2000; Lombardi & van Servellen, 2000; Nuttbrock, 2012; Rachlin et al., 2008; Sperber et al., 2005), whereby trans people are reporting a need for help more frequently than cis people because they lack accessible, inclusive substance misuse services and are expressing a need for an alternative source of support, such as gender-affirmative LGBT+ peer support groups (Matsuzaka, 2018).

4.3. Strengths and limitations

The greatest strength of this study is its sample size. GDS 2019 followed by GDS 2018 represent the largest reported samples of trans participants with cis comparators in the substance misuse literature. While five other studies in the substance misuse literature report on trans samples with ≥1,000 participants, none of these included cis participants and so could not make between-group comparisons (Gonzalez, Gallego, & Bockting, 2017; Klein & Golub, 2016; Reback & Fletcher, 2014; Reisner et al., 2015; Yi et al., 2017). Moreover,

since the primary aim of GDS is to understand drug use and not gender differences, the volunteer bias that may have affected the specialist research that we mention is unlikely to have influenced our findings (Eysenbach & Wyatt, 2002).

GDS also reports the largest sample of non-binary people in the substance misuse literature and is the first study to offer disaggregated analysis for non-binary participants (Flentje, Bacca, & Cochran, 2015; Keuroghlian, Reisner, White, & Weiss, 2015). Given the increased need for help that the non-binary participants in this study demonstrated and the increasing incidence of self-reported non-binary gender identity (Sell, Goldberg, & Conron, 2015), our study is an important step forward in understanding respondents who want to use less and their potential treatment needs.

Prior trans substance misuse research has been criticized for being dominated by studies from North America (Gilbert, Pass, Keuroghlian, Greenfield, & Reisner, 2018). The global samples presented here move toward a more general understanding of substance misuse help-seeking intentions among trans people, independent of country- or region-specific influences. However, this fails to capture the between-country variation in psychoactive substance use behaviors among trans people, which might relate to the acceptability of being trans in individual countries. Despite the large sample size in this study, the number of trans respondents would be too small to analyze accurately by country. As such, it was not possible for us to consider the cannabis legislation of individual nations and so we made a decision to consider cannabis separately from “illicit drugs” due to the large number of respondents reporting cannabis use.

We recognize that this study is limited by its cross-sectional design and that the nature of these questions allow only for an introductory understanding of substance misuse help-seeking among trans people. Moreover, it has not been possible to comment on help-seeking intentions for opioid users, despite the global opioid crisis (Anderson, 2017). Data on opioid use was not collected in GDS 2018. We had to combine the GDS 2018 and GDS 2019 datasets to have a sufficient number of trans respondents for meaningful comparison.

As such, help-seeking intentions were only reported for substances considered in both GDS 2018 and GDS 2019.

4.4. Future research and clinical implications

This work is novel and therefore needs to be replicated in similarly sized, and ideally more representative, samples. However, there is significant cost and difficulty associated with obtaining a representative sample of psychoactive substance users large enough to compare trans and cis respondents, particularly since psychoactive substance use and trans identity are both socially sensitive topics and highly stigmatized.

The GDS 2021 will explore additional items relating to barriers to treatment-seeking, negative experiences within treatment, and individuals' preferred method of support. The GDS 2021 will be useful to further understanding of the findings presented here. Qualitative work should also be conducted to gain a deeper understanding of the reasons why trans (particularly non-binary) people are reporting a greater desire for substance misuse help compared to their cis counterparts. Our research should be supplemented by research, both qualitative and quantitative, that seeks to identify which barriers and facilitators influence trans peoples' engagement with substance misuse services, both across the trans community and within particular subgroups; e.g., trans men.

The finding that trans people may be more likely to want help for substance misuse than cis people reinforces how worrying a finding it is that as few as 5% of substance misuse service providers report formal education surrounding the needs of trans clients (Rachlin et al., 2008). As an introduction to concepts of (trans)gender as they relate to health, we recommend the following introductory texts: American Psychological Association (2015); Richards, Bouman, & Barker (2017); and Vincent (2018). Following an introduction to these concepts, we recommend formal training for service providers, with the aim of empowering them to: a) communicate sensitively with trans clients, with appropriate language and

pronoun use; b) develop an awareness of the violence that trans people face, including within healthcare settings (Lyons et al., 2015; Reisner et al., 2015); c) offer trans people access to single-gender spaces that reflect their lived gender; d) facilitate the development of trans-specific peer-support groups; and e) work collaboratively with trans people to develop service-user informed psychosocial interventions. In addition, we recommend the use of the two-stage approach to recording gender in initial assessments, in the clinical setting (Bauer et al., 2017; Sausa et al., 2009). Recording gender in this way demonstrates cultural competence and allows trans people to disclose their identity to ensure that they receive the benefits of the aforementioned training.

5. Conclusions

This study suggests that trans people may have a greater need for substance misuse services than their cis counterparts. Considering this finding in the context of potentially stigmatizing general substance misuse services and a paucity of specialist alternatives, there is a need for both clinicians and researchers to move beyond the current cisnormative binary conception of gender so that the needs of substance using trans people can be understood and met.

References:

American Psychological Association. (2015). *Guidelines for Psychological Practice With Transgender and Gender Nonconforming People*. https://doi.org/10.1037/a0039906

Anderson, T. (2017). Curbing prescription opioid dependency. An epidemic of overdoses and deaths from opioids is fuelled by increased prescribing and sales in North America. *Bull World Health Organ*, *95*, 318–319. https://doi.org/http://dx.doi.org/10.2471/BLT.17.020517

Arayasirikul, S., Wilson, E. C., & Raymond, H. F. (2017). Examining the Effects of Transphobic Discrimination and Race on HIV Risk Among Transwomen in San Francisco. *AIDS and Behavior*, *21*(9), 2628–2633. https://doi.org/10.1007/s10461-017-1728-3

Barratt, M. J., Ferris, J. A., Zahnow, R., Palamar, J. J., Maier, L. J., & Winstock, A. R. (2017). Moving on From Representativeness: Testing the Utility of the Global Drug Survey. *Substance Abuse: Research and Treatment*, *11*, 117822181771639. https://doi.org/10.1177/1178221817716391

Bauer, G. R., Braimoh, J., Scheim, A. I., & Dharma, C. (2017). Transgender-inclusive measures of sex/gender for population surveys: Mixed-methods evaluation and recommendations. *PLOS ONE*, *12*(5), e0178043. https://doi.org/10.1371/journal.pone.0178043

Benotsch, E. G., Zimmerman, R., Cathers, L., McNulty, S., Pierce, J., Heck, T., … Snipes, D. (2013). Non-medical use of prescription drugs, polysubstance use, and mental health in transgender adults. *Drug and Alcohol Dependence*, *132*(1–2), 391–394. https://doi.org/10.1016/j.drugalcdep.2013.02.027

Bockting, W. O. (2009). Transforming the paradigm of transgender health: a field in transition. *Sexual and Relationship Therapy*, *24*(2), 103–107. https://doi.org/10.1080/14681990903037660

Bockting, W. O., Miner, M. H., Swinburne Romine, R. E., Hamilton, A., & Coleman, E. (2013). Stigma, mental health, and resilience in an online sample of the US transgender population. *American Journal of Public Health*, *103*(5), 943–951. https://doi.org/10.2105/AJPH.2013.301241

Budhwani, H., Hearld, K. R., Milner, A. N., McGlaughlin, E., Charow, R., Rodriguez-Lauzurique, R. M., … Paulino-Ramirez, R. (2017). Transgender Women's Drug Use in the Dominican Republic. *Transgender Health*, *2*(1), 188–194. https://doi.org/10.1089/trgh.2017.0032

Carroll, L., Gilroy, P. J., & Ryan, J. (2002). Counseling Transgendered, Transsexual, and Gender-Variant Clients. *Journal of Counseling & Development*, *80*(2), 131–139. https://doi.org/10.1002/j.1556-6678.2002.tb00175.x

Chakrapani, V., Newman, P. A., Shunmugam, M., Logie, C. H., & Samuel, M. (2017). Syndemics of depression, alcohol use, and victimisation, and their association with HIV-related sexual risk among men who have sex with men and transgender women in India. *Global Public Health*, *12*(2), 250–265. https://doi.org/10.1080/17441692.2015.1091024

Clark, T. C., Lucassen, M. F. G., Bullen, P., Denny, S. J., Fleming, T. M., Robinson, E. M., & Rossen, F. V. (2014). The health and well-being of transgender high school students: Results from the New Zealand adolescent health survey (youth'12). *Journal of Adolescent Health*, *55*(1), 93–99. https://doi.org/10.1016/j.jadohealth.2013.11.008

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, 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

Conron, K. J., Scott, G., Stowell, G. S., & Landers, S. J. (2012). Transgender health in massachusetts: Results from a household probability sample of adults. *American Journal of Public Health*, *102*(1), 118–122. https://doi.org/10.2105/AJPH.2011.300315

Davies, E. L., Maier, L. J., Winstock, A. R., & Ferris, J. A. (2019). Intention to reduce drinking alcohol and preferred sources of support: An international cross-sectional study. *Journal of Substance Abuse Treatment*, *99*, 80–87. https://doi.org/10.1016/J.JSAT.2019.01.011

Eliason, M. J. (2000). Substance abuse counsellor's attitudes regarding lesbian, gay, bisexual, and transgendered clients. *Journal of Substance Abuse*, *12*(4), 311–328.

Eyler, A. E. (2007). Primary medical care of the gender-variant patient. In R. Ettner, S. Monstrey, & A. E. Eyler (Eds.), *Principles of transgender medicine and surgery* (pp. 15–32). New York: The Haworth Press.

Eysenbach, G., & Wyatt, J. (2002). Using the Internet for Surveys and Health Research. *Journal of Medical Internet Research*, *4*(2), e13. https://doi.org/10.2196/jmir.4.2.e13

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

Flores, A. R., Herman, J. L., Gates, G. J., & Brown, T. N. T. (2016). *How many adults identify as transgender in the United States?* Los Angeles, CA. Retrieved from https://williamsinstitute.law.ucla.edu/wp-content/uploads/How-Many-Adults-Identify-as-Transgender-in-the-United-States.pdf

Gilbert, P. A., Pass, L. E., Keuroghlian, A. S., Greenfield, T. K., & Reisner, S. L. (2018). Alcohol research with transgender populations: A systematic review and recommendations to strengthen future studies. *Drug and Alcohol Dependence*, *186*, 138–146. https://doi.org/10.1016/j.drugalcdep.2018.01.016

Glen, F., & Hurrell, K. (2012). *Technical note: Measuring Gender Identity*. Retrieved from https://www.equalityhumanrights.com/sites/default/files/technical_note_final.pdf

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

Gonzalez, C. A., Gallego, J. D., & Bockting, W. O. (2017). Demographic Characteristics, Components of Sexuality and Gender, and Minority Stress and Their Associations to Excessive Alcohol, Cannabis, and Illicit (Noncannabis) Drug Use Among a Large Sample of Transgender People in the United States. *The Journal of Primary Prevention*, *38*(4), 419–445. https://doi.org/10.1007/s10935-017-0469-4

Gossop, M., Darke, S., Griffiths, P., Hando, J., Powis, B., Hall, W., & Strang, J. (1995). The Severity of Dependence Scale (SDS): psychometric properties of the SDS in English and Australian samples of heroin, cocaine and amphetamine users. *Addiction*, *90*(5), 607–614.

Government Equalities Office. (2018). *Trans People in the UK*. Retrieved from https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/fil

e/721642/GEO-LGBT-factsheet.pdf

Hebbar, Y. R. N., Nagaraj, S., & Singh, R. L. (2018). Psychiatric morbidities in transgender and cisgender people of Manipur, India: A comparative study. *Asean Journal of Psychiatry 19*(2), http://www.aseanjournalofpsychiatry.org/index.php/aseanjournalofpsychiatry/article/download/681/416

Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the Minority Stress Model. *Professional Psychology: Research and Practice*, *43*(5), 460–467. https://doi.org/10.1037/a0029597

International Business Machines Corporation. (2018). IBM SPSS Statistics Software version 25.

Keuroghlian, A. S., Reisner, S. L., White, J. M., & Weiss, R. D. (2015). Substance use and treatment of substance use disorders in a community sample of transgender adults. *Drug and Alcohol Dependence*, *152*, 139–146. https://doi.org/https://dx.doi.org/10.1016/j.drugalcdep.2015.04.008

Kidd, S. A., Veltman, A., Gately, C., Chan, K. J., & Cohen, J. N. (2011). Lesbian, Gay, and Transgender Persons with Severe Mental Illness: Negotiating Wellness in the Context of Multiple Sources of Stigma. *American Journal of Psychiatric Rehabilitation*, *14*(1), 13–39. https://doi.org/10.1080/15487768.2011.546277

Klein, A., & Golub, S. A. (2016). Family Rejection as a Predictor of Suicide Attempts and Substance Misuse Among Transgender and Gender Nonconforming Adults. *LGBT Health*, *3*(3), 193–199. https://doi.org/10.1089/lgbt.2015.0111

Kuyper, L., & Wijsen, C. (2014). Gender identities and gender dysphoria in the Netherlands. *Archives of Sexual Behavior*, *43*(2), 377–385. https://doi.org/10.1007/s10508-013-0140-y

LGBT Youth Scotland, & Equality Network. (2010). *Out of sight, out of mind? Transgender People's Experiences of Domestic Abuse*. Retrieved from https://www.scottishtrans.org/wp-content/uploads/2013/03/trans_domestic_abuse.pdf

Lombardi, E. L., & van Servellen, G. (2000). Building culturally sensitive substance use prevention and treatment programs for transgendered populations. *Journal of Substance Abuse Treatment*, *19*(3), 291–296.

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

Marsh, S., Mohdin, A., & McIntyre, N. (n.d.). Homophobic and transphobic hate crimes surge in England and Wales. Retrieved June 16, 2019, from https://www.theguardian.com/world/2019/jun/14/homophobic-and-transphobic-hate-crimes-surge-in-england-and-wales

Matsuzaka, S. (2018). Alcoholics anonymous is a fellowship of *people* : A qualitative study. *Alcoholism Treatment Quarterly*, *36*(2), 152–178. https://doi.org/10.1080/07347324.2017.1420435

Mayer, K. H., Bradford, J. B., Makadon, H. J., Stall, R., Goldhammer, H., & Landers, S. (2008). Sexual and gender minority health: what we know and what needs to be done. *American Journal of Public Health*, *98*(6), 989–995. https://doi.org/10.2105/AJPH.2007.127811

Meerwijk, E. L., & Sevelius, J. M. (2017). Transgender population size in the United States: A meta-regression of population-based probability samples. *American Journal of Public Health*, *107*(2), e1–e8. https://doi.org/10.2105/AJPH.2016.303578

Messman, J. B., & Leslie, L. A. (2019). Transgender college students: Academic resilience and striving to cope in the face of marginalized health. *Journal of American College Health*, *67*(2), 161–173. https://doi.org/10.1080/07448481.2018.1465060

Nuttbrock, L. A. (2012). Culturally competent substance abuse treatment with transgender persons. *Journal of Addictive Diseases*, *31*(3), 236–241. https://doi.org/https://dx.doi.org/10.1080/10550887.2012.694600

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

Rachlin, K., Green, J., & Lombardi, E. (2008). Utilization of health care among female-to-male

transgender individuals in the United States. *Journal of Homosexuality*, *54*(3), 243–258. https://doi.org/10.1080/00918360801982124

Reback, C. J., & Fletcher, J. B. (2014). HIV prevalence, substance use, and sexual risk behaviors among transgender women recruited through outreach. *AIDS and Behavior*, *18*(7), 1359–1367. https://doi.org/10.1007/s10461-013-0657-z

Reisner, S. L., Pardo, S. T., Gamarel, K. E., Hughto, J. M. W., Pardee, D. J., & Keo-Meier, C. L. (2015). Substance use to cope with stigma in healthcare among U.S. female-to-male trans masculine adults. *LGBT Health*, *2*(4), 324–332. https://doi.org/10.1089/lgbt.2015.0001

Reisner, S. L., Poteat, T., Keatley, J., Cabral, M., Mothopeng, T., Dunham, E., … Baral, S. D. (2016). Global health burden and needs of transgender populations: a review. *Lancet*, *388*(10042), 412–436. https://doi.org/10.1016/S0140-6736(16)00684-X

Richards, C., Bouman, W. P., & Barker, M.-J. (Eds.). (2017). *Genderqueer and Non-Binary Genders*. London, UK: Palgrave Macmillan.

Sausa, L., Sevelius, J., Keatley, J., Iniguez, J., & Reyes, M. (2009). *Policy Recommendations for Inclusive Data Collection of Trans People in HIV Prevention, Care and Services.* Retrieved from http://transhealth.ucsf.edu/trans?page=lib-data-collection

Scheim, A. I., Bauer, G. R., & Shokoohi, M. (2016). Heavy episodic drinking among transgender persons: Disparities and predictors. *Drug and Alcohol Dependence*, *167*, 156–162. https://doi.org/https://dx.doi.org/10.1016/j.drugalcdep.2016.08.011

Scheim, A. I., Bauer, G. R., & Shokoohi, M. (2017). Drug use among transgender people in Ontario, Canada: Disparities and associations with social exclusion. *Addictive Behaviors*, *72*, 151–158. https://doi.org/10.1016/j.addbeh.2017.03.022

Sell, R., Goldberg, S., & Conron, K. (2015). The utility of an online convenience panel for reaching rare and dispersed populations. *PLOS ONE*, *10*(12), e0144011. https://doi.org/10.1371/journal.pone.0144011

Shah, H. B. U., Rashid, F., Atif, I., Hydrie, M. Z., Fawad, M. W. Bin, Muzaffar, H. Z., … A., H. H. (2018). Challenges faced by marginalized communities such as transgenders in Pakistan. *The*

Pan African Medical Journal, *30*, 96. https://doi.org/http://dx.doi.org/10.11604/pamj.2018.30.96.12818

Sperber, J., Landers, S., & Lawrence, S. (2005). Access to health care for transgendered persons: Results of a needs assessment in Boston. *International Journal of Transgenderism*, *8*(2–3), 75–91. https://doi.org/10.1300/J485v08n02_08

Staples, J. M., Neilson, E. C., George, W. H., Flaherty, B. P., & Davis, K. C. (2018). A descriptive analysis of alcohol behaviors across gender subgroups within a sample of transgender adults. *Addictive Behaviors*, *76*, 355–362. https://doi.org/10.1016/j.addbeh.2017.08.017

Stieglitz, K. A. (2010). Development, risk, and resilience of transgender youth. *Journal of the Association of Nurses in AIDS Care*, *21*(3), 192–206. https://doi.org/10.1016/j.jana.2009.08.004

Stotzer, R. L. (2009). Violence against transgender people: A review of United States data. *Aggression and Violent Behavior*, *14*(3), 170–179. https://doi.org/10.1016/J.AVB.2009.01.006

Tupler, L. A., Zapp, D., DeJong, W., Ali, M., O'Rourke, S., Looney, J., & Swartzwelder, H. S. (2017). Alcohol-related blackouts, negative alcohol-related consequences, and motivations for drinking reported by newly matriculating transgender college students. *Alcoholism: Clinical and Experimental Research*, *41*(5), 1012–1023. https://doi.org/10.1111/acer.13358

Van Caenegem, E., Wierckx, K., Elaut, E., Buysse, A., Dewaele, A., Van Nieuwerburgh, F., … T'Sjoen, G. (2015). Prevalence of gender nonconformity in Flanders, Belgium. *Archives of Sexual Behavior*, *44*(5), 1281–1287. https://doi.org/10.1007/s10508-014-0452-6

Vincent, B. (2018). *Transgender Health*. London: Jessica Kingsley Publishers.

Winter, S., Diamond, M., Green, J., Karasic, D., Reed, T., Whittle, S., & Wylie, K. (2016). Transgender people: health at the margins of society. *Lancet*, *388*. https://doi.org/10.1016/S0140-6736(16)00683-8

Wirtz, A. L., Poteat, T. C., Malik, M., & Glass, N. (2018). Gender-based violence against transgender people in the United States: A call for research and programming. *Trauma, Violence, and Abuse*. https://doi.org/10.1177/1524838018757749

Yi, S., Ngin, C., Tuot, S., Chhoun, P., Chhim, S., Pal, K., … Mburu, G. (2017). HIV prevalence, risky

behaviors, and discrimination experiences among transgender women in Cambodia: descriptive findings from a national integrated biological and behavioral survey. *BMC International Health and Human Rights*, *17*(1), 14. https://doi.org/10.1186/s12914-017-0122-6

Table 1: Classification and distribution of gender groups.

Birth assigned gender	Gender identity	Gender group	Number of participants
Female	Female	Cis woman	64,319
Male	Male	Cis man	118,157
Male	Female	Trans woman*	353
Female	Male	Trans man*	369
Female	Non-binary	Non-binary*	1,857
Male	Non-binary		
Female	Different identity		
Male	Different Identity		

Notes: *trans

Table 2: Percentage of GDS respondents who report wanting to use alcohol and other drugs less often, or get help with using less, by gender.

	Cis men	Cis women	Trans men	Trans women	Non-binary	χ^2 (df = 4)
Want to drink less alcohol	34.0% (35,243)[a]	30.8% (17,774)[b]	28.9% (87)[a,b]	30.1% (88)[a,b]	33.3% (512)[a,b]	178.1***
Want help to drink less alcohol	8.5% (2,947)[a]	7.9% (1,384)[a]	11.5% (10)[a,b]	10.5% (9)[a,b]	14.0% (71)[b]	25.1***
Want to use less cannabis	30.9% (18,069)[a]	26.5% (6,424)[b]	23.2% (43)[a,b]	21.9% (39)[a,b]	28.7% (290)[a,b]	172.4***
Want help to use less cannabis	12.3% (1,981)[a]	13.1% (728)[a]	23.1% (9)[a,b]	27.0% (10)[a,b]	21.3% (56)[b]	27.0***
Want to use less illicit drugs	46.7% (15,554)[a]	45.9% (6,895)[a]	47.1% (41)[a]	35.3% (41)[a]	41.5% (252)[a]	14.1**
Want help to use less illicit drugs	10.6% (1,046)[a]	10.9% (415)[a]	13.0% (3)[a,b]	30.0% (9)[b]	15.1% (27)[a,b]	11.7*

Notes: *p<0.05; **p<0.01; ***p<0.0001; df: degrees of freedom; each superscript letter (a,b,c) indicates a group which differs significantly from any group not denoted with the same superscript letter, at the level p<0.05, e.g. on the measure ‘want to drink less alcohol’ cis men significantly differed from cis women but not from trans men.

[i] These composite variables were necessary because the number of responses for individual substances was too small to allow for meaningful analysis. For example, the question “Would you like help to use less cocaine over the next 12 months?” had only 82 trans respondents (trans men n=10, trans women n=8, non-binary n=64). Similarly, the question “Would you like help to use less methamphetamine over the next 12 months?” had 35 trans respondents (trans men n=3, trans women n=6, non-binary n=26).