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Missing data in substance abuse research? Researchers' reporting practices of sexual orientation and gender identity

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Abstract

Background—Lesbian, gay, bisexual, and transgender individuals are at higher risk for substance use and substance use disorders than heterosexual individuals and are more likely to seek substance use treatment, yet sexual orientation and gender identity are frequently not reported in the research literature. The purpose of this study was to identify if sexual orientation and gender identity are being reported in the recent substance use literature, and if this has changed over time.

Method—The *PsycINFO* and PubMed databases were searched for articles released in 2007 and 2012 using the term “substance abuse” and 200 articles were randomly selected from each time period and database. Articles were coded for the presence or absence of sexual orientation and gender identity information.

Results—Participants' sexual orientation was reported in 3.0% and 4.9% of the 2007 and 2.3% and 6.5% of the 2012 sample, in *PsycINFO* and PubMed sample articles, respectively, while non-binary gender identity was reported in 0% and 1.0% of the 2007 sample and 2.3% and 1.9% of the 2012 *PsycINFO* and PubMed sample articles. There were no differences in rates of reporting over time.

Conclusions—Sexual orientation and gender identity are rarely reported in the substance abuse literature, and there has not been a change in reporting practices between 2007 and 2012.

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Recommendations for future investigators in reporting sexual orientation and gender identity are included.

Keywords

Lesbian; gay; bisexual; transgender; health disparities; substance abuse

1. INTRODUCTION

Previous research indicates heightened rates of substance use disorders (Keckojevic et al., 2012; McCabe et al., 2013; Mereish and Bradford, 2014) and treatment-seeking for substance misuse (Cochran and Mays, 2000; McCabe et al., 2013) among lesbian, gay, bisexual¹, and transgender² (LGBT) individuals compared to heterosexual and cisgender² individuals. In addition, LGBT populations experience other mental health disparities, including higher rates of depression and suicide attempts (Burton et al., 2013; Conron, et al., 2010; Lick et al., 2013). These mental health disparities have been attributed to stigma, discrimination, bullying, internalized homophobia, family conflict, abuse, and sexual minority specific victimization experienced by LGBT individuals (Burton et al., 2013; Keckojevic et al., 2012; Lick et al., 2013; Meyer, 2003).

Despite awareness of these health disparities experienced by LGBT individuals, federally funded surveys have failed to collect data on sexual orientation and gender identity (Cahill and Makadon, 2014a; Institute of Medicine, 2011) although there is a push to integrate these variables into electronic health records (Cahill and Makadon, 2014b). Recently, the United States Department of Health and Human Services (USDHHS, 2010, see Healthy People 2020) and the Institute of Medicine (IOM, 2011) laid out research agendas to advance the understanding of LGBT Health. Due to the lack of sexual orientation and gender identity data, researchers are missing important predictors that could account for variability in health research. The collection of sexual orientation and gender identity as basic demographic variables, alongside demographic variables such as race, sex, and age, could inform existing research, better identify health disparities, and aid in the development of substance use interventions specific to the needs of LGBT individuals.

1.1 Considerations for Measurement

It is important to consider the best options for the measurement of sexual orientation and gender identity. Measurement guidelines are still evolving, which may be daunting for the researcher. Nonetheless, some good options for measurement are emerging. For example, the Center of Excellence for Transgender Health at University of California, San Francisco advocates the use of a two-step question that captures a transgender person's current gender identity as well as their assigned sex at birth: This two-step process first queries "current

¹Heterosexual, lesbian, gay, and bisexual refer to sexual orientation: that is the gender that someone is attracted to, sexually active with, or wants to partner with. Non-heterosexual individuals may be referred to as sexual minorities.

²Transgender and cisgender refer to gender identity, which describes the gender with which an individual identifies, which is not necessarily consistent with sex (determined by physiological characteristics) assigned at birth. Transgender identity describes a gender identity that is not consistent with the identity assigned to an individual at birth, while cisgender is defined as a gender identity wherein an individual experiences a gender identity that is congruent with the individual's assigned sex at birth. Non-cisgender individuals may be referred to as gender minorities.

gender identity” then follows with a question querying “assigned sex at birth” (Sausa et al., 2009). Cahill and Makadon (2014) also recommend the two step method, but in the reverse order. It has been found that this technique provides more detailed and accurate demographic information and also increases overall rates of identification of transgender individuals as compared to a single question asking respondents’ gender with choices of “male,” “female,” “transgender,” or “other” (Tate et al., 2012).

Sexual orientation can also be challenging to measure, as it is a multidimensional construct and its measurement has varied considerably over time (Sell, 1997). At minimum, a measure of identity (i.e., the category of sexual orientation with which one identifies such as heterosexual, lesbian, gay, or bisexual) can be included, although it is important to consider that sexual orientation can also include behavioral and attraction domains, which can be incongruent with one another (Korchmaros et al., 2013) and that substance use behaviors can differ depending on which component of sexual orientation is being measured (McCabe et al., 2013).

It is also possible to use open-ended responses to capture both sexual orientation and gender identity, which can result in a wealth of responses (Harrison et al., 2011). Non-binary, open response scales could more accurately describe each individual, although they can make data compilation more complicated.

1.2 Purpose of this Study

The purpose of the present study is to evaluate the degree to which sexual orientation and gender identity have been reported within the substance abuse literature. Additionally, we evaluated if there has been a change in the reporting of these variables from 2007 to 2012, a time period which corresponds to the prioritization of LGBT health (USDHHS, 2010; IOM, 2011).

2. METHOD

To identify articles for this study, the PsycINFO and PubMed databases were searched with specific criteria, and 200 articles were randomly selected from 2007 and 2012 from each of the two databases (resulting in a total of 800 randomly selected articles). PsycINFO contains over 3.7 million records from an estimated 2,500 journals from over 50 countries covering multiple disciplines related to psychology including: medicine, nursing, and neuroscience (American Psychological Association, 2014). PubMed includes over 23 million biomedical records from both the MEDLINE® database, which includes biomedical journal article citations from over 5500 journals, and citations submitted to PubMed Central voluntarily by publishers or authors (United States National Library of Medicine, 2014). In PsycINFO, search parameters included: the keyword “substance abuse”, publication type “peer-reviewed journal”, and methodology limited to “empirical study”; while in PubMed, search parameters were search terms “substance abuse” and publication type “Journal”. Search parameters differed between the two databases due to different search capabilities in the databases (e.g., it is not possible to search for peer-reviewed articles in PubMed, U.S. National Library of Medicine, 2013). PubMed uses Medical Subject Headings (MeSH), a thesaurus of terms, which expanded the search to include “substance-related disorders” in

addition to “substance” and “abuse”. At the time the searches were conducted, the PsycINFO search yielded 559 articles for 2007 and 1,861 articles for 2012, while PubMed returned 8,333 articles for 2007 and 10,002 articles for 2012. Notably, articles could have been included in the results if they were published in some form in those years; for example, an online publication date of 2012 and a print publication date of 2013 would still show up in a search restricting articles to 2012. Two hundred articles were randomly selected from each of the 2007 and 2012 records using a random number generator. Articles were then read and coded by a team of undergraduate, post-baccalaureate, and graduate level researchers.

Articles were retained for analysis if they were available in English and had human subjects for whom they reported basic demographic information. Excluded articles included studies where the subjects were not human individuals but were instead: animals, institutions, cell cultures, genes, and autopsies. Methods and results sections of articles were thoroughly reviewed in order to determine a presence or absence of the reporting of sexual orientation or gender identity. The measurement of sexual orientation was recorded as existing in the article if the article contained any indication of the sexual orientation of participants based on behavior, identity, or partner status (e.g., in a demographic table). Articles that reported solely opposite-sex sexual behaviors or relationship status, but did not address the potential for same-sex behaviors, identification, or relationship status were not coded as reporting sexual orientation. Articles were coded to indicate that they reported non-binary gender identity if there was any indication of gender options beyond male or female; this could include options such as: transgender, preferred not to answer, and other. The total number of participants in each retained study was recorded, as were the number of sexual minorities (i.e., not solely heterosexual in behavior or identity) and gender minorities (i.e., not within a binary gender of male or female). Frequency data were compiled on each of the two years for each of the databases. A one-sided Fisher’s exact test was used to compare the reporting of sexual orientation and gender identity (considered separately) in 2007 and 2012, pooling the two databases, to detect changes in reporting practices over time.

3. RESULTS

Results, including details by year and database, are reported in Table 1. Of the 800 randomly selected articles, 343 (85.8%) in PsycINFO and 210 (52.5%) in Pubmed met inclusion criteria and were retained for analysis. A total of 21 articles (3.8%) reported sexual orientation and 7 (1.3%) reported non-binary gender identity, representing 26 total articles with 2 (0.4%) articles reporting both sexual orientation and gender identity. There was no detectable difference in the frequency of reporting of sexual orientation (1-sided Fisher’s exact test $p=0.55$) nor non-binary gender identity (1-sided Fisher’s exact test $p=0.07$) between 2007 and 2012.

The 26 studies that reported sexual orientation or non-binary gender identity are reported in Table 2, along with a description of how they measured these constructs. Of these studies, 13(50%) of studies were directly related to HIV. The 21 studies that reported sexual orientation reported options of gay, lesbian, bisexual (11 studies), used measures of sexual behavior (5 reported men who have sex with men [MSM] and 1 used same sex sexual

behavior), used unidentified methods which identified non-heterosexual participants (2 studies), used multiple measures of sexual orientation (1 study), and used a scale of sexual orientation ranging from 100% heterosexual to 100% homosexual (1 study). The 7 studies which reported non-binary gender identity included reporting of transgender identity (3 studies), “not reported” responses to questions of sex (2 studies), transgender or intersex (1 study), and an option for “other” gender (1 study).

4. DISCUSSION

In this study, we found that sexual orientation and gender identity are rarely being reported in the substance abuse literature. Even more rare are studies that report both sexual orientation and gender identity, limited to only 2 studies within our sample. Additionally, we found that there has not been a detectable change in rates of reporting these variables over time. The lack of sexual orientation and gender identity data in the substance abuse literature may be due to concerns that questions about sexual orientation or gender identity may make participants uncomfortable, or may reflect that sexual orientation and gender identity have not yet been embraced as basic demographic variables.

When sexual orientation and gender identity are queried in the literature, it is often the case that the researchers have a vested interest in studying an issue that is particularly relevant to LGBT populations (e.g., grant-funded research regarding HIV infection and sexual risk taking among gay or bisexual men). Consistent with this, half of the studies we reviewed that reported sexual orientation or gender identity were focused on HIV. There is a need to regularly and systematically measure sexual orientation and gender identity within substance abuse research alongside other demographic variables due to the disproportionate risk among these groups. The reporting of these variables, even when research studies are not focused exclusively on gender and sexuality, could provide estimates of effect size for other research or inform meta-analytic research to answer research questions of interest regarding sexual and gender minority substance use or treatment.

The inclusion of only binary options for gender also relies on the assumption that only binary gender identities are valid gender identities. In doing so, most of our research incorporates a binary social construction of gender (Connell and Messerschmidt, 2005; Courtnay, 2000; Payne et al., 2008; West and Zimmerman, 1987), something arbitrary but accepted as an ingrained component of research methodology. Providing non-binary options for gender may result in a more accurate representation of gender in the research.

Limitations and Future Directions

This study was limited in its use of published research within two databases, which may not include all available research. We also did not take into account studies in which sexual orientation may have been measured but was not reported due to factors such as a need for brevity or a lack of sexual or gender minorities in the sample. It is also possible that publications in 2012 may not accurately reflect change in response to IOM and Healthy People 2020 recommendations due to delays in the publication process or research protocols that were already being executed. In addition, this study may have overestimated the number of gender minorities represented in the reviewed studies, as studies which reported the non-

binary response of “not reported” for sex variables may have included individuals who did not report their sex for a variety of reasons, not limited to transgender identity. Despite these limitations, we believe that this study has identified that sexual orientation and gender identity are rarely reported in the literature and we hope that it will encourage researchers to account for these important variables in the future both within substance use research and in related fields such as social work, education, public health, and public policy.

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- Mereish EH, Bradford JB. Intersecting identities and substance use problems: sexual orientation, gender, race, and lifetime substance use problems. *J Stud Alcohol Drugs*. 2014; 75:179–188. [PubMed: 24411810]
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Highlights

- We randomly selected “substance abuse” articles from the PsycINFO and PubMed databases.
- We identified if research articles reported sexual orientation and gender identity.
- We found that few articles report sexual orientation and gender identity.
- We recommend collecting sexual orientation and gender identity data.

Table 1

Reporting of sexual orientation and gender identity in articles

	All articles N=800	PsycINFO		PubMed	
		2007 n=200	2012 n=200	2007 n=200	2012 n=200
Articles meeting inclusion criteria <i>n</i> (% of total sampled)	553 (69.1%)	166 (83.0%)	177 (88.5%)	103 (51.5%)	107 (53.5%)
Report Sexual Orientation <i>n</i> (% of articles included)	21 (3.8%)	5 (3.0%)	4 (2.3%)	5 (4.9%)	7 (6.5%)
Report Non-binary Gender Identity <i>n</i> (% of articles included)	7 (1.3%)	0 (0.0%)	4 (2.3%)	1 (1.0%)	2 (1.9%)
# of participants in included studies	5,546,158	706,312	802,386	3,134,605	902,855
# sexual minorities identified (% of # of participants in included studies)	12,289 (0.2%)	1163 (0.2%)	408 (0.1%)	3797 (0.1%)	6921 (0.8%)
# of gender minorities identified (% of # of participants in included studies)	836 (<0.1%)	0 (0.0%)	25 (<0.1%)	3 (<0.1%)	808 (0.1%)

Table 2

Studies that reported sexual orientation or gender identity

Study Citation	Sexual orientation measurement or reporting	Gender identity measurement or reporting	Comments on the study	HIV related study
2007 Psycinfo				
Cabral HJ, Tobias C, Rajabian S, Sohler N, Cunningham C, Wong M, Cunningham W. Outreach program contacts: do they increase the likelihood of engagement and retention in HIV primary care for hard- to-reach patients? AIDS Patient Care STDS. 2007;21 Suppl 1:S59-67.	Stated they measured sexual orientation, reported it only as sexual minority (yes/no)	Not reported	N/A	Yes
Feldman MB, Meyer IH. Childhood abuse and eating disorders in gay and bisexual men. Int J Eat Disord. 2007 Jul;40(5):418-23.	Gay or bisexual	Not reported	Study only included gay and bisexual men	No
Meade CS, Sikkema KJ. Psychiatric and psychosocial correlates of sexual risk behavior among adults with severe mental illness. Community Ment Health J. 2007 Apr;43(2):153-69.	Gay, lesbian, or bisexual	Not reported	N/A	Yes
Mustanski B, Garofalo R, Herrick A, Donenberg G. Psychosocial health problems increase risk for HIV among urban young men who have sex with men: preliminary evidence of a syndemic in need of attention. Ann Behav Med. 2007 Aug; 34(1):37-45.	Gay, bisexual, or other/questioning	Not reported	Study only included young MSM	Yes
Savage A, Quiros L, Dodd, SJ, Bonavota, D. Building trauma informed practice: Appreciating the impact of trauma in the lives of women with substance abuse and mental health problems. J Soc Work Pract Addict 2007; 7(1-2): 91-116.	Heterosexual, bisexual, lesbian	Not reported	N/A	No
2007 Pubmed				
Calzavara L, Ramuscak N, Burchell AN, Swantee C, Myers T, Ford P, Fearon M, Raymond S. Prevalence of HIV and hepatitis C virus infections among inmates of Ontario remand facilities. Can Med Assoc J. 2007 Jul 31;177(3):257-61.	History of sex with same sex partner	Not reported	N/A	Yes
Colfax GN, Vittinghoff E, Grant R, Lum P, Spotts G, Hecht FM. Frequent methamphetamine use is associated with primary non-nucleoside reverse transcriptase inhibitor resistance. AIDS. 2007 Jan 11;21(2):239-41.	Men who have sex with men (MSM)	Not reported	Study only included MSM	Yes
Hurtado I, Alastrue I, Ferreros I, del Amo J, Santos C, Tasa T, Hernández-Aguado I, Pérez-Hoyos S. Trends in HIV testing, serial HIV prevalence and HIV incidence among people attending a Center for AIDS Prevention from 1988 to 2003. Sex Transm Infect. 2007 Feb;83(1):23-8.	Participants are described in terms of HIV risk categories: MSM, heterosexual, or injecting drug user (IDU)	Not reported	N/A	Yes
Kipke MD, Weiss G, Wong CF. Residential status as a risk factor for drug use and HIV risk among young men who have sex with men. AIDS Behav. 2007 Nov;11(6 Suppl):56-69. Epub 2007 Jan 30.	Measured both sexual identity (gay, bisexual), attraction, and behavior	Not reported	Study only included men who identified as gay or bisexual or	Yes

Study Citation	Sexual orientation measurement or reporting	Gender identity measurement or reporting	Comments on the study	HIV related study
Nicholas PK, Voss JG, Corless IB, Lindgren TG, Wantland DJ, Kempainen JK, Canaval GE, Sefcik EF, Nokes KM, Bain CA, Kirksey KM, Eller LS, Dole PJ, Hamilton MJ, Coleman CL, Holzemer WL, Reynolds NR, Portillo CJ, Bunch EH, Tsai YF, Mendez MR, Davis SM, Gallagher DM. Unhealthy behaviours for self-management of HIV-related peripheral neuropathy. <i>AIDS Care</i> . 2007 Nov;19(10):1266–73.	Not reported	Transgender was reported as a gender option	recently had sex with a man N/A	Yes
Zule WA, Costenbader E, Coomes CM, Meyer WJ Jr, Riehmman K, Poehlinan J, Wechsberg WM. Stimulant use and sexual risk behaviors for HIV in rural North Carolina. <i>J Rural Health</i> . 2007 Fall;23 Suppl:73–8.	Gay, lesbian, bisexual, and heterosexual	Not reported	N/A	Yes
2012 Psycinfo				
Blain LM, Muench F, Morgenstern J, Parsons JT. Exploring the role of child sexual abuse and posttraumatic stress disorder symptoms in gay and bisexual men reporting compulsive sexual behavior. <i>Child Abuse Negl</i> . 2012 May;36(5):413–22.	Gay or bisexual	Not reported	Study only included gay or bisexual men	No
Graceffo JM., Hayes JA, Chun-Kennedy C Locke BD. (2012). Characteristics of high-risk college student drinkers expressing high and low levels of distress. <i>J Coll Couns</i> . 2012;15(3). 262–273.	Not reported	Out of 427 participants, 2 “preferred not to answer” and 1 was missing	N/A	No
Johnson MW, Bruner NR. The Sexual Discounting Task: HIV risk behavior and the discounting of delayed sexual rewards in cocaine dependence. <i>Drug Alcohol Depend</i> . 2012 Jun 1;123(1–3):15–21.	Heterosexual, gay, bisexual, lesbian	Not reported	N/A	Yes
Keceovic A, Wong CF, Schragger SM, Silva K, Bloom JJ, Iverson E, Lankenau SE. Initiation into prescription drug misuse: differences between lesbian, gay, bisexual, transgender (LGBT) and heterosexual high-risk young adults in Los Angeles and New York. <i>Addict Behav</i> . 2012 Nov;37(11):1289–93.	Measurement is unclear, but sexual orientation is reported as: Heterosexual or LGBT	Transgender or intersex	Study is focused on differences between heterosexual and LGBT young adults	No
Morris MD, Brouwer KC, Lozada RM, Gallardo M, Vera A, Strathdee SA. “Injection first”: a unique group of injection drug users in Tijuana, Mexico. <i>Am J Addict</i> . 2012 Jan–Feb;21(1):23–30.	Heterosexual sexual orientation is reported for most participants, non-heterosexual participants are not given a label	Not reported	N/A	No
Ramo DE, Liu H, Prochaska JJ. Reliability and validity of young adults’ anonymous online reports of marijuana use and thoughts about use. <i>Psychol Addict Behav</i> . 2012 Dec;26(4):801–11.	Not reported	Male, female, transgender	Only male and female participants were retained in analysis	No

Study Citation	Sexual orientation measurement or reporting	Gender identity measurement or reporting	Comments on the study	HIV related study
Subica AM, Claypoole KH, Wylie AM. (2012). PTSD'S mediation of the relationships between trauma, depression, substance abuse, mental health, and physical health in individuals with severe mental illness: Evaluating a comprehensive model. <i>Schizophrenia Res.</i> 2012; 136(1): 104–109.	Not reported	Gender options were men, women, and other	N/A	No
2012 PubMed				
Austin EL, Bozick R. Sexual orientation, partnership formation, and substance use in the transition to adulthood. <i>J Youth Adolesc.</i> 2012 Feb;41(2):167–78.	100% homosexual or mostly homosexual was used to define gay or lesbian, 100% heterosexual or mostly heterosexual was used to define heterosexual, bisexual individuals were dropped from the study	Not reported	This study also measured partner's gender, but did not report it. Study focused on differences based on sexual orientation.	No
Bickel M, Marben W, Betz C, Khaykin P, Stephan C, Gute P, Haberl A, Knecht G, Wolf T, Brodt HR, Geiger H, Herrmann E, Jung O. End-stage renal disease and dialysis in HIV-positive patients: observations from a long-term cohort study with a follow-up of 22 years. <i>HIV Med.</i> 2013 Mar;14(3):127–35. Epub 2012 Sep 20.	MSM	Not reported	N/A	Yes
James S, McField ES, Montgomery SB. Risk factor profiles among intravenous drug using young adults: a latent class analysis (LCA) approach. <i>Addict Behav.</i> 2013 Mar;38(3):1804–11. Epub 2012 Sep 23.	Heterosexual, lesbian, gay, bisexual	Male, female, transgender	N/A	No
Kozak MS, Mugavero MJ, Ye J, Abani I, Lawrence ST, Nevin CR, Raper JL, McCullumsmith C, Schumacher JE, Crane HM, Kitahata MM, Saag MS, Willig JH. Patient reported outcomes in routine care: advancing data capture for HIV cohort research. <i>Clin Infect Dis.</i> 2012 Jan 1;54(1):141–7.	MSM or heterosexual as HIV risk category	Not reported	N/A	Yes
Harte CB, Meston CM. Recreational use of erectile dysfunction medications and its adverse effects on erectile function in young healthy men: the mediating role of confidence in erectile ability. <i>J Sex Med.</i> 2012 Jul;9(7):1852–9.	Heterosexual/Straight, homosexual/gay, bisexual	Not reported	N/A	No
Mercado-Crespo MC, Mbah AK. Race and ethnicity, substance use, and physical aggression among U.S. high school students. <i>J Interpers Violence.</i> 2013 May;28(7):1367–84. Epub 2012 Dec 21.	Not reported	“Not reported” category for sex, endorsed by 803 out of 12,404 participants	Gender identity not queried, but non-response reported	No
Mor Z, Grayeb E, Beany A, Grotto I. Increasing trend of HIV/AIDS among Arab and Jewish male persons in Israel, 1986–2010. <i>HIV Med.</i> 2013 Epub 2012 Nov 22.	Sexual orientation was reported as “men who have sex with men” or heterosexual.	Not reported	N/A	Yes
Wenzel S, Holloway I, Golinelli D, Ewing B, Bowman R, Tucker J. Social networks of homeless youth in emerging adulthood. <i>J Youth Adolesc.</i> 2012 May;41(5):561–71.	Lesbian, gay, bisexual, heterosexual	Not reported	N/A	No