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Sexual and gender minority young adults' smoking characteristics: Assessing differences by sexual orientation and gender identity

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HIGHLIGHTS

- Smoking characteristics were mostly similar across sexual and gender identities.
- Transgender individuals smoked more cigarettes per day than cisgender or nonbinary.
- Nonbinary participants smoked less than transgender or cisgender participants.
- Lesbians initiated regular smoking later than “other” sexual identity individuals.

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ABSTRACT

Introduction: Sexual and gender minority (SGM) young adults have higher smoking prevalence than their non-SGM peers. Less is known about differences in smoking characteristics within the SGM community.

Methods: Participants were SGM young adult smokers age 18–25 ($N = 165$, M age = 21.8) enrolled in a clinical trial of the Put It Out Project, a Facebook smoking cessation intervention for SGM young adults. Analyses tested differences between 1) sexual orientation groups, and 2) gender identity groups, on the following smoking characteristics: cigarettes/day, daily smoker (yes/no), social smoker (yes/no), years of smoking, number of close friends who smoke (out of 5), age of initiation, age began smoking regularly, time to first cigarette (30 min or less/ > 30 min), lifetime quit attempts, past-year quit attempts, and stage of change for quitting smoking (precontemplation, contemplation, preparation).

Results: Participants were 56% bi/pansexual, 18% gay, 18% lesbian, 8% other (e.g., asexual, queer). The gender identity of the sample was 52% cisgender, 18% transgender, 30% gender non-binary. Lesbian women began smoking at an older age ($M = 18.0$, $SD = 2.0$) than “other” sexual orientation participants ($M = 15.7$, $SD = 2.2$), $p < .05$. Transgender participants smoked the most cigarettes per day ($M = 11.3$, $SD = 6.7$), followed by cisgender ($M = 8.1$, $SD = 5.6$), then non-binary ($M = 5.7$, $SD = 3.5$) participants ($p < .001$; pairwise comparisons p 's < 0.05). No other constructs differed by sexual orientation or gender.

Conclusions: Smoking characteristics were mostly similar across subgroups of young adult SGM smokers; however, transgender individuals were heavier smokers.

1. Introduction

Sexual and gender minority (SGM) individuals have higher prevalence of smoking than their cisgender, heterosexual peers (Buchting & Emory, 2017; Centers for Disease Control and Prevention, 2017), with disparities appearing by adolescence (Corliss et al., 2014) and peaking in young to middle adulthood (McCabe et al., 2018). Few studies have examined important smoking characteristics (e.g.,

heaviness, dependence) and risk factors within this population. Moreover, collapsing across subgroups of SGM individuals in order to compare them to non-SGM individuals may obscure important differences between subgroups of both sexual orientations and gender identities. For example, transgender individuals have higher smoking prevalence than their cisgender peers (Buchting & Emory, 2017). Research assessing differences in smoking characteristics between different SGM identities is scarce and inconclusive.

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Notably, young adults are less likely than adolescents or adults to identify with their birth sex or to describe their identities with traditional terminology (GLAAD, 2017; McElroy, Everett, & Zaniletti, 2011). Modern research on young SGM individuals needs to account for the variety of sexual and gender identities young adults use to identify and describe themselves, several of which may overlap. Although some large, nationally representative data sets (e.g., PATH) measure both sexual orientation and smoking characteristics, little attention is paid to the complexities of gender identity and non-LGB sexual orientations.

Given the relative dearth of research on differences in smoking characteristics between SGM subgroups, this study was largely exploratory. The aims were to: 1) characterize different facets of smoking (e.g., frequency, heaviness, dependence symptoms) among SGM young adults, and 2) examine similarities and differences in smoking characteristics between different subgroups of SGM individuals, including both sexual orientation subgroups and gender identity subgroups. The purpose was to gain a more comprehensive understanding of smoking characteristics among SGM young adults in the United States.

2. Methods

2.1. Participants, design, and procedure

Data were derived from a baseline assessment of a Facebook smoking cessation intervention trial for SGM young adults ($N = 165$). Eligible participants were 18–25 years old, identified as SGM, had smoked at least 100 cigarettes in their lives, currently smoked cigarettes and used Facebook 4+ days per week, lived in the United States, and read English. Participants were recruited using a paid advertising campaign administered on Facebook in April 2018. Ads were targeted toward SGM smokers using rainbow imagery and keywords such as “LGBT,” which the Facebook ad platform uses to identify a suitable audience to whom ads are shown (based on keywords in Facebook users' posts). Informed consent was obtained from all participants and all research activities were approved by the UCSF Institutional Review Board.

2.2. Measures

2.2.1. Participant characteristics

Participants described their sexual orientation, gender identity, and demographics.

2.2.1.1. Sexual orientation. Participants were asked, “Do you think of yourself as (please check all that apply): straight (heterosexual), lesbian/gay (homosexual), bisexual, pansexual, not listed (please specify).” Sexual orientation was recoded into “gay man,” “lesbian woman,” “bisexual and/or pansexual,” and “other.” When participants reported multiple identities, “gay/lesbian” took priority in coding, followed by “bisexual/pansexual.” then “other”. In order to differentiate between identities as much as possible, more specific categories took priority over less specific categories. Selecting “gay/lesbian” denotes attraction to a specific gender, while bisexual, pansexual, and other terminology describe attraction to multiple genders.

2.2.1.2. Gender identity. Participants were asked, “What is your current gender identity?: male, female, trans male/trans man, trans female/trans woman, genderqueer/gender non-conforming, gender fluid, agender, nonbinary, or different identity (please specify).” Gender identity was recoded into “cisgender,” “transgender,” and “genderqueer/fluid/non-binary” (i.e., “other”). When multiple identities were reported, “transgender” took priority, then “cisgender,” then “other”. Again, priority in coding was determined by specificity of the term.

2.2.1.3. Demographics. Participants reported their age, sex assigned at birth, race/ethnicity, household income, subjective social status (i.e., perceived social standing relative to others in one's community and in the United States, measured on two 0–10 scales using illustrations of 10-rung ladders) (Singh-Manoux, Adler, & Marmot, 2003), years of education, and geographic location.

2.2.2. Smoking characteristics

All participants were current smokers. We measured current smoking characteristics, smoking history, friends' smoking, and readiness to quit.

2.2.2.1. Current smoking characteristics. Characteristics measured included heaviness of smoking (cigarettes per day), daily smoking (days of smoking in a typical week, recoded into 7 or < 7), social smoking (yes/no) (Lisha et al., 2015), dependence (time to first cigarette, less than or > 30 min after waking), past-year quit attempt (yes/no), and preferred cigarette brand(s). Participants were asked to report their preferred cigarette brand(s) with the option to list up to three. The most popular brands reported in the sample were Marlboro, Camel, and Natural American Spirit. Therefore, data are presented as the proportion of participants listing the brand as preferred.

2.2.2.2. Smoking history. Smoking history items included years of smoking, age of first trying to smoke a cigarette, age regular smoking began, and number of lifetime quit attempts (Hall, Tsoh, Prochaska, et al., 2006).

2.2.2.3. Friends' smoking. Participants reported how many of their five closest friends smoke (none of them, one, two, three, four, or all five).

2.2.2.4. Readiness to quit. Readiness to quit tobacco was assessed using the Stages of Change Questionnaire (Prochaska & DiClemente, 1983). Participants were categorized into the precontemplation (not ready to quit), contemplation (ready in the next 6 months), or preparation (ready in the next 30 days, plus had a past-year quit attempt) stage of change.

2.3. Analyses

Two sets of analyses were used to test differences between 1) sexual orientation categories and 2) gender identity categories. Differences were tested using one-way ANOVAs for normally distributed continuous outcome variables (e.g., cigarettes per day, age of first cigarette, Fagerström Test of Cigarette Dependence [FTCD] score (Fagerström, 2012)), Kruskal-Wallis tests for non-normally distributed continuous outcome variables (i.e., past-year quit attempts, lifetime quit attempts) and chi-square tests of independence for categorical outcome variables (e.g., daily smoking, social smoking, readiness to quit smoking). A Bonferroni correction was applied to pairwise comparisons following a significant omnibus test.

3. Results

Participant characteristics (i.e., demographics, smoking characteristics) are displayed in the online supplementary material. Participants' sexual orientations and gender identities (coded as described above) are displayed in Table 1. The majority identified as bisexual/pansexual ($n = 93$, 56.3%). Approximately equal numbers of gay/lesbian participants identified as male (gay men: $n = 29$, 17.6%) and female (lesbian women: $n = 30$; 18.2%). The remaining 13 (7.9%) identified solely with another sexual orientation (e.g., asexual, queer). Although the majority of participants identified as cisgender ($n = 86$; 52.1%), a sizeable minority identified outside the gender binary ($n = 50$; 30.3%) and an additional 29 (17.6%) were transgender.

Table 1
Cross-tabulation of sexual orientation and gender identity.

	Gay man (N/%)	Lesbian woman (N/%)	Bisexual or pansexual (N/%)	Other (N/%)	Total (N/%)
Cisgender (N/%)	22 (13.3%)	18 (10.9%)	45 (27.3%)	1 (0.6%)	86 (52.1%)
Transgender (N/%)	4 (2.4%)	1 (0.6%)	17 (10.3%)	7 (4.2%)	29 (17.6%)
Genderqueer/fluid/NB (N/%)	3 (1.8%)	11 (6.7%)	31 (18.8%)	5 (3.0%)	50 (30.3%)
Total (N/%)	29 (17.6%)	30 (18.2%)	93 (56.4%)	13 (7.9%)	165 (100%)

Table 2
Differences in smoking characteristics by sexual orientation and gender identity.

	Sexual orientation				Gender identity		
	Gay (N = 29)	Lesbian (N = 30)	Bisexual and/or Pansexual (N = 93)	Other ^b (N = 13)	Cisgender (N = 86)	Transgender (N = 29)	Other ^c (N = 50)
Cigarettes per day	9.7 (6.5)	6.8 (4.3)	7.8 (5.7)	7.5 (4.5)	8.1 (5.6)	11.3 (6.7)	5.7 (3.5)
Daily smoker (% yes)	22 (75.9%)	20 (66.7%)	66 (71.0%)	8 (61.5%)	63 (73.3%)	21 (72.4%)	32 (64.0%)
Social smoker (% yes)	21 (72.4%)	24 (80.0%)	63 (67.7%)	7 (53.8%)	62 (72.1%)	18 (62.1%)	35 (70.0%)
Years of Smoking	4.1 (2.4)	3.9 (3.5)	4.6 (3.5)	4.1 (3.2)	4.3 (3.1)	4.3 (3.2)	4.5 (3.6)
Number of close friends who smoke (out of 5)	2.2 (1.7)	2.6 (1.1)	2.4 (1.3)	2.9 (1.6)	2.4 (1.4)	2.5 (1.4)	2.5 (1.4)
Age of initiation	15.3 (2.3)	15.1 (3.5)	14.7 (2.8)	14.2 (2.7)	14.7 (2.7)	14.6 (3.1)	15.1 (3.1)
Age began smoking regularly	17.6 (1.9)	18.0 (2.0)	17.1 (2.6)	15.7 (2.2)	17.5 (2.2)	16.5 (2.4)	17.3 (2.6)
Time to first cigarette (% smoking within 30 min of waking)	14 (48.3%)	7 (23.3%)	43 (46.2%)	4 (30.8%)	38 (44.2%)	15 (51.7%)	15 (30.0%)
Lifetime quit attempts (median/IQR) ^a	3.0 (5.5)	3.5 (6.0)	3.0 (3.5)	5.0 (14.0)	3.5 (4.3)	3.0 (3.5)	3.5 (8.0)
Past-year quit attempts (median/IQR) ^a	2.0 (2.5)	1.5 (3.3)	1.0 (2.0)	2.0 (5.5)	2.0 (2.0)	1.0 (2.0)	2.0 (2.0)
Stage of change							
Precontemplation	9 (31.0%)	11 (36.7%)	23 (24.7%)	5 (38.5%)	26 (30.2%)	9 (31.0%)	13 (26.0%)
Contemplation	13 (44.8%)	9 (30.0%)	49 (52.7%)	4 (30.8%)	41 (47.7%)	14 (48.3%)	20 (40.0%)
Preparation	7 (24.1%)	10 (33.3%)	21 (22.6%)	4 (30.8%)	19 (22.1%)	6 (20.7%)	17 (34.0%)
Brand preference							
Marlboro	25 (86.2%)	24 (80.0%)	78 (83.9%)	13 (100%)	71 (82.6%)	27 (93.1%)	42 (84.0%)
Camel	20 (69.0%)	17 (56.7%)	61 (65.6%)	9 (69.2%)	61 (70.9%)	15 (51.7%)	31 (62.0%)
American Spirits	11 (37.9%)	13 (43.3%)	36 (38.7%)	5 (38.5%)	29 (33.7%)	11 (37.9%)	25 (50.0%)

Note: Bold text indicates $p < .05$.

^a Kruskal-Wallis tests were used instead of ANOVAs due to non-normal distributions.

^b Includes “asexual” and “queer”.

^c Includes “genderqueer/gender non-conforming”, “genderfluid”, “agender”, “nonbinary”, and other (e.g., “neurogender”, “bigender”, “androgynous”, “two-spirit”, “questioning”).

3.1. Smoking characteristics and sexual orientation

Onset of regular smoking differed by sexual orientation, $F(3,161) = 3.30$, $p = .022$. Specifically, lesbian women began smoking regularly at an older age than “other” (e.g., asexual, queer) participants, $p = .020$. Participants did not differ by sexual orientation with respect to any other smoking characteristics (Table 2). When bisexual/pansexual participants were divided into “bisexual men” and “bisexual women”, the pattern of results remained the same (all p 's > 0.05).

3.2. Smoking characteristics and gender identity

Cigarettes per day differed by gender identity, $F(2,162) = 10.18$, $p < .001$. Transgender participants smoked significantly more cigarettes per day than cisgender ($p = .017$) and non-binary ($p < .001$) participants. Compared to non-binary participants, cisgender participants smoked more cigarettes per day ($p = .039$). Cisgender and non-binary participants did not significantly differ in cigarettes per day after correcting for multiple comparisons ($p = .035$). There were no significant differences by gender identity with respect to any other smoking characteristics (Table 2).

4. Discussion

This study described smoking characteristics and examined differences by sexual and gender identity in a sample of SGM young adults enrolled in a Facebook smoking cessation trial. Transgender young

adults smoked significantly more cigarettes per day than others. Although the present study did not have sufficient power to examine mediators, heavier smoking among transgender young adults may be due to transgender-specific stressors. For example, smoking is associated with later initiation of gender-affirming medical treatment (Menino, Katz-Wise, Vetter, & Reisner, 2018) and experiencing SGM identity-based harassment (Coulter, Bersamin, Russell, & Mair, 2018). Further research is needed to clarify the role of stress in the transgender community's high smoking prevalence. Heavy smoking may place transgender individuals at higher risk for health concerns, which is especially concerning given that transgender individuals have less access to health care and utilize health care at a lower rate than their cisgender peers (Gonzales & Henning-Smith, 2017). Gender non-binary participants smoked fewer cigarettes per day than transgender or cisgender participants. Gender minorities who do not identify as transgender are an understudied group whose health risks and health needs remain largely unknown. Results suggest that research should assess smoking in transgender and gender non-binary participants separately.

Most other smoking characteristics (e.g., quit attempts, readiness to quit, dependence symptoms) did not significantly differ across SGM subgroups. Studies reporting higher smoking prevalence among bisexual individuals did not assess specific smoking characteristics in young adults (McCabe, Hughes, Matthews, et al., n.d.; McCabe et al., 2018; Schuler, Rice, Evans-Polce, & Collins, 2018). Due to increased societal acceptance of the fluidity of sexuality (GLAAD, 2017), young bisexual adults may face less discrimination and ostracism than past generations. Notably, non-LGB sexual minorities began smoking

regularly at a younger age than did lesbians. These participants may reflect a specific subgroup of sexual minority individuals who begin smoking earlier. However, their age of regular smoking onset did not differ from that of gay men or bisexual/pansexual individuals, and results should be interpreted with caution.

Across subgroups, dependence and quantity of cigarettes per day were relatively low. Social factors may be an important aspect of smoking for SGM young adults, given the high prevalence of smoking in SGM social circles (Fallin, Neilands, Jordan, & Ling, 2014). Indeed, participants reported that approximately half of their closest friends smoked. Preferred cigarette brands were consistent with brand preference in the general population (Marlboro, Camel (Schleicher, Johnson, Rigdon, et al., 2017)) and the SGM population (Natural American Spirit (Pearson, Johnson, Villanti, et al., 2017)). Notably, participants' average subjective social status compared to others in the U.S. and in their communities was below the midpoint of the scale. This may be due in part to experiences of minority stress, which may influence early smoking characteristics (Meyer, 2003).

Among SGM young adult smokers, there may not be meaningful differences in smoking characteristics by sexual orientation. Differences observed in other studies may have been partially accounted for by gender identity and gender expression. Gender is more visible to the general public than is sexual orientation, and may have a greater impact on experiences of minority stress that are thought to impact smoking characteristics.

4.1. Limitations

This study's conclusions should be considered in light of some important limitations. First, although identity is the best unidimensional measure of young people's sexual orientation (Pribe & Goran Svedin, 2013), more detailed measures of sexual behavior and attraction would be informative. Second, this sample was not representative, despite its diversity in geographic location and readiness to quit smoking. The sample was limited to Facebook users willing to enroll in a clinical trial. Although 89% of SGM young adults use social media (Center, 2013), we cannot rule out differences between our sample and the general population of SGM young adult smokers. Finally, participants could endorse multiple identity categories and provide their own terminology. Like other SGM-specific research with young adults (GLAAD, 2017), we used a variety of terminology to accommodate the wide variety of identities that may fit under one umbrella (e.g., genderfluid, gender non-binary) but have subtle differences. Because this was a relatively small sample in a pilot study, we deemed it important to gather as much information as possible about participants' diverse identities. However, it is difficult to compare our results to those of population-based studies because of differences in categorization.

4.2. Conclusions

In this study of SGM young adult smokers, transgender individuals reported the heaviest smoking, followed by cisgender and non-binary individuals. Few differences in smoking characteristics were identified between participants with different sexual orientations. Transgender young adults may be at particularly high risk for smoking-related health concerns, based on the heaviness of their smoking. Further research is needed to identify barriers to smoking cessation and effective smoking cessation interventions for SGM young adults. Given similar smoking characteristics across SGM subgroups, interventions tailored to the SGM community as a whole may have widespread effectiveness.

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Contributors

Drs. Ramo and Prochaska designed the parent study. All authors contributed to conceptualization of the current study. Dr. Vogel conducted the statistical analysis and wrote the first draft of the manuscript. Drs. Humfleet and Meacham reviewed and revised for important intellectual content. All authors contributed to and have approved the final manuscript.

Conflict of interest

Drs. Vogel, Humfleet, and Meacham have no conflicts of interest to disclose. Dr. Ramo has consulted for Carrot, Inc., which makes a tobacco cessation device. Dr. Prochaska has provided consultation to pharmaceutical and technology companies that make medications and other treatments for quitting smoking and has served as an expert witness in lawsuits against the tobacco companies.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.addbeh.2019.03.005>.

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