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Brief report

Sexual and Gender Minority College Students and Tobacco Use in Texas

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Abstract

Introduction: Most research regarding sexual and gender minority (SGM) populations is limited to examination of cigarette or general tobacco use or does not examine heterogeneity across SGM groups other than lesbian or gay and bisexual individuals. This study examined differences in the odds of current use and age of initiation of five tobacco/nicotine products among three groups of SGM young adults who self-identified as (1) gay or lesbian, (2) bisexual, and (3) queer, transgender, or "other," compared to their heterosexual peers.

Methods: Participants were 4252 college students aged 18–29 years from 24 colleges in Texas who completed an online tobacco use survey. Multilevel logistic regression models were used to examine the odds of SGM participants currently using each tobacco product. Multilevel linear regression models were used to examine the association of current product users' SGM status with self-reported age of each product's initiation. All models were adjusted for sociodemographic factors and accounted for students clustered within each college.

Results: At least one SGM group had significantly greater odds of currently using every tobacco product type compared to heterosexual participants, except hookah. There were few differences across groups in age of initiation. However, queer, transgender, and "other-" identified participants initiated e-cigarettes 1.34 years younger than heterosexual participants, and bisexual participants initiated smokeless tobacco 3.66 years younger than heterosexual participants.

Conclusions: Findings highlight some significant tobacco use disparities among SGM young adults compared to their heterosexual peers. Longitudinal studies with larger group sizes will identify prospective predictors of sustained SGM-related tobacco use disparities.

Implications: This study extends the current literature by including the sexual and gender minority identity options of queer, transgender, and "other," highlighting disparities in tobacco use between young adults in these subgroups compared to their heterosexual peers, particularly in noncigarette tobacco product use. Findings underscore the need for the Food and Drug Association and other health agencies to tailor health communication efforts specific to sexual and gender minority populations pertaining to the risks and harms surrounding tobacco product use.

Introduction

Broadly speaking, someone whose sense of self differs from social expectations based on their biological sex assigned at birth is considered part of the gender minority. This includes, but is not limited to, gender nonconforming, genderqueer, and transgender individuals.[1] Sexual minority individuals include those who identify as lesbian, gay, and bisexual (LGB), as well as the identities claimed by queer, and pansexual people, among others. Research examining the tobacco use behaviors of sexual and gender minority (SGM) populations is relatively new to public health. Questions regarding sexual orientation and gender identity have only recently or sporadically been implemented in state- and national-level survey instruments[2] and are often limited primarily to examination of cigarette use among adults who identify as lesbian, gay, and bisexual. National estimates from 2013 to 2014 indicate that cigarette smoking prevalence is 27.1% among LGB adults compared to 16.4% among heterosexual adults.[3] These national estimates align with the majority of research, which indicates that SGM adults report higher levels of cigarette use than their non-SGM counterparts[4–10] and younger ages of cigarette initiation among SGM adolescents.[6,11,12] Only a few studies show no differences in tobacco product use between SGM and non-SGM populations or lower prevalence among SGM populations.[13,14]

Many studies examine the tobacco product use of LGB individuals as one group compared to their heterosexual peers.[5,12,14,15] Less is known about the use of alternative tobacco or nicotine products (hereafter referred to as tobacco products), such as electronic cigarettes (e-cigarettes) or hookah, or about the heterogeneity in use among various SGM populations of young adults, the group reporting the highest prevalence of alternative tobacco use.[3,16] Some studies conduct intragroup comparisons, notably among bisexual individuals,[6,8,10,11,17] where a growing body of research identifies bisexual women as the subgroup with the highest prevalence of cigarette and cigar smoking in the SGM community.[6,10,11] Although scarce, other research highlights notable differences in cigarette smoking among less-studied SGM subgroups, including those who identify as queer or pansexual.[18]

In the current study, we expand upon existing research by examining the use of a wide range of tobacco products among 18- to 29-year-old SGM young adults, particularly those who self-identify as gay, lesbian, bisexual, transgender, queer, or "other." Based on the extant literature, we hypothesized that SGM young adults would have greater odds of being current users of cigarettes, e-cigarettes, cigars, hookah, and smokeless tobacco than their heterosexual peers. Additionally, we hypothesized that SGM young adults who reported currently using the five examined tobacco products would report a younger age of initiation than current users in the heterosexual majority.

Methods

Participants

Participants were 4252 young adult college students involved in the third wave of the Marketing and Promotions across Colleges in Texas project (Project M-PACT). Data from the third wave (October–November, 2015) were used because the question regarding SGM status was added at this wave. Project M-PACT is a rapid-response surveillance study examining the tobacco use behaviors of a cohort of 5482 college students aged 18- to 29 years attending 24 two- and four-year colleges in five counties surrounding the four largest metropolitan areas of Texas, Austin, Dallas/Fort Worth, Houston, and San Antonio. At wave 3, 78% (*n* = 4321) of the original cohort participated in the survey, but of these 69 were missing measures used in

the present study and thus excluded from the final sample. The 4252 participants in this study were approximately 20 years old (mean age = 20.45; SD = 2.33) and more than half were female (64.5%). Regarding race/ethnicity, 35.6% of students were non-Hispanic white, 30.9% were Hispanic/Latino, 18.1% were Asian, 7.9% were African American/black, and 7.4% reported another race/ethnicity or two or more races/ethnicities. Most students (3686 or 86.7%) self-identified as heterosexual, while 272 (6.4%) identified as bisexual, 168 (4.0%) as gay or lesbian, 77 (1.8%) as "other," 38 (0.9%) as queer, and 11 (0.3%) as transgender.

Procedure

Project M-PACT required that participants be 18- to 29 years old, and full- or part-time degree- or certificate-seeking undergraduate students enrolled at a participating college. Eligible students responded to an e-mail invitation, where they provided informed consent and completed the online survey. More than 13 000 students (*n* = 13 714) were eligible to participate in the study and of these, 5482 (40%) students completed wave 1. For additional information regarding recruitment and study procedures, see Loukas et al.[19]

Measures

Sociodemographic Covariates

Four sociodemographic covariates were measured in this study: sex, race/ethnicity (dichotomized into nonwhite versus white), school type (2-year or 4-year college), and age in years (treated as a continuous variable).

Sexual/Gender Minority Status

Due to space limitations on the survey, gender identity and sexual orientation were assessed with 1 item, which asked, "Do you consider yourself to be…?" with the response options (a) "Heterosexual or straight," (b) "Gay or lesbian," (c) "Bisexual," (d) "Queer," (e) "Transgender," or (f) "Other." For analyses, the final three categories (queer, transgender, and "other") were collapsed into one group due to small group sizes; thus, sexual/gender identity for this study consisted of four categories.

Current Tobacco Product Use and Age of Initiation

Current use of five products (cigarettes, e-cigarettes, cigars, hookah, and smokeless tobacco) was assessed by asking how many of the past 30 days participants smoked or used each product. These items were each dichotomized to reflect those who reported use on one or more days in the past 30 (current users, coded as 1) and those who reported use on zero days (coded as 0). Questions regarding product initiation were modeled after the PATH survey,[20] where retrospective self-report asked "How old were you the first time you used ___, even one or two puffs?" Drop-down menus provided answers ranging from "under 10 years old" through the participant's current age. Never and noncurrent users were not included in age of initiation analyses, and responses of "under 10 years old" were coded as 9.

Data Analysis

Five multilevel binary logistic regression models were used to examine the odds of currently using each tobacco product, with sexual/gender identity serving as the independent variable. Heterosexual participants served as the reference group for each comparison with gay/lesbian, bisexual, and queer/transgender/"other" identified participants. Next, five multilevel linear regression analyses were conducted to examine the role of sexual/gender identity, the independent

variable, in reported age of initiation for current users of each tobacco product. All models included the sociodemographic covariates of sex, race/ethnicity, age, and school type (2-year vocational or 4-year university). Additionally, multilevel models included college as a random effect to account for clustering of students within the 24 colleges. All analyses were conducted with STATA version 14.[21]

Results

Prevalence estimates of current use of each of the five tobacco products for the three SGM groups and their heterosexual peers are shown in Table 1. Multilevel binary logistic regression analyses indicated that compared to heterosexual participants, at least one SGM group had significantly greater odds of currently using each product except hookah, while controlling for sociodemographic factors. Gay/lesbian participants had 2.31 (95% confidence interval [CI] = 1.65 to 3.25) times greater odds and bisexual participants had 2.45 (95% CI = 1.84 to 3.26) times greater odds of currently using cigarettes compared to heterosexual participants. Gay/lesbian participants also had 1.61 times greater odds (95% CI = 1.08 to 2.40) and bisexual participants 2.55 times greater odds (95% CI = 1.86 to 3.49) of current e-cigarette use compared to heterosexual

participants. Queer, transgender, and "other-" identified participants had significantly elevated odds of currently using cigars (adjusted odds ratio [AOR] = 2.12, 95% CI = 1.19 to 3.81) and smokeless tobacco (AOR=2.63, 95% CI = 1.09 to 6.32) compared to heterosexual participants.

Current users' ages of initiation of the five tobacco products are displayed in Table 2. Multilevel linear regression models indicated that, after controlling for sociodemographic factors, two groups reported significantly lower ages of initiation for two products compared to heterosexual participants. Queer, transgender, and "other-" identified participants initiated e-cigarettes 1.34 years earlier than their heterosexual peers, while bisexual participants initiated smokeless tobacco 3.66 years earlier than their heterosexual peers. There were no differences in age of initiation between SGM participants and their heterosexual peers for cigarettes, cigars, or hookah.

Discussion

The present study adds to our understanding of SGM young adult tobacco use by examining popular alternative tobacco product use beyond cigarettes, including e-cigarettes, cigars, hookah, and smokeless tobacco while simultaneously expanding the operationalization of SGM status beyond LGB to include those who identify as queer, transgender, and "other." Consistent with other research[3–8,10,11] and in partial support of our hypothesis, compared to their heterosexual peers, SGM participants reported greater odds of currently using all products except hookah. These elevated tobacco use rates may be explained by

Table 1. Prevalence of Current Tobacco Product Use and Results From Logistic Regression Analyses Examining Odds of Current Tobacco Use Among Sexual and Gender Minority (SGM) Young Adults and Their Heterosexual Peers (*N* = 4252)

Current product use	%	Logistic regression[a] AOR	Logistic regression[a] 95 % CI
Cigarettes			
Heterosexual	15.6	**ref**	**ref**
Gay or lesbian	34.5	**2.31[b]**	**1.65–3.25**
Bisexual	28.7	**2.45[b]**	**1.84–3.26**
Queer, transgender, or other	22.2	1.51	0.97–2.36
E-Cigarettes			
Heterosexual	11.3	**ref**	**ref**
Gay or lesbian	20.2	**1.61[c]**	**1.08–2.40**
Bisexual	21.7	**2.55[b]**	**1.86–3.49**
Queer, transgender, or other	10.3	0.87	0.47–1.60
Cigars			
Heterosexual	5.9	ref	ref
Gay or lesbian	6.5	0.79	0.42–1.49
Bisexual	6.3	1.25	0.74–2.10
Queer, transgender, or other	11.1	**2.12[c]**	**1.19–3.81**
Hookah			
Heterosexual	12.6	ref	ref
Gay or lesbian	14.3	1.11	0.71–1.75
Bisexual	14.4	1.31	0.91–1.87
Queer, transgender, or other	11.1	0.82	0.46–1.47
Smokeless tobacco			
Heterosexual	2.2	ref	ref
Gay or lesbian	1.8	0.48	0.15 – 1.55
Bisexual	1.1	0.72	0.22 – 2.31
Queer, transgender, or other	4.8	**2.63[c]**	**1.09–6.32**

AOR = adjusted odds ratio; CI = confidence interval.
[a] One regression model is fit for each tobacco product, controlling for age, sex, race/ethnicity, and school type (2-year vs. 4-year). Heterosexual serves as the reference group. Each model includes college attended as a random effect.
[b] *p* < .001.
[c] *p* < .05.

Table 2. Multilevel Linear Regression Models Examining Product Age of Initiation Among Sexual and Gender Minority (SGM) and Non-SGM, Current Tobacco Product-Using Young Adults[a]

	Mean (SE)	B	*p*
Cigarettes (*n* = 684)			
Heterosexual	16.05 (.13)	ref	
Gay or lesbian	15.60 (.34)	−0.46	.19
Bisexual	15.97 (.32)	−0.08	.80
queer, transgender, or other	16.44 (.49)	0.39	.44
E-Cigarettes (n = 516)			
Heterosexual	19.19 (.07)	ref	
Gay or lesbian	19.35 (.25)	0.15	.55
Bisexual	19.12 (.19)	−0.08	.71
Queer, transgender, or other	**17.85 (.41)**	**−1.34**	**.001**
Cigars (*n* = 263)			
Heterosexual	17.39 (.17)	ref	
Gay or lesbian	16.69 (.74)	−0.70	.36
Bisexual	17.24 (.60)	−0.15	.81
Queer, transgender, or other	16.78 (.69)	−0.61	.38
Hookah (*n* = 536)			
Heterosexual	17.70 (.12)	ref	
Gay or Lesbian	18.48 (.44)	0.78	.08
Bisexual	17.83 (.35)	0.13	.72
Queer, transgender, or other	17.41 (.59)	−0.29	.63
Smokeless tobacco (*n* = 100)			
Heterosexual	16.81 (.39)	ref	
Gay or lesbian	16.76 (1.41)	−0.05	.97
Bisexual	**13.15 (1.24)**	**−3.66**	**.004**
Queer, transgender, or other	16.70 (1.19)	−0.11	.93

SE = standard error; B = unstandardized regression coefficient
[a] One regression model is fit for each tobacco product, controlling for age, sex, race/ethnicity, and school type (2-year vs. 4-year). Heterosexual serves as the reference group. Each model includes college attended as a random effect.

a variety of factors. According to the minority stress model, young adults who identify as sexual or gender minorities may use tobacco as a coping mechanism for managing stress and discrimination resulting from membership in a stigmatized minority group.[22] Alternatively, the greater tobacco use prevalence may result from targeted tobacco marketing, including that found in LGB-centered bars, a mainstay of social life in LGB communities,[23] heavily LGB-populated neighborhoods,[24] and LGB-focused print advertising.[25,26] Still other explanations point to LGB-specific barriers to health care and lack of access to cessation tools as reasons for the greater prevalence of tobacco use among SGM community members.[27] While young adults report the highest prevalence of alternative tobacco products,[3] more research is needed to discern the reasons for elevated tobacco product use among SGM young adults in this sample compared to their heterosexual peers.

In contrast to our hypothesis, there were few differences in age of initiation by product between SGM young adult participants and their heterosexual peers. While research has demonstrated greater current tobacco use among those who initiated at younger ages,[28] this likely does not account for the large differences in tobacco use prevalence in our sample, as only bisexuals and those who identified as queer, transgender, or "other" initiated smokeless tobacco and e-cigarettes, respectively, younger than their heterosexual peers. Nonetheless, additional research with younger participants is needed to prospectively capture potential differences in age of tobacco product initiation among SGM and heterosexual adolescents and determine the role of age of initiation in subsequent prevalence of use.

Findings from this study add to evidence demonstrating that SGM status is a key sociodemographic characteristic to consider, which provides insight into tobacco use disparities that would be masked if SGM status were not assesed.[11,29] While extending existing research in this area, findings from this study should be considered in light of some limitations. This young adult sample was recruited from 2- and 4-year colleges, thus findings cannot be generalized to noncollege attending young adults. Further, while SGM individuals comprised 13.3% of the sample, small group sizes of tobacco-using SGM participants further limit the generalizability of these findings. Moreover, this study assessed sexual orientation and gender identity with 1 item, making disaggregation of the two separate constructs impossible. Best practices by the Williams Institute suggest asking about transgender and/or gender nonconforming identity separately from questions about biological sex and sexual orientation.[1] Finally, assessment of tobacco initiation age via retrospective self-report calls into question the reliability of these data.[30] Prospective data collection or questions that include anchoring events to trigger more accurate estimations of initiation age are recommended[31] and would also allow sexual and/or gender minority status to be discerned at the time of tobacco initiation.

Conclusion

These findings contribute to the research that demonstrates significant tobacco use disparities among SGM young adults compared to their heterosexual peers. Findings also extend current research by including the queer, transgender, and "other" SGM groups, highlighting unique tobacco use differences for these subgroups versus the more frequently studied subgroups of gay, lesbian, and bisexual individuals. Moreover, these findings underscore the need for the Food and Drug Administration and other health agencies to expand health communication efforts to younger SGM individuals who may be experimenting with or initiating tobacco use and to understanding groups beyond those who identify as LGB.

Declaration of Interests

None declared.

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