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Demographic, Mental Health, Behavioral, and Psychosocial Factors Associated with Cigarette Smoking Status Among Young Men Who Have Sex with Men: The P18 Cohort Study

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Abstract

Purpose: Young sexual minority men smoke at higher rates relative to heterosexual peers. The purpose of this study was to examine correlates of smoking in a sample of young gay, bisexual, and other men who have sex with men (MSM) who might differ from more general and age-diverse samples of sexual minority individuals and, thus, inform tailored approaches to addressing tobacco use within this population.
Methods: Data on smoking status were examined in relation to demographics, mental health, substance use behavior, and psychosocial factors. Using multinomial logistic regression, factors were identified that differentiate current and former smokers from never smokers.
Results: In bivariate analysis, smoking status was related to demographic, mental health, substance use, and psychosocial factors. Most significantly, smoking status was associated with school enrollment status, current alcohol and marijuana use, and symptoms of depression. Multivariate modeling revealed that, compared to being a never smoker, the odds of current or former smoking were highest among those currently using either alcohol or marijuana. The odds of both current and former smoking were also higher among those reporting greater levels of gay community affinity. Finally, the odds of being a former smoker were higher for those reporting internalized antihomosexual prejudice.
Conclusion: This study identifies several factors related to smoking status in a diverse sample of young sexual minority males. These findings should encourage investigations of smoking disparities among younger MSM to look beyond common smoking risk factors in an attempt to understand etiologies that may be unique to this group. Such findings may indicate multiple points of potential intervention aimed at decreasing cigarette smoking within this vulnerable population.

Keywords: adolescence, health disparities, men who have sex with men (MSM), tobacco use.

Introduction

A well-established body of research has demonstrated higher prevalence of cigarette smoking among sexual minority men relative to their heterosexual peers.[1–7] Prior studies have estimated the prevalence of cigarette smoking among men who have sex with men (MSM) to be between 27% and 40%,[8,9] well above the current estimate of 20.9% found within the general U.S. population.[10]

These same investigations have identified factors at both the individual and community level that are associated with smoking among MSM. These include levels of connection to and participation within gay communities and venues,[11] experiences of stress, stigma, and victimization,[12] and concurrent use of alcohol and other substances.[13]

Limited data exist on the correlates and prevalence of smoking specifically among younger MSM (YMSM), or those sexual minority men in the developmental stages following early adolescence and preceding adulthood.[14,15] Those few studies that have examined smoking within YMSM populations have found associations similar to those identified in older age cohorts. They also note a similar

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disparity in the prevalence of YMSM smoking relative to heterosexual peers and suggest that they may, in fact, be at particular risk for smoking.[3,16,17] In one such study examining the factors associated with cigarette smoking among YMSM, Holloway et al.[18] found that of their sample of $n=526$ 18–24 year old YMSM, 51% reported either light or heavy cigarette smoking in the past 30 days. In the same analysis, gay community factors, such as gay bar attendance, were associated with higher levels of cigarette smoking. In addition, individual level factors such as psychological distress were also associated with higher levels of cigarette smoking. With regard to specific forms of psychological distress, O'Cleirigh et al. found sexual minority related traumatic events to have a significant dose–effect relationship with the number of traumatic events increasing the odds of both current or former smoking.[19]

This study aims to reinforce these and similar findings by (1) utilizing a strictly late adolescent sample (18–19) to examine multiple factors previously shown to be associated with smoking among YMSM and (2) including additional behavioral, health-related variables, such as current alcohol and marijuana use. By examining social, individual, and behavioral factors within this narrow age group, this investigation seeks to further refine our understanding of the ecosocial drivers of smoking among YMSM.[20] Guiding this approach are two main suppositions: first, that men of this population face unique challenges, embody distinctive strengths and vulnerabilities, and engage in behaviors that may either promote or diminish their individual health and wellbeing. Second, that due to the diversity of experiences represented in this population, no single etiology of cigarette smoking disparities exists among YMSM.[20]

Methods

Data for this study are drawn from an on-going cohort study of young sexual minority males residing in the New York City metropolitan area and referred to hereafter as the P18 Cohort Study. Study details have previously been published and are summarized herein.[21]

Briefly, potential participants were recruited between June 2009 and May 2011, using a combination of venue- and internet-based methods. Nonprobability quota sampling methods were employed to ensure enrollment of a racially/ethnically diverse study sample. At baseline participants completed an audio computer-based self-interview assessment to provide information on demographic factors, psychosocial factors, and other health-related behaviors. Information on recent drug and alcohol use was collected via an interviewer-administered Timeline Followback (TLFB) calendar-based measure.

Eligible participants were 18 or had just turned 19 years-old at the time of screening, natal males, reported engaging in sexual activity with a man in the 6 months preceding the screening interview, and self-reported a HIV serostatus of either negative or unknown. A total $n=2068$ participants were screened for study eligibility with $n=600$ meeting eligibility requirements and enrolling into the study between July 2009–May 2011. However, two participants did not complete the full assessment, yielding a baseline sample of $n=598$. This study employs data from the $n=598$ study participants who completed their baseline assessment. This study was reviewed and approved by New York University's Institutional Review Board and all participants provided written informed consent.

Main dependent variable

Cigarette use. To ascertain participants' smoking status, a screening questionnaire adapted from the 2008 National Survey on Drug Use and Health was administered. Participants were first asked, ''Have you ever smoked a cigarette?'' A follow-up question then asked, ''Do you currently smoke?'' From these responses, participants were categorized as *current smokers*, *former smokers*, or *never smokers*. Among those who reported currently smoking, we ascertained frequency of cigarette use. Participants were asked, ''how many cigarettes do you smoke on a typical day?'' and respondents were given the following options to describe their daily cigarette use: (1) *less than five cigarettes a day*, (2) *more than five but less than a pack per day*, (3) *about a pack per day* and (4) *more than one pack per day.* Participants who had reported either current or former smoking were also asked at what age they smoked their first cigarette.

Covariates

Demographic factors. Participants self-reported race/ethnicity, examined in this study as Black, White non-Hispanic, Hispanic, and Multiracial/Other. Included in the Multiracial/Other category are participants who identified multiple race categories ($n=56$), selected ''Other'' as a race category ($n=21$) or selected Asian/Pacific Islander (API) ($n=29$). This was due to small sample sizes that prevented examination of statistically significant differences across these categories. School enrollment status was examined dichotomously as current enrollment (either yes or no). Enrollment included attendance at either a junior high school, high school, college/university, or trade/vocational school. Socioeconomic status (SES) was assessed by asking participants' perceived familial SES and grouped as *upper and upper-middle*, *middle*, and *lower and lower-middle*. Due to the young age of participants at baseline, perceived familial SES was used to account for the unlikely circumstance of generating an annual income of one's own, as well as not being able to precisely recall or gauge their parents' or guardians' actual yearly net income. Prior studies have shown that in terms of predicting health outcomes, perceptions of household familial income are as reliable as actual income.[22] Lastly, sexual orientation was assessed using the Kinsey 1-item, 6-point scale with participants' self-reported sexual orientation placed on a continuum ranging from exclusively homosexual to exclusively heterosexual.[23] For the purpose of this analysis, sexual orientation was examined dichotomously as either *exclusively homosexual* or *not exclusively homosexual*.

Mental health factors. Depressive symptomatology experienced within the 2 weeks before assessment was assessed using the 21-item Beck Depression Inventory (BDI-II) ($\alpha=0.87$). Standard cut-scores were applied to categorize participants' depressive symptomatology as *None*, *Minimal*, or *Moderate to Severe*. Attention deficit hyperactivity disorder (ADHD) was similarly assessed using an 18-item inventory with participants categorized as either having no ADHD or meeting the criteria for one or both diagnostic subtypes

(predominantly inattentive or predominantly hyperactive-impulsive) based on symptoms experienced within the 6 months before assessment.[24] Post-traumatic stress disorder (PTSD) was assessed using the Trauma Awareness and Treatment Center (TATC) scale, a 10-item screening instrument adapted from the PTSD Checklist–Civilian Version (PCL-C).[25] Cut-scores were again applied to categorize PTSD symptomatology as *None*, *Minimal*, or *Moderate to Severe*. Suicidality was assessed both in terms of previous ideation and attempts. Ideation was assessed via a single item asking, ''During the past 12 months, did you ever seriously think about committing suicide?'' categorized as yes/no. In addition, participants were asked, ''During the past 12 months, how many times did you actually attempt suicide?'' dichotomized as no attempts made or at least one attempt made in the preceding 12 months.

Other substance use. Past recent alcohol and marijuana use was ascertained using the TLFB method recalling the 30 days preceding baseline interview. By completing a calendar-based measure, participants indicated on which days they either consumed alcohol or marijuana. Responses were then examined dichotomously as either use or nonuse in a 30 day period. Of the $n = 598$ participants who completed a baseline assessment, one participant was unable to complete just the TLFB portion, yielding a TLFB sample of $n = 597$.

Psychosocial factors. We assessed parental psychopathology using the Modified NIMH ECA Survey for Parental Psychopathology,[26] which asks respondents to recall parental symptomatology attributable to depression, bipolar disorder, schizophrenia, and antisocial behavior. Responses were dichotomized as either having observed any parental symptomatology or not. We then assessed internalized antihomosexual prejudice using a 4-item internalized homophobia scale ($\alpha = 0.87$) (e.g., ''Sometimes I dislike myself for being gay/bisexual.'' etc.) with responses on a 5-point Likert scale ranging from ''strongly disagree'' to ''strongly agree''.[27,28] Consistent with prior research, responses were categorized dichotomously as either those reporting any internalized homophobia/antihomosexual prejudice or those reporting none. Finally, gay community affinity was assessed via a single item (''I feel a part of the gay community in New York City.'').[29] Responses were measured on a 5-point Likert scale and ranged from ''strongly disagree'' to ''strongly agree.'' For the purpose of this analysis, responses ranging from ''strongly agree'' to ''neither agree or disagree'' were designated as *yes,* while responses ranging from ''strongly disagree'' to ''disagree'' were designated as *no.*

Analytic plan

Descriptive analysis was first conducted to examine the distribution of smoking status in this sample. Bivariate associations between smoking status, demographic factors, mental health factors, psychosocial factors, and health-related behaviors were then analyzed using χ^2 statistics. Next, to examine the associations between variables, multinomial logistic regression models were constructed predicting never, former, and current smoking status with never smokers as the comparison group. All variables found to be significant in bivariate analysis ($P < 0.05$) were entered into the model as covariates.

Results

In this sample of young sexual minority males, 70% ($n = 420$) reported having smoked cigarettes at some point in their lifetime including 30% ($n = 178$) who reported being current smokers. The remaining 30% of the total sample reported no smoking history. Of the 178 current smokers, 62% reported smoking less than five cigarettes a day, 27% reported more than five but less than a pack of cigarettes per day, 10% reported smoking about a pack per day, and 1% reported smoking more than one pack per day. The median age of first cigarette use was 16 (range, 5–19).

In bivariate analysis (Table 1) associations between demographic factors and smoking status were found by race/ethnicity with a greater proportion of current and former smokers identifying as White and Hispanic/Latino ($P = 0.008$). School enrollment status was also strongly associated, with a higher percentage of current smokers reporting no current school attendance ($P < 0.001$). With regard to mental health, depressive symptomatology was also found to be strongly related to smoking status, with current smokers more likely to report moderate to severe depressive symptoms (22%) than former smokers (11%) and never smokers (7%) ($P < 0.001$). Similar associations were observed with PTSD symptomatology ($P = 0.007$) and suicidal ideation ($P = 0.009$), with current smokers more likely to report both distress and suicidality.

Associations with smoking status were also found with psychosocial factors. Young sexual minority males who reported any internalized homophobia were more likely to be former smokers compared to those reporting no internalized homophobia ($P = 0.007$). Difference in smoking status was also seen in men reporting gay community affinity versus men who do not, such that men reporting greater affinity were more likely to also report current smoking ($P = 0.013$). Finally, associations by other behaviors were also examined. Both alcohol and marijuana use were strongly associated with smoking status. Those reporting use of either substance in the last 30 days were far more likely to report current smoking ($P < 0.001$).

Multinomial logistic regression models were constructed including all sociodemographic characteristics, psychosocial factors, and mental health-related states associated with cigarette smoking ($P < 0.05$). Given the associations between the mental health factors examined here, each mental health-related condition (PTSD, suicidal ideation, and depressive symptomology) was entered separately, yielding three different models. In each model, we examined the likelihood of being a former or current smoker versus being a never smoker (Table 2). In each of the three models, race was modestly associated with former smoking status, with Black individuals being less likely to be former smokers (adjusted odds ratio [AOR] = 0.49, 95% confidence intervals [CI]: 0.25, 0.99; AOR = 0.43, 95% CI: 0.24, 0.98; AOR = 0.49, 95% CI: 0.24, 0.98, respectively). Similarly, those participants identifying as API, Multiracial, or Other were also less likely to be former smokers (AOR = 0.53, 95% CI: 0.28, 0.99; AOR = 0.44, 95% CI: 0.28, 0.98; AOR = 0.53, 95% CI: 0.28, 1.00, respectively).

Odds of reporting currently smoking were higher among those not currently in school (AOR = 3.38, 95% CI: 1.52, 7.48; AOR = 3.21, 95% CI: 1.44, 7.12; AOR = 3.60, 95% CI: 1.52, 7.48, respectively). Odds of current smoking status were greater among those reporting gay community affinity

Table 1. Bivariate Associations Between Demographic, Mental Health, Psychosocial, and Behavioral Factors and Smoking Status ($N = 598$)

	Total (n = *598*)% (n)	*Never smoker* (n = *178*)% (n)	*Former smoker* (n = *242*)% (n)	*Current smoker* (n = *178*)% (n)	P
Demographic characteristics					
Race					
Hispanic/Latino	38 (229)	31 (56)	42 (101)	40 (72)	0.008
Black	15 (89)	20 (35)	12 (30)	14 (24)	
API/Multiracial/Other	18 (107)	25 (45)	15 (35)	15 (27)	
White non-Hispanic	29 (173)	24 (42)	31 (76)	31 (55)	
School enrollment					
Currently in school	86 (512)	92 (163)	88 (214)	76 (135)	<0.001
Not currently in school	14 (86)	8 (15)	12 (28)	24 (43)	
Perceived familial SES					
Lower & lower middle	34 (200)	37 (65)	31 (74)	34 (61)	0.396
Middle	37 (222)	39 (70)	37 (90)	35 (62)	
Upper & upper middle	29 (176)	24 (43)	32 (78)	31 (55)	
Sexual orientation					
Exclusively homosexual	41 (248)	46 (81)	42 (102)	37 (65)	0.219
Not exclusively homosexual	59 (350)	54 (97)	58 (140)	63 (113)	
Mental health factors					
Depressive symptomatology					
None	7 (41)	6 (10)	9 (22)	5 (9)	<0.001
Minimal	80 (480)	88 (156)	80 (194)	73 (130)	
Moderate to severe	13 (77)	7 (12)	11 (26)	22 (39)	
ADHD symptomatology					
None	93 (554)	96 (171)	93 (224)	89 (159)	0.051
Meets criteria for 1 or both subtypes	7 (44)	4 (7)	7 (18)	11 (19)	
PTSD symptomatology					
None	12 (70)	12 (22)	13 (31)	10 (17)	0.007
Minimal	65 (391)	71 (125)	67 (163)	57 (103)	
Moderate to severe	23 (137)	17 (31)	20 (48)	33 (58)	
Suicidal ideation					
No ideation	83 (499)	88 (156)	86 (207)	76 (136)	0.009
Ideation in past year	17 (99)	12 (22)	14 (35)	24 (42)	
Suicide attempt					
No attempt	95 (568)	97 (173)	95 (229)	93 (166)	0.224
Attempt(s) in past year	5 (30)	3 (5)	5 (13)	7 (12)	
Psychosocial factors					
Parental psychopathology					
No parental history	57 (341)	61 (109)	59 (142)	51 (90)	0.101
Some reported history	43 (257)	39 (69)	41 (100)	49 (88)	
Internalized homophobia					
No	28 (170)	34 (61)	22 (52)	32 (57)	0.007
Yes	72 (428)	66 (117)	78 (190)	68 (121)	
Gay community affinity					
No	23 (136)	30 (53)	22 (53)	17 (30)	0.013
Yes	77 (462)	70 (125)	78 (189)	83 (148)	
Other substance use					
Alcohol consumption					
No alcohol in past 30 days	21 (124)	43 (77)	16 (38)	5 (9)	<0.001
Alcohol consumed past 30 days	79 (473)	57 (101)	84 (204)	95 (168)	
Marijuana consumption					
No Marijuana in past 30 days	54 (321)	85 (151)	53 (128)	24 (42)	<0.001
Marijuana consumed past 30 days	46 (276)	15 (27)	47 (114)	76 (135)	

(AOR = 2.42, 95% CI: 1.30, 4.49; AOR = 2.51, 95% CI: 1.35, 4.67; AOR = 2.42, 95% CI: 1.31, 4.48, respectively) as were odds of being a former smoker (AOR = 1.93, 95% CI:1.17, 3.19; AOR = 1.92, 95% CI: 1.16, 3.18; AOR = 1.91, 95% CI: 1.16, 3.16, respectively). Conversely, those who did not report internalized homonegativity or homophobia were less likely to be former smokers (AOR = 0.48, 95% CI: 0.29, 0.79; AOR = 0.48, 95% CI: 0.30, 0.79; AOR = 0.48, 95% CI: 0.29, 0.78, respectively).

Both recent alcohol and marijuana use predicted both former and current smoking. Those who had consumed alcohol at least once in the past 30 days were more likely to be former (AOR = 2.97, 95% CI: 1.80, 4.88; AOR = 2.96, 95% CI: 1.80, 4.87; AOR = 2.96, 95% CI: 1.80, 4.86, respectively) and

Table 2. Multinomial Logistic Regression Models Examining Correlates of Smoking Status Among Sexual Minority Male Youth ($N = 598$)

	Former smoker vs. never smoker			*Current smoker vs. never smoker*		
	Model 1 AOR (95% CI)	*Model 2 AOR (95% CI)*	*Model 3 AOR (95% CI)*	*Model 1 AOR (95% CI)*	*Model 2 AOR (95% CI)*	*Model 3 AOR (95% CI)*
Race						
White non-Hispanic	1.00	1.00	1.00	1.00	1.00	1.00
Hispanic/Latino	1.26 (0.72, 2.22)	1.27 (0.72, 2.22)	1.27 (0.72, 2.22)	1.27 (0.66, 2.44)	1.24 (0.65, 2.39)	1.27 (0.66, 2.43)
Black	0.49 (0.25, 0.99)*	0.43 (0.24, 0.98)*	0.49 (0.24, 0.98)*	0.52 (0.23, 1.17)	0.48 (0.21, 1.01)	0.49 (0.22, 1.09)
API/Multiracial/Other	0.53 (0.28, 0.99)*	0.44 (0.28, 0.98)*	0.53 (0.28, 1.00)*	0.65 (0.30, 1.37)	0.65 (0.31, 1.38)	0.64 (0.30, 1.35)
School enrollment						
Currently Yes	1.00	1.00	1.00	1.00	1.00	1.00
Currently No	1.68 (0.79, 3.55)	1.64 (0.78, 3.48)	1.69 (0.80, 3.57)	3.38 (1.52, 7.48)**	3.21 (1.44, 7.12)**	3.60 (1.52, 7.48)***
PTSD symptomatology						
Yes	1.00			1.00		
No	0.88 (0.50, 1.53)	—	—	0.44 (0.24, 0.82)**	—	—
Depressive symptomatology						
Yes	—	1.00	—	—	1.00	—
No		0.73 (0.32, 1.66)			0.31 (0.13, 0.74)**	
Suicidal ideation (past year)						
Yes	—	—	1.00			1.00
No			0.97 (0.53, 1.83)	—	—	0.54 (0.27, 1.09)
Internalized homophobia						
Yes	1.00	1.00	1.00	1.00	1.00	1.00
No	0.48 (0.29, 0.79)**	0.48 (0.30, 0.79)**	0.48 (0.29, 0.78)**	0.84 (0.48, 1.47)	0.83 (0.47, 1.45)	0.83 (0.48, 1.46)
Gay community affinity						
No	1.00	1.00	1.00	1.00	1.00	1.00
Yes	1.93 (1.17, 3.19)**	1.92 (1.16, 3.18)**	1.91 (1.16, 3.16)**	2.42 (1.30, 4.49)**	2.51 (1.35, 4.67)**	2.42 (1.31, 4.48)**
Alcohol use (last 30 days)						
0 days	1.00	1.00	1.00	1.00	1.00	1.00
≥1 day(s)	2.97 (1.80, 4.88)***	2.96 (1.80, 4.87)***	2.96 (1.80, 4.86)***	7.12 (3.17, 15.98)***	7.02 (3.15, 15.65)***	6.73 (3.04, 14.92)***
Marijuana use (last 30 days)						
0 days	1.00	1.00	1.00	1.00	1.00	1.00
≥1 day(s)	4.14 (2.46, 6.96)***	4.17 (2.48, 7.02)***	4.16 (2.47, 7.00)***	13.22 (7.37, 23.71)***	13.52 (7.53, 24.28)***	13.19 (7.37, 23.62)***

*$P \leq 0.05$.
**$P \leq 0.01$.
***$P \leq 0.001$.
CI, confidence intervals; AOR, adjusted odds ratio.

current smokers (AOR = 7.12, 95% CI: 3.17, 15.98; AOR = 7.02, 95% CI: 3.15, 15.65; AOR = 6.73, 95% CI: 3.04, 14.92, respectively), as were those who had consumed marijuana within that same time frame (Former: AOR = 4.14, 95% CI: 2.46, 6.96; AOR = 4.17, 95% CI: 2.48, 7.02; AOR = 4.16, 95% CI: 2.47, 7.00; and Current: AOR = 13.22, 95% CI: 7.37, 23.71; AOR = 13.52, 95% CI: 7.53, 24.28; AOR = 13.19, 95% CI: 7.37, 23.62 respectively).

Finally, mental health-related states were also found to be significant in two of the three respective models: those including depressive symptomology and PTSD symptomatology. Odds of current smoking were lower among those not reporting depressive symptomatology (AOR = 0.31, 95% CI: 0.13, 0.74), as were odds of those not reporting PTSD symptomatology (AOR = 0.44, 95% CI: 0.24, 0.82).

Discussion

Results from these analyses largely conform with what has been demonstrated previously in investigations of smoking disparities among MSM and YMSM. Specifically, psychosocial factors such as gay community affinity, mental health states typically associated with PTSD and depression, and behavioral factors such as recent alcohol and drug use were strongly associated with current and former smoking. In light of what has been previously reported regarding tobacco disparities among sexual minorities, our finding that internalized antihomosexual prejudice was associated with former smoking may require further explanation. Prior investigations have noted an absence of associations between internalized homophobia/antihomosexual bias and substance use including cigarette smoking, particularly among males.[30,31] Where associations have been noted, different potential explanations have been offered. One theory posited by Pachankis et al., which may hold relevance for our finding, suggests that smoking offers a means of appearing more masculine and may therefore be an attempt to conform to gender role norms or to conceal one's sexual orientation.[32] Therefore, those YMSM in our sample who reported any internalized homophobia may have at one point been more inclined to smoke cigarettes when they were experiencing heightened levels of self-consciousness either about gender nonconformity or perceived sexual orientation. However, since these data are cross-sectional, we are unable to directly infer the temporal relationship between former smoking and internalized homophobia/antihomosexual bias.

Associations with smoking also differed by race. Most notably, regression analysis indicated that Black and API/Multiracial/Other YMSM were less likely to be former smokers. We tested the theory that Black and API/Multiracial/Other individuals may have later onsets of cigarette smoking by comparing the mean age of first cigarette by race using one-way ANOVA and found no significant differences [$F(3, 416) = 2.049$, $P = 0.106$].

Some of the most robust associations with smoking status were observed by gay community affinity. Affinity toward gay communities may manifest in greater and more frequent participation in said communities. While no inferences about the socialization patterns of this population can be made based on the data presented here, hypotheses regarding the influence of gay communities and venues on substance use have been well supported elsewhere.[18,33] Gay socialization patterns and processes of acculturation may be more permissive toward substance use including cigarettes. Also, as prior studies have suggested,[11] gay community venues such as gay bars or neighborhoods may be specifically targeted for the promotion and marketing of tobacco products.[18]

What our results also point to is the confluence of substance use in this population. As other studies have shown, the phenomenon of polysubstance use is more common among sexual minority male substance users.[13,34] Therefore, it is unsurprising that men in this sample who used tobacco were also more likely to use marijuana and alcohol. In light of this finding, one might also reexamine how gay community affinity is related to smoking in this population. As the men in this sample were all between the ages of 18 and 19, there were fewer opportunities to drink alcohol at gay venues than if this sample had included men over the age of 21. While many nonlegal venues for drinking alcohol do exist—including outdoor recreational spaces, apartments, and dorm rooms—these places are contextually distinct from explicitly gay venues, where associations between alcohol and smoking may be more salient and expected.

Our findings also support the vast literature that has noted the associations between cigarette smoking and mental health conditions such as depression and PTSD. It is equally well documented that a variety of mental health conditions are experienced at higher rates among YMSM and MSM in general.[35–37] This is notably true of our sample, wherein only 7% of the total sample had reported experiencing no symptoms of depression within the past 6 months.

Before drawing final conclusions, key study limitations should be noted. First, the data used in this analysis are cross-sectional and, therefore, examine relationships between smoking status and other factors of interest at one point in time. As such, no inferences can be made regarding the causality or temporal relationship between these factors and ones' current or former smoking behavior. In addition, data regarding smoking were self-reported by participants and may, therefore, be subject to bias. Under certain conditions, participants might over- or under-report smoking behavior to provide socially desirable responses. However, the consistency of our estimates of smoking prevalence with other similar analyses cited throughout, and the use of audio computer-assisted self-interviews reduces the concern that biases resulted in either an inflation or deflation in estimates of smoking prevalence. It must also be acknowledged that potential shortcomings exist in the scales and instruments from which these data are derived. Most notably, the information upon which the smoking status categories are based is imprecise and potentially contributes to some measurement ambiguity. While categorizing smoking status as *never*, *current*, and *former* provides a basic description of smoking behavior that can be examined alongside correlates, future versions of this study should make use of the most robust tobacco use measurements that include not only cigarettes but other tobacco products as well. Similarly, the use of the Kinsey Scale as a means of assessing sexual identity limits potential comparisons to studies that assess sexual identity using a different rubric. However, given the age of this sample, it is perhaps justified to allow respondents to plot their sexual identity along a continuum, as with the Kinsey Scale; recognizing that for many late adolescents, identities are still in a process of formation.

Conclusion

Taken together, these findings suggest that distinct developmental trajectories exist among late adolescent-aged sexual minority men that may increase their likelihood to smoke cigarettes. The results of our analysis implicate risk factors that could either be unique to sexual minority male youth, such as gay community affinity and internalized homonegativity, or common risk factors that are experienced at higher rates relative to heterosexual peers, such as depression and other substance use. These findings support the hypothesis that no uniform etiology of tobacco use disparities exists among YMSM.[12] YMSM may be exposed to risk factors associated with tobacco use as a function of stressors routinely encountered by minority groups.[36] Alternatively, commonly utilized support systems and networks that have historically benefited sexual minority males may engender their own risk exposures leading to increased incidence of tobacco and other substance use. While the relationship between gay community acculturation and adolescent substance use requires further examination in its own right, it directs attention to an alternative etiology of tobacco use among a subset of YMSM who might otherwise exhibit resiliencies in other domains and who may demonstrate efficacy in accessing community-specific resources.

These multiple etiologies present a challenge to public health and tobacco control efforts specifically aimed at young sexual minority males. While prior studies have helped to establish the ways in which gay communities can both insulate and expose individuals to risk, this mechanism may operate uniquely among sexual minority men emerging out of late adolescence into adulthood. It is, therefore, vital that future efforts adopt an approach to smoking-related disparities among YMSM that is not monolithic. More favorable approaches should utilize the inherent resiliencies embodied by men in this population; enlist community supports to engage YMSM in healthful ways, while also working to alleviate the stressors that continue to disparately affect them.

In terms of future directions for research, several recommendations can be gleaned from this study. First, cigarette smoking among MSM and YMSM represents a persistent health disparity that should be studied longitudinally.[38] In addition, more precise measures of cigarette use that include the assessment of rapidly emerging products in the tobacco market, such as electronic ''E'' cigarettes and vaporizers, should be used wherever possible. This may be of particular relevance to YMSM, as recent surveillance data suggest that the largest percentage of electronic cigarette users is aged 18–24, male, and identifies as LGBT.[39] Finally, given that our understanding of the etiological milieu of this disparity among MSM is incomplete, future analysis should include investigations into early life experiences and levels of exposure to environmental tobacco, but also risk factors that might be uniquely tied to the experiences of sexual minority males.

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