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Community and Individual Factors Associated with Cigarette Smoking Among Young Men Who Have Sex With Men

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Abstract

Young men who have sex with men (YMSM) have higher rates of cigarette smoking than their heterosexual counterparts, yet few studies have examined factors associated with cigarette smoking among YMSM. The present study sought to understand how different types of gay community connection (i.e., gay community identification and involvement, gay bar/club attendance) were associated with smoking among YMSM recruited through venue-based sampling in Los Angeles, California (N = 526). Structural equation modeling was used to isolate direct and indirect effects of gay community connection on smoking through cognitive and psychological mediators (i.e., psychological distress, health values, internalized homophobia). Findings indicate YMSM cigarette smoking prevention and intervention must be tailored to address the direct and indirect influences of the gay community.

Keywords

YMSM; gay; cigarette smoking; community; internalized homophobia; mental health; health values

Research on men who have sex with men (MSM) has shown higher rates of cigarette smoking in this population than in comparable groups of heterosexual men (Greenwood et al., 2005; Lampinen, Bonner, Rusch, & Hogg, 2006). The prevalence of cigarette smoking among gay and bisexual men is estimated to be between 27% and 48% (Gruskin, Greenwood, Matevia, Pollack, & Bye, 2007; Stall, Greenwood, Acree, Paul, & Coates, 1999) with young MSM (YMSM) being at particular risk for cigarette smoking (McKirnan, Tolou-Shams, Turner, Dyslin, & Hope, 2006). YMSM are in the developmental period between late adolescence and early adulthood, a life stage filled with numerous changes, such as leaving adolescent support networks, obtaining a job, and deepening intimate partner relationships (Arnett, 2002). In addition to the general challenges faced by YMSM stemming from transitioning from adolescence to adulthood, psychological distress related to a stigmatized sexual identity and increased participation in a community with high prevalence rates of cigarette smoking may have further health consequences (Meyer, 2003; Stall, Friedman, & Catania, 2008). Indeed, adolescents who begin smoking earlier are more

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likely to smoke long-term and be subjected to the negative health outcomes related to cigarette smoking (Mayhew, Flay, & Mott, 2000).

Previous studies have identified both individual (e.g., stress) and community (e.g., gay bar attendance) factors related to cigarette smoking among older MSM (Lampinen et al., 2006; Stall et al., 1999). However, to our knowledge, no such studies exist that focus specifically on YMSM. This research is especially important given the developmental challenges specific to YMSM. Many have left their home of origin, either by choice or as a result of family conflict related to sexual orientation, and are beginning to interact with gay communities that present opportunities for risk behavior (Stall, Friedman, & Catania, 2008). For example, high rates of cigarette smoking in the gay community, along with tobacco advertisement targeted at lesbian, gay, bisexual (LGB) populations, may lead YMSM to initiate or increase cigarette smoking.

The present study seeks to model the association between gay community affiliation on cigarette smoking within a social cognitive framework (Bandura, 1986). This theoretical orientation was chosen because it emphasizes the important role of the social environment on individual behavioral processes through the principle of triadic reciprocal causation. In this framework, the social environment, individual factors, and behavior are understood to influence each other. Our analysis is not meant as a formal test of Social Cognitive Theory, though the theory influenced our modeling approach. Specifically, the present analysis examines the effects of involvement with the gay community (i.e., gay community identification and involvement, gay bar/club attendance) both directly and indirectly through three individual-level psychological and cognitive mediating variables (i.e., psychological distress, health values, internalized homophobia). Results of this study will facilitate a better understanding of the community and individual correlates of cigarette smoking among YMSM in order to develop effective cigarette smoking interventions for this population.

Methods

Procedure and Participants

The present study used baseline data from the Healthy Young Men study, a longitudinal study of sexual risk behavior and substance use among YMSM (for description, see Kipke et al., 2007). Participants were male; 18-24 years old at recruitment; self-identified as gay, bisexual, or uncertain about their sexual orientation and/or reported having sex with a man; self-identified as Caucasian, African American, or Latino of Mexican descent; and were residents of Los Angeles County with no expectation of living outside the County for at least six months following recruitment. Sample characteristics are displayed in Table 1.

Venue-based probability sampling was used to obtain a representative sample of 526 YMSM attending gay venues (e.g., bars, coffee shops, gay pride festivals) in Los Angeles County. Confidential, self-administered surveys were completed in English or Spanish. Participants were given 35 dollars compensation for their time and effort. The study was approved by the Committee on Clinical Investigations at Children's Hospital Los Angeles.

Measures

Variables used in the current analysis are described below (see Table 2 for descriptive statistics).

Cigarette Smoking—Based on the number of days smoked in the last 30 days (frequency) and average number of cigarettes smoked on a typical day (intensity), participants were coded as lifetime non-users (never smoked cigarettes; 34%); non-recent

users (smoked but not in the past 30 days; 15%); light users (smoked 15 days or less in the past month and 1/2 a pack of cigarettes per day or less; 29%); or frequent/heavy users (smoked more than 15 days in the past month or greater than 1/2 a pack of cigarettes per day; 22%). Higher scores indicated heavier smoking on this four-point index. Measures combining frequency and intensity of substance use have been used previously with these data (Wong, Kipke, & Weiss, 2008).

Community Factors—Respondents' identification and involvement with the gay community was based on a modified version of the Identification and Involvement with the Gay Community Scale (IGCS; Vanable & McKirnan, 2004), which has been shown valid in diverse samples of gay and bisexual men. Eight items (e.g., participation in community events) rated on a 5-point scale were used to create a single composite variable ($\alpha = 0.64$). Gay bar/club attendance, which was included in the original scale, was separated out for this analysis, as prior studies have found gay bar attendance to be independently associated with cigarette smoking in a population similar to that of the present study (Stall et al., 1999). A single question assessed frequency of attending gay bars and clubs (1 = *never* to 5 = *several times a week or every day*).

Individual Factors—Psychological distress was measured by a latent variable with four indicators: (1) depression based on the 20-item Center for Epidemiologic Studies Depression Scale (Radloff, 1977); (2) stressful life events based on a pre-existing 30-item measure (Wills, Sandy, & Yaeger, 2002; $\alpha = 0.76$); (3) experiencing suicidality during previous 12 months (dichotomous); and (4) experiencing hopelessness consistently over previous 12 months (dichotomous). Health values were measured with three items (e.g., "my health is one of my biggest concerns") rated on a 4-point Likert scale ($\alpha = 0.64$). Internalized homophobia was measured using a 10-item scale ($\alpha = 0.82$) developed by Ross and Rosser (1996).

Data Analysis

This study used structural equation modeling (SEM) with both observed and latent variables (Kline, 2004) using Mplus statistical software (Muthén & Muthén, 2007). A model with all possible paths was specified and non-significant paths were systematically removed one at a time; the model was retested until a final parsimonious model with only significant paths was established. Covariates were added to the model individually to test their association with the outcome variable and their effect on the overall model fit: Only covariates associated with the outcome variable were retained in the model. Once a final model had been established, mediation analysis was undertaken to examine statistical significance of indirect effects of community variables on cigarette smoking. Indirect effects were computed and tested via the Sobel test (Sobel, 1982) in Mplus.

Results

Table 2 presents the correlation matrix for all variables in the final model, which possessed excellent fit statistics, CFI = .979, TLI = .965, RMSEA = .026. The empirical data showed no significant deviation from the model, $\chi^2(32) = 43.315$, $p = .087$. The total R-square value for the overall sample was .134, signifying that this model explained approximately 13% of the variance in cigarette smoking among YMSM in this sample. Results of the analysis with only significant paths included are depicted in Figure 1. Standardized path coefficients are reported in order to allow comparisons across all model paths and variables.

Background and gay community variables were directly associated with both cigarette smoking and with individual level mediators. African American YMSM had lower levels of

cigarette smoking, compared to their white counterparts. Gay bar/club attendance was associated with higher levels of cigarette smoking, indicating that more time spent in gay bars/clubs was associated with greater smoking behavior. Race was also associated with gay bar/club attendance, with Latino and African American YMSM attending gay bars/clubs less frequently than white YMSM. African American YMSM also had higher levels of internalized homophobia, and both African American and Latino YMSM had greater health values than their white counterparts. Greater gay community identification and involvement was associated with lower levels of internalized homophobia, indicating the more connected YMSM were to the gay community, the less they felt negatively about themselves as gay men. All three individual level variables were associated with cigarette smoking. Greater psychological distress corresponded to higher levels of cigarette smoking, while health values, and internalized homophobia, corresponded to lower levels of cigarette smoking.

In addition to direct effects, there were significant indirect effects of the background and gay community connection variables on cigarette smoking, indicating mediation between the community level variables and cigarette smoking through individual level variables. The association between gay community identification and involvement and cigarette smoking was fully mediated via internalized homophobia (total indirect effects: $\beta = .03$, $t = 2.072$, $p < .05$). African American race/ethnicity and cigarette smoking was partially mediated via health values (total indirect effects: $\beta = -.06$, $t = -3.66$, $p < 0.001$; total direct effect: $\beta = -.12$, $t = -2.62$, $p < .010$). Latino race/ethnicity and cigarette smoking was fully mediated via gay bar/club attendance (total indirect effects: $\beta = -.05$, $t = -3.127$, $p < .05$).

Discussion

The current study is among the first to present an analysis of cigarette smoking among YMSM. We sought to understand the direct and indirect relationships between gay community involvement, individual-level psychological and cognitive mediators, and cigarette smoking. This information can be useful when developing cigarette smoking interventions for this population. As expected, gay bar/club attendance was positively associated with cigarette smoking, which has been demonstrated previously with older MSM (Stall et al., 1999). Such findings reinforce the importance of social context on cigarette smoking with YMSM. Although cigarette smoking is no longer permitted in public venues by California law, young men may smoke outside of bars, in outdoor patio spaces, or at underground venues where indoor smoking still occurs. The association between cigarette smoking and gay bar/club attendance may also be a result of targeted advertising in venues where YMSM socialize (Smith & Malone, 2003). Attention to the ways in which cigarettes are marketed to YMSM merits further attention, as young people have been shown to respond favorably to advertisements tailored for adolescents (Arnett, 2001).

Gay community identification and involvement was negatively associated with internalized homophobia. Young men who are able to access and become engaged in gay community activities may benefit from positive social relationships and be exposed to positive gay role models, therefore reducing internalized homophobia. However, higher levels of internalized homophobia were in turn associated with lower levels of cigarette smoking. This intriguing finding is in line with previous research indicating that the gay community offers both supportive and deleterious opportunities for YMSM (Stall et al., 2008). YMSM who feel negatively about their sexuality are less likely to identify with and be involved in the gay community, where cigarette smoking is highly prevalent and perhaps more accepted than in other social contexts. YMSM with higher levels of internalized homophobia may also be more strongly connected to other communities (e.g., home, church, school) where cigarette smoking is less normative than in gay social contexts.

Consistent with previous studies of heterosexual adolescents, African-American respondents had lower levels of cigarette smoking than did their white counterparts (CDC, 2006). In addition, race/ethnicity was associated with cigarette smoking indirectly through health values, gay bar/club attendance, and internalized homophobia. These findings point to variation in gay community involvement by race/ethnicity and the differential effects these socialization patterns may have on cigarette smoking. Lower attendance at gay social venues may expose African American and Latino YMSM to lower levels of the health risk behaviors prevalent in the gay community, including smoking. At the same time, greater connection to communities of origin may encourage positive health values, which are in turn associated with less cigarette smoking. This may also contribute to the aforementioned association between internalized homophobia and lower smoking prevalence. These relations are complex and should be further explored in future research.

Like all studies, the present study has some limitations. The cross-sectional analysis presented here does not allow for inference about the temporal association between independent and dependent variables. It is possible, for example, that YMSM smokers select gay bars and clubs because smoking occurs at these locations. Data were collected from gay-identified venues; therefore, these results may not generalize to young men who do not attend these venues. In addition, since sampling occurred through gay-identified venues, our estimates of gay community identification and involvement may be inflated. This analysis does not adjust for all potential covariates that have been previously associated with cigarette smoking, such as peer influence on cigarette smoking (Ennett et al., 2006). Statistical power limitations prevented us from testing separate models within subgroups defined by demographic characteristics, such as race/ethnicity. Significant paths between race/ethnicity and other variables in the model may be indicative of processes underlying the decision to smoke unique to each racial/ethnic subgroup. Future studies of YMSM with larger racial/ethnic minority samples and sufficient statistical power should strive to elucidate those differences.

Our study explained 13% of the variance in cigarette smoking among YMSM in our sample. Previous models of cigarette smoking among other adolescent populations indicate a wide range of explanatory power: 7% to 45% of variance explained in smoking behavior (Blum et al., 2000; Piontek et al., 2007). One possible reason for the modest variance in smoking behavior explained in our study relates to the study sample. A meta-analysis of substance use among sexual minority youth demonstrated that across 18 studies, sexual orientation alone had significant explanatory power over cigarette smoking (Marshal et al., 2008). The fact that only YMSM are represented in this sample, coupled with the lack of peer smoking measures, may account for the modest explanatory power of this model despite its excellent fit.

Conclusions

There is a need for culturally-tailored smoking interventions for YMSM (Harding, Bensley, & Corrigan, 2004). Results presented here highlight the potential benefit of social marketing campaigns placed in gay venues and gay publications to reduce cigarette smoking as similar campaigns have been effective in the past to reduce cigarette smoking with other populations (Grier & Bryant, 2004). Other structural level interventions to reduce smoking in this population may include outreach to bar and club owners to enforce stricter cigarette smoking policies, such as restrictions on cigarette smoking in outdoor patios or within specified distances from venues. The direct effects of gay bar/club attendance and indirect effects of gay community identification and involvement point to the need for additional research on how ties to different segments of the gay community may place YMSM at risk for cigarette smoking.

Attention to reducing psychological distress and increasing health values among YMSM are also of primary importance and should be emphasized in smoking prevention programs targeting this population. This study further highlights the association between identification and involvement in the gay community and how YMSM feel about themselves. Empirical research is needed on how individual health behavior processes among YMSM are linked to the larger gay community. In order to effectively address disproportionate rates of cigarette smoking among YMSM, public health interventionists would be wise to consider a two-pronged approach targeting both the community venues where gay men socialize as well as the individual cognitive and psychological factors that have been associated with cigarette smoking in this study.

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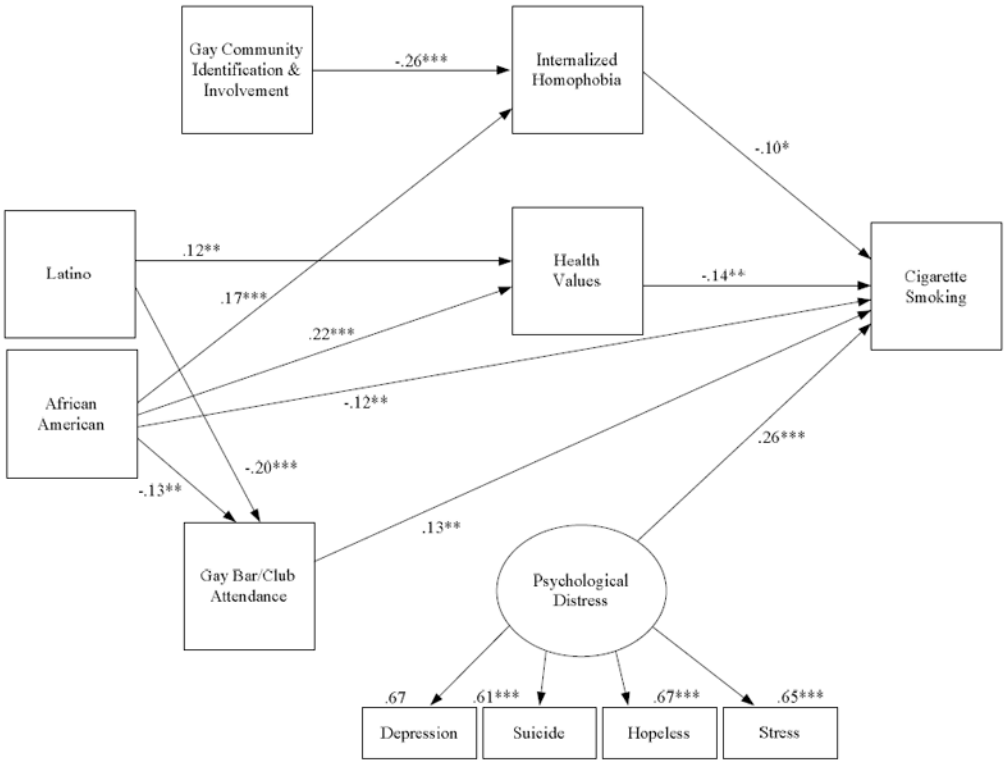

Figure 1.

Structural equation model: Predictors of cigarette smoking among 526 YMSM *Note*. Circles represent a latent variable; rectangles represent single-item indicators. Single-headed arrows represent regression paths. Correlations among the predictors are not depicted in for readability; however, four significant correlations were present: (1) hopelessness and suicidality were positively correlated ($r = .28$, $p < .001$); psychological distress and internalized homophobia were positively correlated ($r = .23$, $p < .001$); gay identification and involvement and gay bar/club attendance were positively correlated ($r = .16$, $p < .001$); and internalized homophobia and health values were positively correlated ($r = .11$, $p < .05$). *p < .05; ** p < .01; ***p< .001

Table 1

Participant Characteristics

Variables	*M* or *N*	*SD* or %
Age in years (18 – 24)	20.14	2.48
Race/ethnicity		
Black	126	24%
Latino	205	39%
White	195	37%
Live with parents	281	53%
Employment and Education Status		
Neither school nor work	70	13%
School only	113	22%
School and work	142	27%
Work only	201	38%
Attracted to men exclusively	372	71%
Identify as bisexual/heterosexual	88	17%

Note: Means and standard deviations are presented for continuous variables; percentages and number of participants are presented for categorical variables; ranges of continuous variables presented in parentheses next to the variable name.

Table 2

Bivariate Correlations and Descriptive Statistics for Model Variables

	1	2	3	4	5	6	7	8	9	10	11
1. Gay identification	–										
2. Gay bar attendance	.12**	–									
3. Homophobia	.08	.00	–								
4. Health values	.02	.00	.52***	–							
5. Depression	-.02	-.01	-.03	.18***	–						
6. Hopelessness	-.04	-.01	.00	.29***	.15**	–					
7. Suicidality	-.01	.30***	-.01	.27***	.11*	.20***	–				
8. Stress	.06	.01	-.07	.30***	.53***	.26***	.26***	–			
9. Cigarette smoking	.01	.10	.08	.01	.09*	-.08	.02	.08	–		
10. Black	.01	-.03	-.03	.00	-.01	.06	.02	.01	-.14**	–	
11. Latino	-0.6	-.08	-.01	.00	-.02	-.01	-.05	-.01	-.02	-.45**	–
M or *n*	3.01	3.28	2.15	3.44	15.04	160	53	6.53	2.39	126	205
SD or %	0.44	1.60	0.28	0.32	11.24	31%	10%	15.44	1.16	24%	39%

* p ≤ .05;

** p ≤ .01;

*** p ≤ .001