



Regarding Youth . . .

We believe research demonstrates that intervention and treatment for youth who use tobacco need to be different than those for adults.

Things to Consider:

- **Age-Appropriate Information**
 - Provide education on tobacco with a strong message about the importance of tobacco abstinence.
 - NIDA for Teens http://teens.drugabuse.gov/facts/facts_nicotine1.php
- **Age-Appropriate Cessation**
 - "End Nicotine Dependence" (END) curriculum
 - facilitator training and materials available free of charge from Sandra Schulthies at UDOH 801-538-6502 or SandyS1@utah.gov
 - classes may be offered by your local health department
 - "Not on Tobacco" (N-O-T) curriculum
 - available for a fee from the American Lung Association
 - contact Anne Asher 801-931-6989 or AAsher@LungUtah.org
 - QuitLine for youth 1-800-QUIT-NOW
- **Common Barriers to Treatment**
 - Adolescents may perceive tobacco use as a normal and socially acceptable behavior.
 - Adolescents may perceive use of tobacco as less problematic than other substances.
 - Adolescents have a propensity to experiment with new behaviors, such as use of tobacco and other substances.
- **Age-Appropriate Treatment**
 - Examine issues surrounding parent permission vs. youth client privacy
 - Utilize an integrated screening and assessment process for both current and risk of future use of substances including tobacco.
 - Use individualized motivational strategies to improve treatment compliance and response. Overly confrontational or authoritarian approaches may increase resistance to stopping tobacco use.
 - Counseling and behavioral interventions should be developmentally appropriate, involve positive reinforcement, and utilize peer support.
 - Nicotine Replacement Therapy (NRT) is a controversial issue in assisting adolescents with tobacco addiction. Only a few studies testing the effects of NRT have been carried out. Although these suggest that NRT is safe and efficacious for adolescents (Moolchan et al., 2004), NRT is not FDA-approved for those under 18.
 - Adolescents may benefit from ongoing community- and school-based intervention activities to help improve their success in remaining tobacco-free.¹

Adolescent Tobacco Use – Facts and Figures

Almost all initial use of cigarettes occurs before high school graduation, and 2/3 of American adolescents have tried smoking by age 18 (Carpenter et al, 2009; Rohde et al, 2003, Everett et al, 2002). Longitudinal data suggest that 26% of daily smokers and 46% of occasional smokers at age 15 had quit by age 28. Overall, 1/3 of all teenage smokers had quit by age 28. However, that leaves a significant number of adolescents who continue smoking well into adulthood (Paavola et al., 2001).

Regarding smoking behavior and patterns, adolescents are known to have much more variable smoking habits than adults. Restricted access to smoking is an important factor to consider in the assessment process because it may lead to an underestimation of nicotine dependence in adolescents (Colby et al., 2000).

There is some evidence of serious nicotine dependence in approximately 20% of adolescent smokers. (Prokhorov et al., 1999).

Adolescent smoking is highly comorbid with psychiatric and substance use disorders, and adolescent smokers with psychiatric comorbidity may be especially at risk for persistence of smoking into adulthood (MacPherson et al, 2007).

If an adolescent's friends smoke, he or she is consequently significantly *at-risk* for tobacco smoking. Adolescents who report three or more friends who smoked had a smoking prevalence approximately 10 times that of adolescents who reported that none of their friends smoked (Maney et al., 2004).

Age, prior experimentation with cigarettes, and having friends who smoke are among the principal predictors of smoking risk. Evidence suggests that psychological reactance also should be considered an important predictor of adolescent smoking initiation (Miller et al., 2006). As adolescents age, reactance should play an increasingly important role in determining the responses they will have to persuasive messages (Alvaro et al., 2003).

Adolescents share with adults concern about their health as a motive to quit smoking but cite other motives more characteristic of their stage of life, including cost, peer influences, attitude and behavior of parents regarding smoking, appearance, and athletic performance (Reidel et al., 2002; Moolchan et al., 2000). Many adolescents lack knowledge of, or dismiss the seriousness of, tobacco-related harm (Friend & Colby, 2006).

Compared to adult smokers, adolescents tend to do more poorly in smoking cessation (Horn et al., 2001) reasons include:

- Adolescents are greater risk takers than adults, which may reflect developmental differences (incomplete development of the frontal lobes and executive function).
- They have experienced relatively minor negative consequences from smoking, so there is less to dissuade them from risking addiction and all that it entails.
- In many cases treatment for adolescents is initiated by parents or school authorities, not the adolescent.

Low levels of initial participation by adolescents in cessation programs (Massey et al., 2003) followed by high levels of attrition (Garrison et al., 2003; Moolchan, Aung, and Henningfield, 2003) have led some investigators to shift the focus of their efforts from adolescence to young adulthood. However, the first meta-analysis of smoking-cessation interventions with teenagers (Sussman, Sun, and Dent, 2006) examined 48 studies using a variety of settings and concluded that overall, smoking-cessation programs with adolescents are efficacious.

Tobacco Control/Mental Health

Multiple Perspectives on Tobacco Use Among Youth With Mental Health Disorders and Addictions

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Abstract

Purpose. Youth and young adults with mental health disorders and addictions are at a high risk of becoming nicotine dependent, and at least half will die of tobacco-related diseases. In comparison to the general population, this population also faces neurobiological and psychosocial vulnerabilities. There is a critical need for community services and research targeting tobacco interventions for these individuals.

Methods. A concurrent mixed methods study was conducted by collecting data from in-depth key informant interviews, focus groups, and a survey. Qualitative key informant interviews with healthcare professionals ($n = 11$) and youth focus groups ($n = 32$) were conducted by using semi-structured questioning regarding barriers and facilitators to tobacco interventions. Content analysis was used to code transcripts and categorize themes. Survey data were also collected from 230 smokers ages 13 to 17 years ($n = 62$) and young adults ages 18 to 25 years ($n = 40$) at three community mental health centers. The survey inquired about tobacco use, motivation to quit, history of quit attempts, and treatment preferences.

Results. Five thematic categories were identified in both the adult key informant interviews and the focus groups with youth: (1) motivation to quit, (2) cessation treatment needs, (3) social influence, (4) barriers to treatment, and (5) tobacco-free policy. Among those surveyed, 44% currently smoked. Youth and young adult survey respondents who smoked were often motivated to quit, few had used proven tobacco cessation aids, but there was interest in access to nicotine replacement therapy.

Conclusion. Merged qualitative and quantitative findings support past literature regarding youth in the general population but also expand upon our knowledge of issues specific to youth and young adults with mental health disorders and addictions. Findings suggest interventions warranting further attention in community treatment settings. (*Am J Health Promot* 2011;25[5 Supplement]:S31-S37.)

Key Words: Tobacco Cessation, Youth, Mental Health, Addictions, Community Treatment, Prevention Research. Manuscript format: research; Research purpose: descriptive; Study design: survey, content analysis; Outcome measure: behavioral; Setting: clinical/healthcare; Health focus: smoking control; Strategy: education, skill building/behavior change; Target population age: youth; Target population circumstances: all education levels, all income levels, all US locations, all races/ethnicities

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INTRODUCTION

Tobacco use represents a significant risk factor affecting persons with mental health disorders and addictions.^{1,2} These individuals die up to 25 years earlier and experience increased medical comorbidity compared with the general population.^{1,3,4} Although there is mounting interest in addressing the tobacco cessation needs of these individuals,⁵ the focus has been on adults. Whereas the neurobiological, psychological, social, and systemic variables associated with high tobacco use among adults with mental health disorders and addictions have been well documented,⁵⁻⁷ there has been little study of smoking among youth and young adults with these same disorders. This younger population is a critical target for tobacco control. These individuals initiate smoking at early ages,⁸ inaccurately believe that they will soon stop smoking,⁹ and may not consider the later harmful effects of tobacco use.¹⁰

Approximately 21% of U.S. children ages 9 to 17 years have diagnosable mental health disorders or addictions, and 5% of these have severe functional impairments related to psychiatric disorders.¹¹ Anxiety disorders are the most common psychiatric diagnoses, followed by disruptive disorders and mood disorders.¹² Addictions, including tobacco use, are also very prevalent among youth.¹² Smoking in the prior 30 days is reported to be 7%, 14%, and 19% by 8th, 10th, and 12th graders, respectively.¹³

Tobacco use prevalence among youth with mental health disorders and addictions is at a much higher rate

than seen in the general population, with prevalence ranging from 20% to 59%.¹⁴⁻¹⁷ Smoking among youth has been found to cause recurrent behavioral problems¹⁸ and is related to an increased risk of lifetime depression.^{19,20} Among youth with major depressive disorder, 75% smoke.^{12,19,21} There is also high prevalence of tobacco use among youth with conduct disorder (90%), attention deficit/hyperactivity disorder (50%), and other addictions (85%).^{12,14-16}

Although the intentions to quit smoking among youth and young adults with mental disorders and addictions are unknown, as many as 65% of youth in the general population report a desire to quit, and even more report an actual quit attempt. For the general youth population, a number of smoking prevention and cessation programs exist, but effectiveness has been mixed.^{8,22} Post-treatment abstinence declines rapidly, resulting in 12-month abstinence rates as low as 4%.²³⁻²⁵ The most successful programs are voluntary, school-based prevention programs, as well as those that focus on motivational enhancement, the immediate consequences of smoking, and building healthy coping strategies.²⁶⁻²⁸ Also, employing coordinated multi-component (e.g., school, media, and homework) interventions has been more successful than single-component strategies.²⁹

Tobacco cessation interventions specifically targeting youth with mental health disorders and addictions have been extremely limited, and it remains unclear if existing programs are appropriate for this population. The purpose of this study was to gather multiple perspectives on smoking behaviors and potential tobacco control strategies for youth and young adults with mental health disorders and addictions.

METHODS

Design

A concurrent mixed-methods study was conducted by collecting data from survey, key informant interviews, and focus groups. We chose complementary qualitative and quantitative methods to triangulate data and investigate convergence of findings.^{30,31} The study was conducted within public health

systems. Study protocols were approved by the university institutional review board. Providers consented to interviews and parental consents and youth assents were obtained for focus groups and surveys.

Key Informant Interviews and Focus Groups. Sample. Utilizing a convenience sample of healthcare professionals, key informant interviews were completed regarding facilitators and barriers to tobacco cessation. Snowball sampling³² was employed to identify healthcare professionals with expertise in youth tobacco cessation, community-based treatment, and tobacco control policy. The study team interviewed 11 professionals over 2 months; five youth providers, two behavioral managed care administrators, two youth experts from the state behavioral health authority, and two administrators from the state health department. Through initial coding of interview transcripts, the five researchers agreed that the professionals interviewed were reporting overlapping issues and that theoretical saturation had been achieved.

Trained university research staff also conducted 10 focus groups with 32 participants over 3 months using a convenience sample of youth (ages 13-17 years) and young adults (ages 18-25 years). Participants were receiving treatment at five rural and urban community mental health centers. Advertisements posted at the treatment centers were used to recruit participants. To attract the greatest number of youth, disclosure of tobacco use was not required. Focus groups participants received a \$10 gift card. If the ideal size for focus groups was not achieved, additional focus groups were held.³³

Participants (N = 32) included youth willing to report current tobacco use (n = 6), ex-users (n = 3), and non-users or those who did not wish to disclose use (n = 23); 65.6% were ages 13 to 17 years, 28.1% were ages 18 to 20 years, and 6.3% did not report their age. Participants were 59.4% male and race/ethnicity was as follows: white, 50%; Hispanic/Latino, 46.9%; African-American, 9.4%; and Native American, 6.3%.

Measures. The questions used for interviews with professionals and for focus groups were based on literature review and previous qualitative studies and used concepts from social learning, addictions treatment, and systems theories (Table 1). Interviews and focus groups were digitally recorded and transcribed verbatim.

Analysis. Transcripts were imported into NVIVO 8 qualitative data analysis software (QSR International, Cambridge, Massachusetts) for coding. We used an editing process of analysis, which encourages interpretation of the data using a team approach.³⁴ Interview and focus group transcripts were first reviewed independently by several team members to extract themes. A codebook of themes and definitions was then developed through consensus meetings. By using an iterative process, the codebook guided further transcript analysis. Audits were completed, and any coding discrepancies were brought to the study team for final interpretation.

Tobacco Use Survey. Sample. Three rural and urban community mental health centers agreed to conduct a tobacco use survey with youth (ages 13-17 years) and young adults (18-25 years) who were receiving treatment for mental health disorders and addictions. Surveys were collected over 4 weeks. After completing a primary diagnosis field, providers disseminated surveys to clients, which asked brief questions regarding smoking. To ensure anonymity, respondents completed surveys after regular clinic visits and left these in sealed envelopes at the centers' reception desks.

Measures. Survey questions were based on review of the literature. The survey collected tobacco use status, general demographic data, and diagnostic information. For respondents who were current smokers, additional questions asked about consumption, motivation to quit, history of quit attempts, and cessation aid preferences.

Analysis. Survey data was entered into Microsoft Excel version 2003 and was analyzed by using SPSS 18 (IBM, Somers, New York). Descriptive analyses and frequencies were conducted, and Pearson χ -square tests

Table 1
Key Informant and Focus Group Questions

Key Informant Interviews

General Infrastructure and Dissemination Questions

1. Is smoking cessation and prevention compatible with you/your organization's values, norms, and perceived needs?
2. What are the possible benefits of offering smoking cessation and prevention services?
3. What support would you/your organization need to implement and sustain smoking cessation strategies? (initially and long term)
4. What are the perceived hurdles and potential implications of providing smoking cessation services?
5. What is the best means of creating buy-in at provider and organizational levels?
6. What prevention and strategies do you think we should promote?
7. What do you think would be best means of integrating tobacco prevention and cessation strategies within your organization?

Questions for Professionals Regarding Youth Cessation

1. What do you see as the unique smoking prevention and cessation needs for youth with mental illnesses and addictions?
2. Do you or your organization address youth tobacco prevention and cessation? If so, how?
3. What are the opportunities and hurdles for youth smoking prevention and cessation services for persons with mental health disorders and addictions in your organization?
4. What is your perception of the readiness of youth with mental health disorders and addictions to engage in cessation services?
5. Can you suggest individuals, providers, and/or organizations we should include in a future statewide survey?

Youth and Young Adult Focus Groups

1. Why do you/your friends smoke? What is the benefit of smoking? What are the costs of smoking?
2. What information and resources do you or others you know need to stop smoking?
3. How can mental health or addictions providers be of most help in assisting individuals to quit smoking?
4. What has prevented you or others from quitting in the past? What has worked?
5. How have your friends or family influenced your smoking or your desire to quit?

were run to determine differences in survey responses by age group.

RESULTS

Key Informant Interviews and Focus Groups

Emergent Themes. Five thematic categories (Table 2) emerged during the analyses of both the professional interviews and the youth focus groups transcripts: (1) motivation to quit, (2) cessation treatment needs, (3) social influence, (4) barriers to treatment, and (5) tobacco-free policy.

Motivation to Quit. Professionals were much more likely than youth respondents to report that motivation for quitting tobacco was low among youth/young adults with mental health disorders and addictions. Professionals reported that the majority of youth did not intend to change their smoking behaviors and do not view themselves as being addicted to tobacco. Many youth (25%) reported that it was up to each individual to take the necessary

Table 2
Qualitative Themes by Professionals and Youth/Young Adults

Emergent Themes	Professionals (n = 11)			Youth and Young Adults (n = 32)		
	No. (%)	No. of References	% of Coverage	No. (%)	No. of References	% of Coverage
Motivation to quit	7 (63.6)	24	12.8	3 (9.4)	3	1.5
Cessation treatment	10 (91)	78	39.5	23 (71.9)	88	36.3
Education	8 (72.7)	25	16.2	13 (40.6)	33	14.7
Counseling	5 (45.4)	15	6.5	10 (31.3)	21	8.2
NRT*	6 (54.5)	9	4.4	11 (34.4)	15	2.6
Pharmacotherapy	1 (9)	1	0.3	1 (3.1)	2	3.2
Self guided	0 (0)	0	0	8 (25)	14	10
Colorado quitline	3 (27.3)	6	4.2	3 (9.4)	3	0.5
Social influence	6 (54.5)	22	12.6	26 (81.3)	84	51.4
Peers	3 (27.3)	6	3.6	11 (34.4)	15	7.8
Family	3 (27.3)	6	2	4 (12.5)	5	6.6
Media	4 (36.4)	4	2	7 (21.9)	5	3.7
Technology	3 (27.3)	3	1.6	0 (0)	0	0
Barriers to treatment	9 (81.8)	50	28.2	0 (0)	0	0
Provider	8 (72.7)	22	14.6	0 (0)	0	0
Organizational	7 (63.6)	20	10.2	0 (0)	0	0
Policy	5 (45.4)	12	6.6	10 (31.3)	16	10.8

* NRT indicates nicotine replacement therapy.

actions towards quitting and stressed that tobacco users will not quit until ready. Both professionals and youth further asserted that youth/young adults are not concerned about the serious health consequences resulting from tobacco use. Youth and young adults generally described themselves as healthy and far too young to be concerned about their own mortality. One professional noted that even youth who are already facing significant physical illness, such as heart conditions, seem to understand the dangers of tobacco yet continue to smoke. As one young adult stated, "I think that it all falls down to a choice. Cause you can give them all the information that you want, but just like any other thing, it's all up to the person to change."

Conversely, both professionals and youth reported that, although many youth and young adults are not ready to quit smoking, cessation education and interventions might rapidly move many of these individuals toward healthy behavioral change. As one professional stated, "They are probably more ready than people think." Additionally, 37.5% of youth participants reported that maintaining or regaining good physical health is a motivator to quit smoking. One young adult reported, "I would like to quit. I would be more active and would not smoke cigarettes all the time... I mean it's our health, it's all we have."

Cessation Treatment Needs. Identified cessation treatment needs fell into five subcategories: education, counseling, nicotine replacement therapy (NRT) and other pharmacotherapy, self-guided treatment, and quitline services. In general, professionals and youth/young adults agreed that available cessation treatments were geared toward adults. Youth also noted the lack of tobacco programs outside the school system. Professionals, as well as youth, stated that interventions tailored to individuals with mental health disorders and addictions would be helpful. For example, youth reported a need for interventions that specifically addressed the social pressures they face. Many professionals interviewed (45%) stated that one-on-one interventions were

necessary to assist youth clients replace smoking with healthy coping skills. Professionals and youth concurred that educational programs focusing on the health consequences of tobacco and using scare tactics are necessary. Youth further stated that cessation programs should include visual aids, such as photos of a cancerous lung and/or handouts listing the thousands of chemicals found in cigarettes. Although professionals reported directing young clients to the state quitline for assistance, youth participants were generally unaware a quitline or any other community resources existed. Youth, on the other hand, described the necessity for self-guided resources that did not require direct professional intervention (e.g., internet-based services).

Views among professionals were split regarding use of NRT or other cessation medications, with half of professionals viewing medications as inappropriate for youth, whereas the other half asserted that these cessation aids were not utilized enough. One professional stated, "People [providers] are just now realizing that NRT can help with smoking cessation without exposing youth to the harmful substances cigarettes contain." All youth participants who reported smoking desired the opportunity to use NRT and pharmacotherapy.

Social Influence. Identified social influences relating to tobacco cessation efforts fell into four subcategories: peers, family, media, and technology. Peers and family were reported to have the most influence on youth and young adults. Peers were viewed as highly influential in tobacco use initiation but were also viewed as impacting cessation efforts positively. A large number of youth (53%) reported they would like friends to help them quit smoking and, in turn, voiced a willingness to help their peers quit. Professionals also supported the idea of peer strategies but to a much lesser extent. As expressed by one professional, "I would like to see groups use more peer leaders. The peers are more effective than adults could ever be."

Family was also seen as highly influential. Youth reported beginning tobacco use because their parents

smoked. Half of the youth who smoked obtained cigarettes from their parents and smoked with their parents in the home. On the contrary, others reported refraining from tobacco use because of their families. As one youth stated, "I rely on my family to help me and my siblings."

Media and technology were seen as key culprits in promoting tobacco use and thwarting quit attempts. Respondents agreed that the tobacco industry targets youth through its advertising. Youth and young adults further reported that the movie industry's portrayal of smoking as sexy or cool led to smoking. Others spoke to the potential positive influence of media. One youth reported, "I saw a movie on chewing tobacco. It scared me so much I decided never to do it."

Barriers to Treatment. Only professionals reported barriers to treatment. Providers' competing demands were seen as key impediments to prevention and cessation services. Professionals shared that they have limited time to address clients' primary mental health disorders and addictions. Tobacco use was seen as a secondary concern, with some providers viewing tobacco use as a bad habit rather than an addiction. Professionals were also concerned that quit attempts would exacerbate their clients' behavioral issues. They reported that there was a common perception that smoking is a necessary evil that helps individuals to manage their psychiatric symptoms.

At an organizational level, professionals reported that community treatment centers lacked awareness of tobacco cessation resources. Generally, tobacco use among young clients was not viewed as a leadership priority, and organizations did not provide staff training regarding this issue. Even when educational efforts were implemented, one provider aptly noted, "You can provide in-depth trainings, but you want to make sure the organization is incorporating treatment into daily practice."

Although youth and young adults did not directly discuss treatment barriers, focus group participants did voice a desire for schools and providers to discuss treatment options.

One youth reported, "... even a teacher could help me quit smoking if they would just talk to me about how bad it is for me."

Tobacco-Free Policy. Both professionals and youth asserted that tobacco-free policies would decrease smoking. Nearly half of professionals (45%) shared that tobacco-free policies at their treatment agencies were effective, though improved enforcement of existing tobacco-free policies was necessary. Youth and young adults also supported tobacco-free campus policies, and 19% shared that they would like to see tobacco products become illegal, making them more difficult to obtain.

Tobacco Use Survey

Surveys were collected from 230 youth; 68.7% were ages 13 to 17 years, and 31.3% were ages 18 to 25 years. Participants were 55.2% male. Primary diagnoses from treatment records were as follows: 53.2% had internalizing disorders (e.g., anxiety, depression), 21.6% had addictions, 19.4% had disruptive behavior disorders (e.g., attention deficit/hyperactivity disorder, oppositional defiant disorder), 2.7% had relational disorders (e.g., reactive attachment disorder), and 2.3% had psychotic disorders (e.g., schizophrenia).

Table 3 presents survey findings. Point prevalence for smoking was 44.3%. Young adults ages 18 to 25 years had a significantly higher prevalence of tobacco use than youth ages 13 to 17 years ($t(1, n = 228) = 5.61; p = .02$), with prevalence rates at 55.6% and 39.2%, respectively. Only the 102 respondents who responded yes to current smoking answered the remaining survey questions. Analyzing results by diagnostic categories, rates were 61.5%, 44.2%, and 34.7% for disruptive behavior disorders, addictions, and internalizing disorders, respectively. Other disorders were not represented among smokers. Most commonly smokers consumed between one and 10 cigarettes per day. Many youth and young adults reported wanting to quit (44.1%), and many of these (40.5%) were pretty motivated, very motivated, or extremely motivated to do so. However, the majority of tobacco users did not want help quitting (61.8%).

Table 3
Tobacco Use Survey Results for Current Tobacco Users*

Question	Patients Age 13–17 Years (N = 62), No. (%)	Patients Age 18–25 Years (N = 40), No. (%)	Total Patients (N = 102), No. (%)
How many cigarettes do you smoke per day?			
0	7 (11.3)	1 (2.5)	8 (7.8)
1–10	41 (66.1)	25 (62.5)	66 (64.7)
11–20	7 (11.3)	9 (22.5)	16 (15.7)
21–30	3 (4.8)	4 (10)	7 (6.9)
≥ 31	0 (0)	1 (2.5)	1 (1.0)
Do you want to quit?			
Yes	26 (41.9)	19 (47.5)	45 (44.1)
No	13 (21.0)	9 (22.5)	22 (21.6)
Not sure	19 (30.6)	12 (16.7)	31 (30.4)
How motivated are you to quit?			
Not at all	4 (6.5)	4 (10)	8 (7.8)
A little motivated	12 (19.4)	12 (30)	24 (23.5)
Pretty motivated	16 (25.8)	8 (20)	24 (23.5)
Very motivated	5 (8.1)	2 (5)	7 (6.9)
Extremely motivated	6 (9.7)	5 (12.5)	11 (10.1)
Have you tried to quit before?			
Yes	41 (66.1)	21 (52.5)	62 (60.8)
No	17 (27.4)	18 (45)	35 (34.3)
If yes, what kind of help did you get?	(n = 41)	(n = 21)	(n = 62)
None	29 (70.7)	16 (76.2)	45 (72.6)
NRT†	8 (19.5)	4 (19.0)	12 (19.4)
Counseling	0 (0.0)	1 (4.8)	1 (1.6)
Help from others	5 (12.2)	3 (14.3)	8 (12.9)
Do you want help quitting?			
Yes	17 (27.1)	14 (35)	31 (30.4)
No	38 (61.3)	25 (62.5)	63 (61.8)
What would help you quit?			
NRT†	19 (30.6)	18 (45)	37 (36.3)
Counseling	3 (4.8)	3 (7.5)	6 (5.9)
Help from others	9 (14.5)	3 (7.5)	12 (11.8)

* Some item percentages do not add up to 100% because of missing data.

† NRT indicates nicotine replacement therapy.

The majority of smokers reported a history of lifetime quit attempts (and 67.8% reported two or more past quit attempts), but most of those making a quit attempt did not receive any cessation assistance (72.6%). When used, NRT was the most common strategy. Very few received cessation counseling (1.6%). When asked what would help them quit, the most frequent answer was NRT (36.3%). In comparing the two age groups of smokers (ages 13–17 years and 18–25 years) across all survey questions, there were no significant differences.

DISCUSSION

Addressing the smoking cessation needs of persons with mental illnesses and addictions is essential to achieving desired gains in population health.⁶ However, past research for this population has focused on adults. This was one of the few studies, to our knowledge, that explored the smoking characteristics of youth and young adults with mental illnesses and addictions. Qualitative and quantitative findings were integrated into the below convergent themes to increase the validity of results.³⁵

Consistent with current evidence for the general population, results suggest that age-appropriate tobacco cessation strategies should be integrated into school settings.^{26,27} However, the findings of this study further suggest that mental health and addictions providers are positioned, as behavioral change agents, to offer tobacco cessation treatments. To successfully intervene with youth and young adults, though, several barriers need to be addressed. Just as with adults, the culture of addictions and mental health treatment has historically reinforced tobacco use.³⁶⁻³⁹ Professionals working with youth and young adults with mental health disorders and addictions need continuing education regarding the growing evidence that tobacco cessation does not exacerbate psychiatric symptoms or threaten sobriety, that these individuals can successfully quit smoking, and that tobacco-free treatment milieus reduce clients' behavioral problems and increase staff satisfaction.^{6,40-43}

The survey found that 44% of respondents currently used tobacco, which is consistent with the few studies reporting prevalence for this population.¹²⁻¹⁷ Findings regarding the intention to quit were mixed. Although rates were lower than the general population,⁴⁴ many current tobacco users were motivated to quit (44%), and the majority of smokers had tried to quit previously. However, most did not receive any aid in prior quit attempts, did not want counseling or help from others in future quit attempts, and had little knowledge of available cessation resources. It was striking that none of the youth smokers had received cessation counseling during quit attempts. These results are aligned with national findings that only 4% of youth/young adult smokers successfully quit smoking each year and are less successful than adults in their quit attempts.⁴⁶ Although combined counseling and pharmacotherapy significantly improves the odds of quitting,^{46,47} both quantitative and qualitative results reinforce that much more work is necessary to motivate youth to utilize proven cessation aids.

Both professionals and youth indicated that tobacco cessation programming must be tailored to persons with behavioral disorders. Smokers most

often had disruptive disorders, other addictions, and internalizing disorders, such as anxiety and depression. Providers might consider how to integrate tobacco prevention and cessation strategies into treatment modalities for these conditions. Results also point to several means of engaging and maintaining youth in treatment. Focus groups and survey suggested that youth and young adults were most interested in NRT as a cessation aid. NRT has not been shown effective for youth generally,^{48,49} and professionals, unlike youth respondents, were mixed on use of any pharmacotherapy. Even so, attention to this clear preference might engender therapeutic alliances that facilitate cessation counseling or entry into other services youth identified as desirable, such as Web-based or self-guided programs.

Our findings, along with past studies, support that peers, families, and tobacco-free policy are integral components of intervening.⁵⁰⁻⁵² Youth stressed that peer leaders who have quit smoking themselves would be effective advocates for tobacco cessation. Findings from both professionals and youth also supported the importance of family messaging, which included restrictive home smoking rules and parental modeling of nonsmoking behaviors. Additionally, youth reported they would be less likely to use tobacco if these products were less readily available. Tobacco-free policies are one means of supporting this suggestion. Treatment agencies might enact and enforce policies to curtail second-hand smoke exposure for both staff and clients.

Professionals and youth focus group participants were in agreement that scare tactics should be used as an educational approach. In contrast, past study suggests that successful cessation programming includes teaching coping skills, motivational enhancement, and provision of healthy alternatives to tobacco use rather than fear tactics.⁵³ It is unclear if such educational strategies for persons with mental health disorders and addictions would be of value.

There were several limitations to this study. Focus group and interview transcripts were not independently coded and audited by all research team members. Rather, a consensus approach was utilized with coding and

auditing conducted by multiple team members, and final decisions were made by the team as a whole. Because focus group participation was not restricted to youth admitting to smoking, nonsmoking participants may have had differing perspectives than known tobacco users. Given this limitation, additional research with known youth tobacco users is recommended. The study used convenience sampling and had small sample sizes, restricting the generalizability of findings. Also, the survey was self-report, which may have led to under-reporting of tobacco use.

Input from professionals, youth, and young adults suggest challenges and opportunities to promoting tobacco control initiatives for individuals with mental health disorders and addic-

SO WHAT? Implications for Health Promotion Practitioners and Researchers

What is already known on this topic?

Persons with mental health disorders and addictions have a higher smoking prevalence in comparison to the general population and suffer significant death and disability as a consequence. Past studies have focused on adults. Little is known regarding the smoking prevalence and cessation needs of youth with behavioral health conditions.

What does this article add?

This study explored the smoking characteristics of youth with mental illnesses and addictions. The perspectives of behavioral health providers and youth suggest opportunities for and barriers to tobacco control efforts. We found that many youth with behavioral health conditions were motivated to quit, but few utilized proven treatments, and common perceptions that youth do not desire to quit and are unable to stop smoking persist.

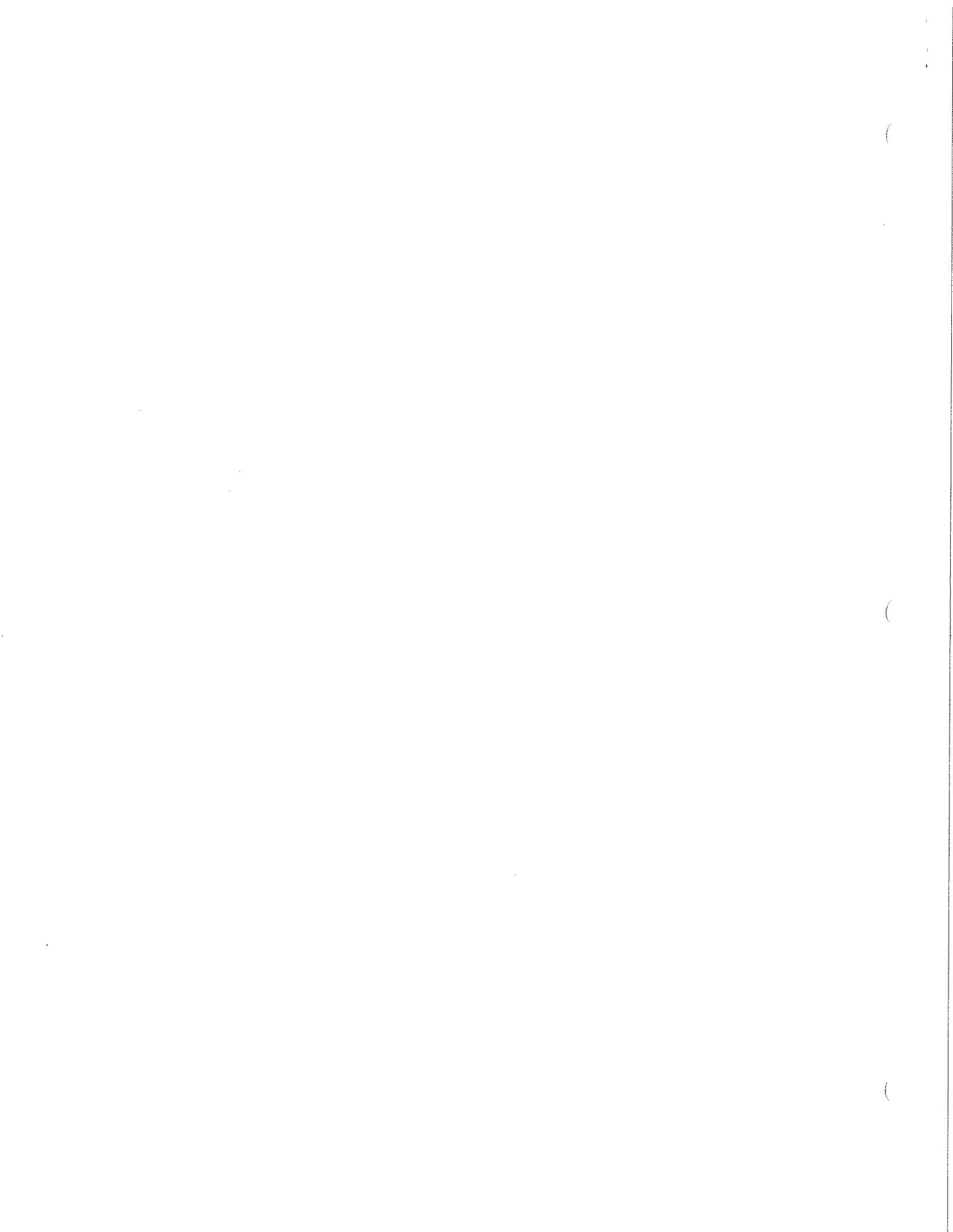
What are the implications for health promotion practice or research?

Community mental health and addictions treatment settings are an ideal point of intervention for smoking cessation among youth clients. These agencies' providers have the behavioral change skills necessary to create evidence-based, age-appropriate tobacco cessation programming.

tions. Youth and young adults have a tremendous need for services, and community mental health and addictions treatment settings are an important point of intervention. Contrary to common perceptions, many youth with mental disorders and addictions are motivated to quit smoking, and most have tried to quit. However, youth are not utilizing provider-driven treatments or quitlines. Although professionals tend to recommend individual, clinic-based interventions, youth desire peer advocacy, technology-based interventions, and NRT or pharmacotherapy. Youth and professionals further agree that tobacco-free policies for treatment clinics and households are critical. These findings add to the existing literature in suggesting the roles community treatment settings might play in not only raising awareness regarding the high rates of smoking among youth clients but also the types of treatments that youth desire and that must be integrated into standard practice.

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Sexual orientation and adolescent substance use: a meta-analysis and methodological review*

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Abstract

Aims—Several decades of research have shown that lesbian, gay and bisexual (LGB) adults are at high risk for substance use and substance use disorders (SUDs). These problems may often start prior to young adulthood; however, relatively little is known about risk for substance use in LGB adolescents. The primary aims of this paper were to conduct a meta-analysis of the relationship between sexual orientation and adolescent substance use and a systematic review and critique of the methodological characteristics of this literature.

Methods—Medical and social science journals were searched using Medline and PsychInfo. Studies were included if they tested the relationship between sexual orientation and adolescent substance use. Eighteen published studies were identified. Data analysis procedures followed expert guidelines, and used National Institutes of Health (NIH)-sponsored meta-analysis software.

Results—LGB adolescents reported higher rates of substance use compared to heterosexual youth (overall odds ratio = 2.89, Cohen's $d = 0.59$). Effect sizes varied by gender, bisexuality status, sexual orientation definition and recruitment source. None of the studies tested mediation and only one tested moderation. One employed a matched comparison group design, one used a longitudinal design, and very few controlled for possible confounding variables.

Conclusions—The odds of substance use for LGB youth were, on average, 190% higher than for heterosexual youth and substantially higher within some subpopulations of LGB youth (340% higher for bisexual youth, 400% higher for females). Causal mechanisms, protective factors and alternative explanations for this effect, as well as long-term substance use outcomes in LGB youth, remain largely unknown.

Keywords

Adolescence; alcohol; bisexual; drugs; gay; lesbian; meta-analysis; sexual minority; sexual orientation; youth

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INTRODUCTION

Several decades of research have shown that there are high rates of substance use and substance use disorders in lesbian, gay and bisexual (LGB) adults [1-3], and recent evidence suggests that these higher rates may have their origins in adolescence. For example, some large, well-designed studies with representative samples show high rates of substance use in LGB youth compared to heterosexual youth [4]. However, compared to LGB adults, much less is known about substance use disparities among LGB adolescents, and large gaps exist in the literature in understanding who is most vulnerable within the LGB adolescent community. One trend in the literature shows that lesbians or bisexual females are at higher risk for substance use than are gay or bisexual adolescent males, for example, and some studies support this hypothesis [5-7]. However, other studies have found stronger effects for boys than for girls [8], did not test gender differences [9-11] or found no gender differences [12,13]. Moreover, most studies examined differences in rates between boys and girls but did not test formally an interaction between sexual orientation and gender in predicting substance use outcomes. Thus, conclusions about the role of gender in risk for substance use in LGB youth are unclear.

Methodological challenges introduced by studying hidden populations may also have an impact on the interpretation of the effects of sexual orientation on LGB youth substance use. For example, some studies have operationalized sexual orientation using self-identification or self-labeling methods [14], others have relied on self-reports of same-sex romantic or sexual attraction [5] and others have defined sexual orientation strictly in terms of past behavior [13]. These measurement differences might have important implications for interpreting and generalizing the results [15]; therefore, examining their role in the estimation of risk for LGB youth is paramount. In addition to how sexual orientation was operationalized, studies varied by whether or not they measured bisexuality status, and whether or not they tested differences between lesbian and gay youth versus bisexual youth in terms of their rates of substance use. These studies seem to have found a relatively consistent pattern of effects, suggesting that bisexual youth are at greater risk for substance use [9,13,16]. However, none of these studies tested bisexuality status formally as a moderator, raising questions about the statistical validity of the effect. Finally, different recruitment mechanisms were used across studies that may also have an impact on the demographic make-up of the participants (e.g. school-based samples versus homeless samples), hence the size of the observed effects and their generalizability; however, little is known about how the recruitment source affects differential rates of substance use in these studies.

In addition to concerns about the internal validity of these studies, there are also concerns about their external validity. In particular, very little research with LGB youth has been conducted outside of the United States, raising questions about the generalizability of the US findings, thus the universality of the problem. One of the most prominent theoretical and explanatory frameworks of LGB health risk is the 'minority stress' model [17], which proposes that LGB health disparities can be explained in large part by stressors induced by a hostile, homophobic culture which often results in a life-time of harassment, maltreatment, discrimination and victimization. While there is ample evidence to suggest that hostility, discrimination and violence towards LGB individuals are universal phenomena [18], international LGB health sciences research is limited.

The primary goals of this paper were therefore four-fold. First, we conducted a meta-analysis to address a simple but important question: are sexual minority (LGB) youth at significantly higher risk for substance use and abuse than are heterosexual youth? To this end, we examine the overall effect size collapsing across all studies and subgroups in order to compare the average relative rates of substance use between LGB youth and heterosexual youth. Secondly,

excluded them from this review. In order to identify unpublished studies that met inclusion criteria, request letters were mailed to all the first authors of all eligible studies asking for their help in identifying published or unpublished studies that met our inclusion criteria. No additional studies were identified. The final sample of 18 studies [5-14,16,24-30] reported a total of 125 effect sizes representing tests of the relationship between sexual orientation and various substance use outcome measures.

Coding of studies

Two doctoral-level reviewers read all the studies and extracted the pertinent data from the published articles which fell into four categories: (i) the predictor variable (definition of sexual orientation); (ii) the outcome variables (substance use measures); (iii) other potential moderating variables (recruitment source; bisexuality status; gender); and (iv) the effect size data. The intraclass correlation across all coded variables was excellent (0.95). Disagreements and coding errors were resolved prior to estimating final results.

Definition of sexual orientation—Four coding categories were used, including measures of: (i) self-identification as gay or bisexual; (ii) same-sex romantic or sexual attraction; (iii) same-sex romantic or sexual behavior; and (iv) two or more of categories 1-3. Note that some studies [5] ask participants to describe themselves on a sexual-orientation continuum that included intermediate categories such as 'mostly heterosexual'. Only effect sizes for 'gay/lesbian' versus 'heterosexual' were used.

Substance use outcome variables—Substance use variables were coded based on the type of substance that was used (tobacco, alcohol, illicit drugs) and the time-frame in which it was used. Alcohol use variables were operationalized typically as a quantity and/or frequency measure, or a heavy alcohol use measure (e.g. binge drinking). Illicit drugs included marijuana, cocaine, crack, methamphetamine, ecstasy (and other 'club' drugs) and heroin. Some studies assessed whether or not certain classes of drugs were used, such as 'inhalants' or 'injection' drugs [10]. Some studies computed composite variables that indicated whether or not participants used any one or more of a list of illicit drugs [8]. All studies used variables that distinguished between current or recent use and life-time use. The majority of studies that reported measures of recent drug or alcohol use used a time-frame defined as the previous 30 days. A few studies reported recent use as occurring during the past year [14]. Only one study assessed and reported rates of substance use disorders (SUDs) operationalized as alcohol and drug abuse and measured using a comprehensive diagnostic interview [30].

Recruitment source—Participants across studies were recruited from several different sources that could be categorized broadly into school and 'high-risk' samples. One general population sample [5] consisted of the offspring of women participating in the Nurses Health Study [31] and did not fit well into either of these categories. School studies were typically large-scale, anonymous surveys of high-school students such as the YRBS [8,16,24,25] or the Add Health study survey [13]. High-risk samples ranged from those seeking mental health treatment or services [9] to homeless youth [10] to prison populations [11]. In addition to the type of sample that was used, we also coded whether or not samples were recruited from countries outside the United States.

Data analytical plan

The data analysis proceeded in four steps. First, mean effect size estimates for each study were calculated by averaging the effects across all drugs and subgroups. Secondly, an overall effect was estimated by combining weighted effects across all studies. Thirdly, methodological characteristics were tested as moderators of the overall effect. Fourthly, outcome variables were categorized based on the type of substance used and the time-frame of use, and the effects

for attraction, 0.29 [P = not significant (NS)] for behavior and 0.25 (P = NS) when combinations of two or more categories were used. Recruitment source was also a significant moderator (Q = 6.6, d.f. = 1, P < 0.01). For this analysis YRBS studies were averaged because the recruitment source was the same. School samples reported only slightly stronger effects 0.49 (n = 8, P < 0.0001) than did the high-risk samples 0.47 (n = 6, P < 0.01). Only one study used a general population-type sample [5] (children of nurses participating in a large-scale health study) which was excluded from the moderator analysis; however, it reported the largest effect size (0.87, P < 0.01). Gender of the participant was also a significant moderator (Q = 16.6, d.f. = 1, P < 0.0001). Results showed that the average effect of sexual orientation on substance use was higher for females 0.78 (n = 10, P < 0.0001) than it was for males 0.42 (n = 11, P < 0.01). There was a robust moderation effect of bisexuality status (Q = 154.3, d.f. = 1, P < 0.0001), such that the effects were strongest in youth who were considered bisexual 0.77 (n = 7, P < 0.0001) and not significant within subsamples of gay/lesbian youth who were not bisexual 0.10 (n = 6, p = NS). Finally, the average effect size for studies conducted outside the United States (0.92, n = 3, P < 0.0001) was significantly larger (Q = 156.4, d.f. = 1, P < 0.0001) than was the average effect of studies conducted within the United States (0.43, n = 12, P < 0.0001). However, this difference was driven largely by the study with the largest average within-study effect size [29] (across all studies in Table 1), and when removed from the analyses the test of moderation was not significant and the average non-US effect size estimate dropped to 0.56 (P < 0.05).

Association between sexual orientation and individual substances

The type of substance used could not be tested formally as a moderator due to the non-independence of the effects; however, average effects for each drug and time-line (recent versus life-time measures of use) were estimated and described in order to examine their possible influence on the effect size variability. Two broad conclusions may be drawn from an examination of the effects shown in Table 2. First, there was no clear pattern of effects associated with the assessment time-line employed by the studies. Secondly, the sizes of the average effects within each drug class seem to vary depending on the class of drug. Most notably, the largest average effect sizes were associated with hard drugs (cocaine, injection drugs) and the smallest were associated with drugs used more commonly by teenagers (heavy alcohol use, marijuana). Although some effects seemed to defy this trend (e.g. the large effects for cigarette use), this variability may account for some of the observed heterogeneity of effects in the overall model. Only one study tested the association between sexual orientation and adolescent substance use disorders [30], which reported an average effect size of 0.25.

DISCUSSION

Results of this meta-analysis indicate that LGB youth report significantly higher rates of substance use compared with heterosexual youth, and a meaningful proportion of the effects could be characterized as large, to very large, depending on the subgroup and the type of drug that was used. For example, the average Cohen's d for the relationship between sexual orientation and life-time cigarette use, injection drug use and a composite drug use variables were all greater than 0.80. Compared to suggested definitions of small (0.20), medium (0.50) and large (0.80) [34], effects of this magnitude are noteworthy. When the overall effect sizes were converted to odds ratios, the odds of substance use for LGB youth were 190% higher than for heterosexual youth and substantially higher within some subpopulations of LGB youth (e.g. 340% higher for bisexual youth, 400% higher for females). The relatively large effects found in this review suggest that the answer to the central question of this study, 'Are sexual minority youth at significantly higher risk for substance use and substance use problems than are heterosexual youth?', is a probable 'yes', but caution is warranted in drawing broad conclusions

that if they intend to stay hidden or covert as a way of protecting themselves their ability to request assistance and support from adults is hindered, and stress and distress may increase due to the anticipation and fear of violent or other negative reaction to disclosure by family and friends [41]. On the other hand, because many youth can disguise their minority status they have the option of staying hidden, which can give LGB youth control over how they are perceived by their family members, peers and society. Thus, developmental models of the minority stress paradigm that include these age specific challenges and phenomena are critical to promoting quality research that can identify age appropriate targets for prevention and intervention programs. Important to these developmental paradigms is the examination of individual, longitudinal trajectories of substance use over time in order to best examine risk and protective factors associated with escalations in use at the individual level. The results of this study showed that only one study tested longitudinal effects [7], and virtually no studies to date have estimated trajectories of substance use over time in LGB youth and compared them to heterosexual youth.

There are several clinical implications of these results for health-care providers. First, as recommended by most pediatric and adolescent medicine textbooks and articles about interviewing adolescents, all teenagers should be asked routinely at each annual visit about their sexual history, which should include assessment of sexual orientation and gender identity as well as substance use experiences [42,43]. Screening tools such as the CRAFFT can be used to determine problematic use and identify when a youth requires referral for further chemical dependency assessment and treatment [44]. Although we found only one study that examined SUD rate disparities in LGB adolescents [30], the large substance use disparities found in this study suggest that concern over chemical dependency in LGB youth is warranted. In settings where clinicians provide health care to youth who are already known to engage in high substance use/abuse behaviors such as residential treatment and detention facilities, teenagers should also be asked routinely about their sexual orientation and gender identity. In other community and out-patient settings clinicians should be prepared to refer patients to treatment programs that are sensitive to sexual orientation issues. In order to facilitate disclosure, clinicians must be trained and comfortable assessing varying sexual orientation and gender identity issues and should preface these discussions by reviewing the rules and limitations of patient-provider confidentiality. In the United States, institutes such as the Substance Abuse and Mental Health Services Administration (SAMHSA) have taken significant steps toward making such important health-care information available to providers [45,46].

A review of the prevention and intervention guidelines published by the American Medical Association [47,48], the National Institute on Drug Abuse [49], National Institute on Alcohol Abuse and Alcoholism [50] and the Institute of Medicine [51] found that none of these highly regarded institutes mention sexual orientation as a potential risk factor for substance use in adolescence, let alone provide information for researchers and health-care providers on how to prevent such problems. This is not surprising, given the nascent state of the literature. For example, it may difficult for professional organizations to recommend modifiable targets for prevention when there are virtually no studies that have examined mediators of the relationship between sexual orientation and adolescent substance use. Thus, given the robust effects found in this review, and the relatively small set of studies that have examined this topic to date, it is important to highlight the need for more LGB youth research. Important next steps should include identifying empirically supported mediators and moderators of risk, and examining individual trajectories of substance use and associated health risk behaviors over time. Furthermore, the importance of replicating and extending health disparities research in LGB populations internationally cannot be overstated. Our results show that in other large, relatively affluent countries such as Canada [29] and Australia [12], disparities in LGB youth substance use are equal to those in the United States. Young-adult studies in New Zealand [52] and Thailand [53] corroborate this trend. Researchers, clinicians and especially sexual minority

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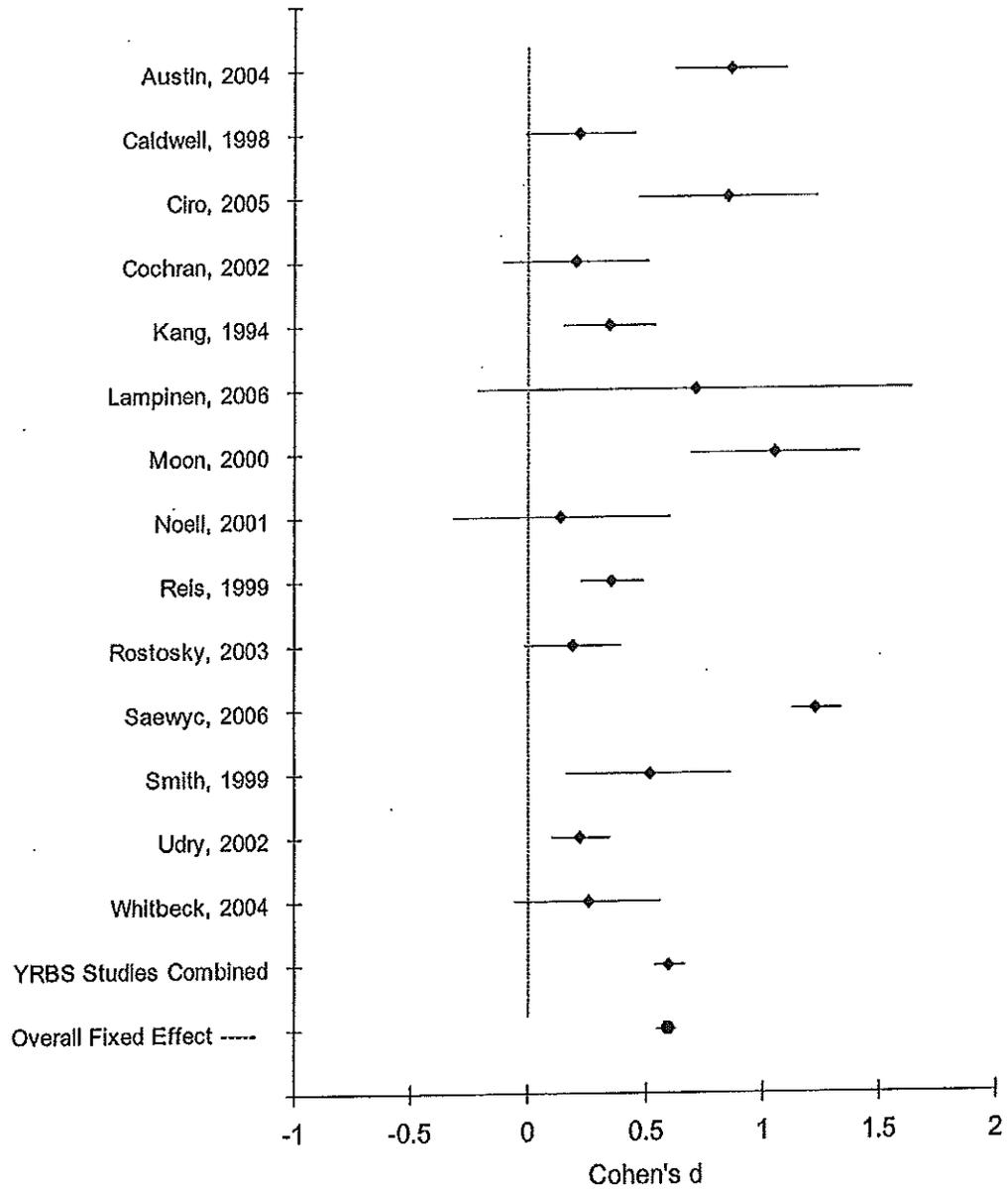


Figure 1. Standardized mean differences (Cohen's d) and 95% confidence intervals for studies testing the association between sexual orientation and adolescent substance use

Study	Gender	Sexual orientation group	Total n	% LGB	Odds ratio	Cohen's d	No. of effects	Recruitment site	Sexual orientation definition	Comments
	C	L/G	7209	4.66	1.24	0.12	3			
	C	B	7122	3.50	2.59	0.53	3			
14	C	L/G/B	1725	5.74	1.41	0.19	2	School	Att	3
15	C	L/G/B			9.32	1.23	4	School	SI	3
	M	G	125 895*	0.70	2.25	0.45	1			
	M	B	126 245*	0.98	6.64	1.04	1			
	F	L	116 137*	0.40	12.83	1.41	1			
	F	B	119 994*	3.60	12.31	1.38	1			
16	C	L/G/B			2.54	0.52	6	School	Att	
	M	G/B	1499	5.34	2.45	0.49	3			
	F	L/B	1888	6.94	2.63	0.53	3			
17	C	L/G/B			1.50	0.22	12	School	Beh	
	M	G	6008	0.95	0.79	-0.13	3			
	M	B	6038	1.44	2.43	0.49	3			
	F	L	6291	1.59	0.83	-0.10	3			
	F	B	6314	1.95	2.36	0.47	3			
18	C	L/G/B			1.59	0.25	4	High risk	SI	6
	M	G/B	187	10.16	0.68	-0.21	2			
	F	L/B	241	18.26	2.34	0.47	2			
Total average effect sizes										
All studies										
Females										
Males										
Bisexual										
Gay/lesbian										
Study: First author and year of publication. MA = Massachusetts, VT = Vermont. Gender: M = male; F = female; C = combined (male and female); sexual orientation group: L = lesbian, G = gay (males), B = bisexual.										

* Total n: weighted sample sizes and effect size data provided by author (personal communication, 2 August 2006). Odds ratio/Cohen's d: weighted estimates of mean effect size across (non-independent) outcomes within each study. Sexual orientation definition: Att = attraction, Beh = behavior, SI = self-labeled. Sampling method: Comm = community. Sexual orientation definition: Att = attraction,

Table 2
 Association between sexual orientation and adolescent substance use stratified by type of substance use variable.

Substance	Recent use			Life-time use		
	Cohen's d	Odds ratio	n	Cohen's d	Odds ratio	n
Cigarettes	0.56	2.76	6	0.80	4.23	2
Alcohol	0.52	2.55	5	0.44	2.23	3
Heavy alcohol	0.16	1.34	5	—	—	—
Marijuana	0.23	1.56	6	0.52	2.58	3
Cocaine	0.72	3.27	5	0.62	3.09	4
Injection drug use	0.56	2.87	4	1.09	7.23	5
Composites	0.81	4.37	3	0.62	3.10	5

Composites = outcome variables operationalized as the use of any one or more of a list of illicit substances which typically excluded alcohol and tobacco.

