Effects of Sexual Orientation and Gender on Perceived Need for Treatment by Persons With and Without Mental Disorders

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Objective: **Research has shown that sexual minority groups have higher prevalence rates of psychiatric disorders (both mental and substance use disorders) and that they may seek treatment at higher rates than heterosexuals. However, relationships between treatment need and treatment use are not well understood. This study examined the relationship of sexual orientation and gender to perceived need for treatment and treatment use among individuals with and without mental or substance use disorders.** ***Methods:*** **Data were obtained from a probability sample of California residents that oversampled for persons from sexual minority groups (unweighted N=2,079). Bivariate analyses compared perceived treatment need and treatment use among groups defined by sexual orientation, gender, and presence of a mood, anxiety, or substance use disorder. Logistic regression models that controlled for sociodemographic factors were used to predict no use of treatment among those who perceived a need for it (unmet need), testing the interactive effects of gender, disorder, and sexual orientation.** ***Results:*** **Women from sexual minority groups had about half the odds of unmet treatment need as heterosexual women, but no interaction was found for men between sexual minority status and unmet need. Among individuals without any of the disorders assessed, men and women from sexual minority groups had lower odds of unmet need for treatment than heterosexual men and women.** ***Conclusions:*** **Sexual orientation and gender differentially influenced treatment utilization, particularly among those who did not have a diagnosed disorder but perceived a need for treatment. Diagnostic criteria appear to be less relevant to understanding treatment use in sexual minority populations. (*Psychiatric Services* 62:404–410, 2011)**

Epidemiological studies have shown higher prevalence rates of alcohol and drug disorders among some sexual minority populations (1–7). Similarly, the prevalence of some commonly occurring mental disorders appears to be elevated among persons from sexual minority groups (3,8,9). However, it is not clear whether these groups also have higher rates of treatment seeking for common mental disorders than heterosexuals. Prior research has shown that lesbian and bisexual women have higher rates of help seeking for alcohol problems than heterosexual women, even among those with lower levels of alcohol-related problems (4,10,11). Similarly, some studies have shown that lesbians tend to utilize mental health services at higher rates than heterosexual women (12).

Cochran and Mays (13) found that men and women who reported same-gender sex partners were more likely than their respective counterparts to have sought mental health or substance abuse services in the past year. However, a study of gay men in Geneva showed that nearly half of those with a psychiatric disorder (including substance use disorders) had never sought treatment, which is comparable to rates found in other general population studies (14). In contrast, studies of persons receiving substance abuse treatment have found more severe substance use problems and higher rates of psychiatric treatment among persons from sexual minority groups than among heterosexuals (15). But clinical studies using targeted subgroups, such as gay men who use methamphetamine, have suggested that levels of psychopathology are elevated in these subgroups compared with population-based samples of persons from sexual minority groups (16,17).

There is disagreement about the factors that prompt individuals to

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seek treatment for psychiatric disorders (18). Several national surveys have found a lack of concordance between the presence of a psychiatric disorder and the receipt of treatment services (19,20). Most individuals with these disorders neither receive treatment for them nor perceive a need for it (21,22). Individuals most commonly state that they can manage these problems on their own (23) or are "not ready" to stop using substances (24). Moreover, national epidemiological surveys have demonstrated that some individuals who do not have a diagnosable disorder seek treatment (25) or perceive a need for it (26), especially when they have high levels of psychological distress or impairments in functioning (27–29).

The goal of the study reported here was to examine the effects of sexual orientation on perceived need for treatment for mental and substance use disorders and unmet need for treatment, taking into consideration whether this relationship is differentially influenced by gender and by the presence of a diagnosed disorder. Because of previous research that showed more treatment seeking among persons from sexual minority groups and higher rates of health services utilization among women (30), we hypothesized that persons from sexual minority groups, particularly women, would be more likely than heterosexuals both to perceive a need for treatment and to receive it. Thus we predicted that persons from sexual minority groups would have overall lower levels of unmet need for treatment, after analyses controlled for other sociodemographic characteristics that might be independently associated with treatment access and utilization.

Methods

Study design and sample

Data for this study were from the 2004–2005 California Quality of Life Survey (Cal-QOL) (31), which is a follow-back to the 2003 California Health Interview Survey (CHIS). The parent CHIS is a stratified, multistage, random-digit telephone health surveillance interview of more than 42,000 adults aged 18 and older that has been conducted every other year since 2001. Information collected covers a wide range of topics, including health status, health conditions, health-related behaviors, health insurance coverage, and access to and use of health care services.

The Cal-QOL follow-back survey used a subsample of the original CHIS survey sample to obtain more detailed information about specific topics (in this case, sexual orientation). The overall CHIS response rate was 34% according to the response rate 4 method of the American Association for Public Opinion Research (32), which is consistent with other recent random-digit telephone interviews. In the CHIS, all adult respondents aged 18 to 70 were asked about the gender of their sexual partners during the past year, and those aged 18 and older (with no age limit) were asked about their sexual orientation identity. Seventy-six percent of respondents were willing to participate in additional health surveys. From the CHIS sample, 4,165 individuals were selected by probability methods. Eligible individuals had completed a CHIS interview in either English or Spanish and were willing to be recontacted. The sampling method overselected for sexual minority status. Of the 4,165 individuals, 2,322 were successfully interviewed between October 2004 and February 2005 (56% response rate according to the response rate 1 method of the American Association for Public Opinion Research [32]). Detailed information about Cal-QOL methods is available elsewhere (31,33). This study received institutional review board approval from the University of California, Los Angeles, and Westat (the survey subcontractor).

The study reported here used data from 2,079 (unweighted) individuals aged 18 to 64 at the time of the CHIS interview; those who were likely eligible for Medicare were excluded, as were individuals with missing data on the diagnostic variables. Overall, the weighted sample was about equally divided between men (48.5%) and women (51.5%).

Measures

Treatment-related measures. Need for treatment was assessed by two questions: "In the past 12 months, did you think you needed help for alcohol or other drug problems?" and "In the past 12 months, did you think you needed help for emotional or mental health problems, such as feeling sad, blue, anxious, or nervous?" A positive response to either question was coded to indicate a perceived need for treatment.

Treatment received was assessed by several questions. The first asked whether the respondent had "received any treatment for emotional, mental health, alcohol, or other drug problems" in the past 12 months. Subsequent questions referred to treatment received for a mental or substance use disorder in specific venues, including hospitalization, residential substance abuse treatment, emergency department, a mental health provider or substance abuse specialist (that is, a psychiatrist, psychologist, social worker, psychiatric nurse, or counselor), a self-help group, alternative medicine, and a nonresidential alcohol or other drug treatment program.

Unmet need for treatment was derived by coding as "yes" all those who perceived a need for treatment in the past 12 months but who did not receive any during that time and coding as "no" all others who perceived a need for treatment and who had received it.

Presence of a disorder. Diagnoses were derived by using the Composite International Diagnostic Interview–Short Form (CIDI-SF) (34). The CIDI-SF, administered by trained lay interviewers, provides screening assessments of community samples for common mental disorders. Studies have found moderate agreement between CIDI-SF diagnoses and those obtained by face-to-face diagnostic clinical interviews on the basis of *DSM-III-R* criteria (35,36). Probable diagnoses were obtained for past-year major depression, generalized anxiety disorder, and panic disorder on the basis of these criteria (37).

Two additional CIDI-SF modules assessed past-year symptoms of drug and alcohol dependence. All respondents who indicated any use of illicit drugs or nonprescribed medications in the previous 12 months were ad-

ministered the drug module, which assesses seven symptoms from six of the core symptom areas of substance dependence: using in larger amounts or for longer periods than intended, being under the influence or recovering from use while engaged in social obligations, experiencing emotional or physical problems from use, having an irresistible urge to use, spending a great deal of time using or getting over using, and developing tolerance. Those reporting three or more of the seven symptoms received a positive diagnosis for past-year probable drug dependence disorder consistent with modified *DSM-IV* criteria (38). Seven similar questions were asked about alcohol use, with the addition of an item on alcohol-related withdrawal symptoms. A diagnosis of past-year probable alcohol dependence disorder was made if the respondent reported symptoms in three or more of the seven core areas consistent with *DSM-IV* criteria. This diagnostic screening method was shown to have excellent reliability and validity in identifying individuals with substance use disorders in the National Comorbidity Survey (39).

For descriptive purposes, disorders were classified into two non–mutually exclusive groups: mood or anxiety disorders (21.7% of the weighted sample) and alcohol or drug use disorders (7.1% of the weighted sample). A composite variable indicating presence of any disorder versus no disorder was used in the multivariate analyses described below.

Sexual orientation. Sexual orientation was determined by information obtained about behavioral history and self-identification. Behavioral questions asked about the gender of sexual partners since age 18 and during the past year. Individuals were also asked their sexual orientation identity. Respondents were classified into one of four categories. In the first category were lesbian, gay, or bisexual women or women with homosexual experience, hereafter referred to as "lesbian and bisexual women" (13.8% of the unweighted sample and 5.2% of weighted sample). In the second group were gay or bisexual men or men with homosexual experience, hereafter referred to as "gay and bisexual men" (15.3% of the unweighted and 7.0% of the weighted samples). The third group included exclusively heterosexual women (37.7% of the unweighted and 46.2% of the weighted samples), and the fourth included exclusively heterosexual men (33.1% of the unweighted and 41.6% of the weighted samples).

Statistical analyses

Data were analyzed with SAS, version 9.1.3. We applied sample weighting to adjust for selection probability, nonresponse, and poststratification to generate estimates representative of the California population. We first used chi square tests to investigate rates of past-year treatment need, treatment received, and unmet need by groups classified by gender, sexual orientation, and presence of a disorder. When cell sizes were less than five, Monte Carlo estimates of exact tests were used to assess their significance. Second, to test the hypothesis about the relationship of gender, disorder, and sexual orientation status with treatment use, we modeled unmet need for treatment in the past year as a dependent variable in logistic regressions. Age, race-ethnicity (white versus other), and education level (some college versus none) were entered as covariates. Interaction effects were examined by the specified-levels approach, which can be used when the modifier has two levels (40). This approach omits the predictor from the model and includes the modifier and two product terms—that is, the product of the predictor with each level of the modifier. The coefficients estimated for these two product terms can then be interpreted as the effect of the predictor for each level of the modifier.

Odds ratios (ORs) and 95% Wald confidence intervals (CIs) are presented. Statistical significance was set at .05. The logistic regression models presented all had acceptable fit, as indicated by the Hosmer-Lemeshow goodness-of-fit statistic (41).

Results

Sample characteristics

As shown in Table 1, the racial-ethnic distribution was approximately 56% white, 30% Hispanic, 6% African American, and 9% other racial-ethnic groups (Asian–Pacific Islander or Native American). The mean age was 40.7 years. Most respondents (72%) were currently employed and 81% (unweighted N=1,773) had health insurance (including both public and private insurers). Sixty-four percent had at least some college education. Approximately two-thirds (64%) were currently married or cohabiting with a partner.

Differences among sexual orientation groups

Overall, respondents from sexual minority groups reported higher rates of mental and substance use disorders (Table 1). Lesbian and bisexual women had the highest prevalence of mood and anxiety disorders (38.1%), followed by gay and bisexual men (33.5%), heterosexual women (23.4%), and heterosexual men (15.8%). Gay and bisexual men had the highest prevalence of substance use disorders (17.7%), followed by lesbian and bisexual women (12.4%), heterosexual men (7.9%), and heterosexual women (4.1%).

Significant differences were found among the groups in age, race-ethnicity, education, employment status, and being married or cohabiting. In general, compared with the heterosexual groups, the sexual minority groups had a significantly higher proportion of whites and lower proportions of Hispanics and respondents in the "other" category, a higher level of education, and a lower proportion of married or cohabitating respondents. Gay and bisexual men were also significantly older than heterosexual men. Regardless of sexual orientation, a greater proportion of men than women were employed in the past year.

Treatment status by disorder, gender, and sexual orientation

The three treatment-related outcomes were examined by gender, sexual minority status, and disorder status (Table 2). As expected, a greater proportion of respondents with mental or substance use disorders than those without such disorders perceived a need for treatment. Among those with at least one disorder, les-

Table 1

Characteristics of a subsample of respondents to the 2004–2005 California Quality of Life Survey, by gender and sexual orientation[a]

Characteristic	Men				Women				Total (N=2,079)	
	Heterosexual (N=689)		Gay and bisexual (N=319)		Heterosexual (N=784)		Lesbian and bisexual (N=287)			
	N	%	N	%	N	%	N	%	N	%
Age (M±SD)[b]	40.3±14.4		42.9±7.2		40.7±13.7		40.7±6.7		40.7±12.5	
Race-ethnicity[c,d]										
White	423	52.4	253	71.2	473	53.6	240	76.3	1,389	55.5
Hispanic	165	31.8	34	18.0	209	32.0	19	12.1	427	29.9
African American	40	6.6	15	5.0	36	5.2	19	8.3	10	6.0
Other	61	9.3	17	5.8	66	9.2	9	3.3	153	8.6
Some college or college degree[d]	465	61.9	277	80.4	522	62.2	242	74.6	1,506	64.0
Employed in past year[d]	558	80.9	231	74.2	509	64.5	204	71.8	1,502	72.4
Married or cohabiting in past year[d]	488	66.9	112	43.3	540	66.6	131	49.5	1,271	64.2
Disorder in past year[d]										
Mood or anxiety[e]	112	15.8	96	33.5	184	23.4	114	38.1	506	21.7
Substance use[d]	53	7.9	42	17.7	31	4.1	31	12.4	157	7.1

[a] Ns are unweighted, and percentages and means are weighted to reflect the general population of California.
[b] Post hoc tests showed a significant difference ($p<.05$) between heterosexual and gay and bisexual men.
[c] Significance was assessed by using a Monte Carlo estimate of an exact Pearson chi square test.
[d] $p<.001$ for difference across groups
[e] Includes major depression, panic disorder, and generalized anxiety disorder

bian and bisexual women had the highest proportion reporting perceived need for treatment (70.5%), followed by heterosexual women (65.1%), gay and bisexual men (62.7%), and heterosexual men (38.5%). Similarly, among those without any disorder, lesbian and bisexual women had the highest proportion reporting perceived need for treatment (26.1%), followed by gay and bisexual men (17.0%), heterosexual women (9.6%), and heterosexual men (7.3%).

Overall, about 22% of the sample reported having received some form of treatment for a mental health or substance use problem in the past year. A greater proportion of respondents with disorders than those without disorders reported having received treatment. Lesbians and bisexual women had the highest rates of treatment participation regardless of disorder status; heterosexual men had the lowest rates of treatment among those with and those without disorders.

About 41% of respondents who perceived a need for treatment met the criterion for unmet need. Unmet

Table 2

Rates of perceived need for treatment, treatment received, and unmet need for treatment in a subsample of respondents to the 2004–2005 California Quality of Life Survey, by disorder, gender, and sexual orientation[a]

Variable	With disorders (N=582)								Without disorders (N=1,490)								Total (N=2,072)	
	Heterosexual men (N=141)		Gay and bisexual men (N=118)		Heterosexual women (N=197)		Lesbian and bisexual women (N=126)		Heterosexual men (N=545)		Gay and bisexual men (N=200)		Heterosexual women (N=584)		Lesbian and bisexual women (N=161)			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Perceived need for treatment[b]	55	38.5	70	62.7	124	65.1	91	70.5	41	7.3	35	17.0	58	9.6	42	26.1	516	21.6
Received treatment[b]	55	36.4	69	52.2	104	50.6	84	58.7	48	7.4	58	31.4	96	15.0	66	35.8	580	21.9
Unmet need for treatment among those with perceived need[c]	19	37.1	19	36.9	42	36.7	16	22.9	23	63.7	15	38.8	27	51.9	5	24.0	166	40.7

[a] Perceived need and treatment pertain to treatment for mental or substance use disorders in the past year. Ns are unweighted, and percentages are weighted to reflect the general population of California. Ns vary slightly from those in Table 1 because of missing data on treatment variables.
[b] $p<.001$ for difference across groups
[c] Significance was assessed by using a Monte Carlo estimate of an exact Pearson chi square test ($p<.01$).

need was highest among heterosexual men and women without disorders and lowest among lesbian and bisexual women regardless of disorder status. About 40% of gay and bisexual men regardless of disorder status had an unmet need for treatment.

Logistic regression models of unmet need for treatment

Unmet need for treatment was modeled in a logistic regression in which interactions among disorder status, gender, and sexual orientation were examined. All models were adjusted for the effects of age, race-ethnicity (white versus nonwhite), and education level (some college or none).

Using the specified-levels approach, we examined the effect of sexual orientation within gender categories and the effects of sexual orientation and gender within disorder categories (Table 3). The results indicated that lesbian and bisexual women were about half as likely as heterosexual women to have unmet need for treatment (OR=.47). However, no significant effects of sexual orientation on unmet need for treatment were found for men. Among respondents with no disorder, those from sexual minority groups were about a third as likely to have unmet need for treatment (OR=.35). No significant interaction effect of gender and disorder status on unmet need for treatment was found.

We also estimated this model without interaction terms in order to examine the main effects of gender, sexual orientation, and presence of a disorder (data not shown). Findings indicated that compared with women, men had higher odds of having unmet need (OR=1.69, CI=1.10–2.58, $p<.05$) and that respondents with a disorder had lower odds of having unmet need than those without a disorder (OR=.57, CI=.37–.87, $p<.05$). However, there was no significant main effect of sexual orientation on unmet treatment need. Also, consistent with prior research (42), older individuals and whites had significantly lower odds of having unmet need for treatment than younger and nonwhite respondents, respectively.

Discussion

This study extends prior research on the effects of sexual orientation on the prevalence of substance use and mental disorders to examine the relationship of prevalence with perceived need for and receipt of treatment services. Consistent with prior research, the study findings indicate that individuals from sexual minority groups had higher prevalence rates of several disorders compared with rates among heterosexual men and women. In addition, persons from sexual minority groups had higher levels of perceived need for treatment and higher rates of treatment utilization and therefore were least likely to have unmet need for treatment. However, when the analyses adjusted for sociodemographic variables, such as race-ethnicity and education, the main effect of sexual orientation on unmet need was no longer significant. The effect of sexual minority status was evident, however, in its interactions with gender and disorder status. Lesbian and bisexual women were significantly less likely than heterosexual women to have unmet treatment need, although among men no difference in unmet need was found by sexual orientation. Sexual minority status was also significantly associated with unmet need for treatment among those without a diagnosed disorder, but the association was not significant among those with a disorder.

These findings suggest that sexual

Table 3

Interactive effects of sexual orientation, gender, and presence of a disorder on unmet need for treatment in a subsample of respondents to the 2004–2005 California Quality of Life Survey[a]

	Gender-specific effects of sexual orientation		Disorder-specific effects of sexual orientation		Disorder-specific effects of gender	
Variable	OR	95% CI	OR	95% CI	OR	95% CI
Age	.98*	.96–1.00	.98*	.97–1.00	.98*	.96–1.00
White (reference: nonwhite)	.36***	.23–.56	.35***	.23–.55	.36***	.23–.56
Some college (reference: none)	1.07	.68–1.66	1.07	.69–1.67	1.06	.68–1.65
Any disorder (reference: none)	.56**	.37–.85	.48**	.30–.77	.60	.36–1.04
Male (reference: female)	1.34	.83–2.15	1.46†	.96–2.22		
Sexual minority group (reference: heterosexual)					.61	.37–1.02
Effect of being lesbian or bisexual for women	.47*	.22–.99				
Effect of being gay or bisexual for men	.78	.39–1.56				
Effect of sexual minority status for men and women without a disorder			.35*	.15–.85		
Effect of sexual minority status for men and women with a disorder			.81	.44–1.47		
Effect of being male for those without a disorder					1.65	.83–3.26
Effect of being male for those with a disorder					1.41	.83–2.39

[a] Disorders included major depression, panic attacks, generalized anxiety disorder, and substance use disorder (unweighted N=515; weighted N= 451.9).

*p<.05
**p<.01
***p<.001
†p<.08

minority status may promote help seeking for psychiatric disorders (43,44) but that its effect is moderated by gender. This finding is similar to results of a recent study that used national survey data and showed that the effects of sexual minority status on substance use and dependence were larger for women than men (45). Moreover, in the study reported here, the effect of sexual minority status was most apparent among women without a mental or substance use disorder.

The findings from this population-based study suggest that diagnostic criteria may be less relevant in determining perceived treatment need and treatment use among sexual minority populations. This finding deserves more exploration in regard to factors that may lead persons in sexual minority groups to seek care (such as placing a greater value on therapeutic services and having higher perceived stress that does not reach diagnostic thresholds), particularly in the face of the limited availability of services tailored for these groups and barriers to providing these services (46–48).

This study encountered limitations typical of telephone-based follow-back surveys. Although the Cal-QOL follow-back survey oversampled for sexual minority status, the weighted sizes of sexual minority groups were relatively small. Statistical power may have been limited in determining significance for some relationships because of the small sizes of some subgroups. Although data were obtained for the most prevalent mental disorders among population-based samples (49), namely mood and anxiety disorders, it is possible that those who were classified as "without disorders" had other mental disorders that were not included in the Cal-QOL assessment, leading to their misclassification. Including variables on sexual orientation and sexual behavior in larger-scale national probability studies of mental health and substance use problems would provide important opportunities to investigate the robustness of our findings.

Conclusions

This study provided evidence that perceptions of need for treatment for either a mental or substance use disorder are highly influenced by sexual orientation and that treatment use is further influenced by both gender and sexual orientation. Moreover, the influence of gender and sexual orientation was more pronounced among those who did not meet diagnostic criteria for either type of disorder but who nonetheless perceived a need for treatment. This suggests that the relationship of diagnostic criteria to determinations of treatment need among individuals from sexual minority groups should be reevaluated in order to better understand and more fully address the factors that influence treatment seeking among those who perceive a need for care.

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References

1. Burgard SA, Cochran SD, Mays VM: Alcohol and tobacco use patterns among heterosexually and homosexually experienced California women. Drug and Alcohol Dependence 77:61–70, 2005
2. Cochran SD, Ackerman D, Mays VM, et al: Prevalence of nonmedical drug use and dependence among homosexually active men and women in the US population. Addiction 99:989–998, 2004
3. Gilman SE, Cochran SD, Mays VM, et al: Risk of psychiatric disorders among individuals reporting same-sex sexual partners in the National Comorbidity Survey. American Journal of Public Health 91:933–939, 2001
4. Hughes TL, Hass AP, Razzano L, et al: Comparing lesbians' and heterosexual women's mental health: a multisite survey. Journal of Gay and Lesbian Social Services 11:57–76, 2000
5. Scheer S, Peterson I, Page-Shafer K, et al: Sexual and drug use behavior among women who have sex with both women and men: results of a population-based survey. American Journal of Public Health 92:1110–1112, 2002
6. Stall R, Paul JP, Greenwood G, et al: Alcohol use, drug use and alcohol-related problems among men who have sex with men: the Urban Men's Health Study. Addiction 96:1589–1601, 2001
7. Wilsnack SC, Hughes TL, Johnson TP, et al: Drinking and drinking-related problems among heterosexual and sexual minority women. Journal of Studies on Alcohol and Drugs 69:129–139, 2008
8. Cochran SD, Mays VM, Sullivan JG: Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. Journal of Consulting and Clinical Psychology 71:53–61, 2003
9. Sandfort TG, de Graaf R, Bijl RV, et al: Same-sex sexual behavior and psychiatric disorders: findings from the Netherlands Mental Health Survey and Incidence Study (NEMESIS). Archives of General Psychiatry 58:85–91, 2001
10. Drabble L, Midanik LT, Trocki K: Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: results from the 2000 National Alcohol Survey. Journal of Studies on Alcohol 66:111–120, 2005
11. Hughes TL: Lesbians' drinking patterns: beyond the data. Substance Use and Misuse 38:1739–1758, 2003
12. Bradford J, Ryan C, Rothblum ED: National Lesbian Health Care Survey: implications for mental health care. Journal of Consulting and Clinical Psychology 62: 228–242, 1994
13. Cochran SD, Mays VM: Relation between psychiatric syndromes and behaviorally defined sexual orientation in a sample of the US population. American Journal of Epidemiology 151:516–523, 2000
14. Wang J, Häusermann M, Ajdacic-Gross V, et al: High prevalence of mental disorders and comorbidity in the Geneva Gay Men's Health Study. Social Psychiatry and Psychiatric Epidemiology 42:414–420, 2007
15. Cochran BN, Cauce AM: Characteristics of lesbian, gay, bisexual, and transgender individuals entering substance abuse treatment. Journal of Substance Abuse Treatment 30:135–146, 2006
16. Peck JA, Shoptaw S, Rotheram-Fuller E, et al: HIV-associated medical, behavioral, and psychiatric characteristics of treatment-seeking, methamphetamine-dependent men who have sex with men. Journal of Addictive Diseases 24:115–132, 2005
17. Peck JA, Reback CJ, Yang X, et al: Sustained reductions in drug use and depression symptoms from treatment for drug abuse in methamphetamine-dependent gay and bisexual men. Journal of Urban Health 82:100–108, 2005
18. Mechanic D: Is the prevalence of mental disorders a good measure of the need for services? Health Affairs 22(5):8–20, 2003
19. Rabinowitz J, Gross R, Feldman D: Correlates of a perceived need for mental health assistance and differences between those who do and do not seek help. Social Psychiatry and Psychiatric Epidemiology 34: 141–146, 1999
20. Stockdale SE, Klap R, Belin TR, et al: Longitudinal patterns of alcohol, drug, and mental health need and care in a national sample of U.S. adults. Psychiatric Services 57:93–99, 2006
21. Grella CE, Karno MP, Warda US, et al:

Perceptions of need and help received for alcohol or drug dependence in a national probability survey. Psychiatric Services 60:1068–1074, 2009

22. Wang PS, Lane M, Olfson M, et al: Twelve-month use of mental health services in the United States: results from the National Comorbidity Survey Replication. Archives of General Psychiatry 62:629–640, 2005

23. van Beljouw I, Verhaak P, Prins M, et al: Reasons and determinants for not receiving treatment for common mental disorders. Psychiatric Services 61:250–257, 2010

24. Reasons for Not Receiving Substance Abuse Treatment. Rockville, Md, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2003

25. Kessler RC, Demler O, Frank RG, et al: Prevalence and treatment of mental disorders. New England Journal of Medicine 352:2515–2523, 2005

26. Edlund MJ, Unützer J, Curran GM: Perceived need for alcohol, drug, and mental health treatment. Social Psychiatry and Psychiatric Epidemiology 41:480–487, 2006

27. Druss BG, Wang PS, Sampson NA, et al: Understanding mental health treatment in persons without mental diagnoses: results from the national comorbidity survey replication. Archives of General Psychiatry 64:1196–1203, 2007

28. Narrow WE, Rae DS, Robins LN, et al: Revised prevalence estimates of mental disorders in the United States: using a clinical significance criterion to reconcile 2 surveys' estimates. Archives of General Psychiatry 59:115–123, 2002

29. Regier DA, Kaelber CT, Rae DS, et al: Limitations of diagnostic criteria and assessment instruments for mental disorders: implications for research and policy. Archives of General Psychiatry 55:109–115, 1998

30. Green CA, Popea CR: Gender, psychosocial factors and the use of medical services: a longitudinal analysis. Social Science and Medicine 48:1363–1372, 1999

31. Cochran SD, Mays VM: Physical health complaints among lesbians, gay men, and bisexual and homosexually experienced heterosexual individuals: results from the California Quality of Life Survey. American Journal of Public Health 97:2048–2055, 2007

32. Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys, 6th ed. Deerfield, Ill, American Association for Public Opinion Research, 2009. Available at www.aapor.org

33. Narayanan V, Fry S, Fan J: California Quality of Life Survey: Methods Report. Rockville, Md, Westat, 2005

34. Kessler RC, Andrews G, Mroczek D, et al: The World Health Organization Composite International Diagnostic Interview–Short Form (CIDI-SF). International Journal of Methods in Psychiatric Research 7:171–185, 1998

35. Aalto-Setala T, Haarasilta L, Marttunen M, et al: Major depressive episode among young adults: CIDI-SF versus SCAN consensus diagnoses. Psychological Medicine 32:1309–1314, 2002

36. Talati A, Fyer AJ, Weissman MM: A comparison between screened NIMH and clinically interviewed control samples on neuroticism and extraversion. Molecular Psychiatry 13:122–130, 2008

37. Diagnostic and Statistical Manual of Mental Disorders, 3rd ed, revised. Washington, DC, American Psychiatric Association, 1987

38 . Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington, DC, American Psychiatric Association, 1994

39. Epstein JF, Gfroerer JC: Estimating Substance Abuse Treatment Need From a National Household Survey: Analyses of Substance Abuse and Treatment Need Issues. Rockville, Md, Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 1995

40. Van Ness PH, Allore HG: Using SAS to investigate effect modification; in Proceedings of the 31st annual SAS Users Group International Conference. Cary, NC, SAS Institute, 2006. Available at www2.sas.com/proceedings/sugi31/195-31.pdf

41. Hosmer DW, Lemeshow S: Applied Logistic Regression, 2nd ed. New York, Wiley, 2000

42. Wells K, Klap R, Koike A, et al: Ethnic disparities in unmet need for alcoholism, drug abuse, and mental health care. American Journal of Psychiatry 158:2027–2032, 2001

43. Andersen RM: Behavioral Model of Families' Use of Health Services. Research series no 25. Chicago, University of Chicago, Center for Health Administration Studies, 1968

44. Andersen RM: Revisiting the behavioral model and access to medical care: does it matter? Journal of Health and Social Behavior 36:1–10, 1995

45. McCabe SE, Hughes TL, Bostwick WB, et al: Sexual orientation, substance use behaviors and substance dependence in the United States. Addiction 104:1333–1345, 2009

46 Mayer KH, Bradford JB, Makadon HJ, et al: Sexual and gender minority health: what we know and what needs to be done. American Journal of Public Health 98: 989–995, 2008

47. Cochran BN, Peavy KM, Cauce AM: Substance abuse treatment providers' explicit and implicit attitudes regarding sexual minorities. Journal of Homosexuality 53:181–207, 2007

48. Cochran BN, Peavy KM, Robohm JS: Do specialized services exist for LGBT individuals seeking treatment for substance misuse? A study of available treatment programs. Substance Use and Misuse 42:161–176, 2007

49. Grant BF, Stinson FS, Dawson DA, et al: Prevalence and co-occurrence of substance use disorders and independent mood and anxiety disorders: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry 61:807–816, 2004