

Racial/Ethnic Disparities in Service Utilization for Individuals With Co-Occurring Mental Health and Substance Use Disorders in the General Population: Results From the National Epidemiologic Survey on Alcohol and Related Conditions

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Objective: This study sought to determine whether black/white disparities in service utilization for mental health and substance use disorders persist or are diminished among individuals with psychiatric comorbidity in the general population.

Method: The 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions was used to identify individuals with lifetime co-occurring substance use disorders and mood/anxiety disorders (N = 4250; whites, N = 3597; blacks, N = 653). Lifetime service utilization for problems with mood, anxiety, alcohol, and drugs was assessed.

Results: Compared to whites, blacks with co-occurring mood or anxiety and substance use disorders were significantly less likely to receive services for mood or anxiety disorders, equally likely to receive services for alcohol use disorders, and more likely to receive some types of services for drug use disorders. Regardless of race/ethnicity, individuals with these co-occurring disorders were almost twice as likely to use services for mood/anxiety disorders than for substance use disorders.

Conclusion: Despite the fact that comorbidity generally increases the likelihood of service use, black/white disparities in service utilization among an all-comorbid sample were found, although these disparities differed by type of disorder. Further research is warranted to understand the factors underlying these differences. Prevention and intervention strategies are needed to address the specific mental health needs of blacks with co-occurring disorders, as well as the overall lack of service use for substance use disorders among individuals with co-occurring psychiatric conditions.

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Psychiatric comorbidity is common^{1–6} and disabling. Individuals with co-occurring psychiatric diagnoses have worse clinical courses and outcomes and are at increased risk of suicide⁷ as well as social and occupational impairment and disability.⁸ In particular, mood and anxiety disorders commonly co-occur with substance use disorders, as has been well documented in both lifetime^{9–11} and current^{1,12} time frames. In addition, the presence of mood and anxiety disorders, especially among those with co-occurring substance use disorders, has been associated with deleterious consequences to both individuals and society.^{7,13–17}

Given that comorbidity affects functioning in multiple domains, researchers have examined how comorbidity impacts the utilization of mental health services. In the health services literature, several models have been developed to conceptualize the interplay of different elements that influence access to care, i.e., barriers to care and factors that tend to promote treatment seeking. The Andersen behavioral model of health service treatment contact is the most extensively studied model of health services utilization.^{18,19} This model integrates social, contextual, and economic factors and posits that use of health care services is a function of predispositional characteristics (e.g., gender, race/ethnicity, educational attainment), enabling factors (e.g., income, health insurance, having a regular source of care), and need of services (e.g., symptom severity and perceived need for care). Because of the increased morbidity associated with multiple psychiatric diagnoses versus the presence of a single disorder, comorbidity is also included in the Andersen model of health services utilization as an important indicator of *need* for treatment utilization. Indeed, studies, including the Epidemiologic Catchment Area Program,²⁰ the National Comorbidity Survey,^{3,21} the National Longitudinal Alcohol Epidemiologic Survey,²² and the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC),¹ consistently show that the likelihood of mental health service utilization is increased among individuals with co-occurring disorders.

In contrast to the picture for comorbidity, minority racial/ethnic status is identified as a predispositional *barrier* to service utilization in the Anderson model.^{18,19} Consistent with this theoretical approach, empirical studies consistently show that members of racial/ethnic minorities are less likely to receive mental health services than whites.²³ In particular, several studies have shown that blacks are less likely than whites to receive services for mood or anxiety disorders,^{3,10,24–35} whether defined broadly as any professional treatment care^{3,30,32} or specifically as talking with a mental health professional^{28,32,36} or using prescription medication.²⁸ However, considerably less is known about disparities in services for alcohol and drug use disorders among blacks. While findings from the National Comorbidity Survey Replication suggest that blacks are less likely than whites to use services for alcohol dependence,³³ NESARC findings indicate a lack of black/white disparities for substance use disorders in the general population overall while also indicating lower rates of service use for mood and anxiety disorders among blacks compared to whites, consistent with earlier studies (K.M.K., M.L.H., P. Alberti, Ph.D., et al., unpublished data, 2007).

To date, racial/ethnic minority status and psychiatric comorbidity have been studied separately as barrier to and enabling factors for, respectively, the receipt of treatment. No research has compared blacks and whites on service

use specifically for mood/anxiety or substance use disorders among a sample of comorbid individuals who all had co-occurring mood/anxiety and substance use disorders. Previous studies using nationally representative samples have examined service use among individuals with co-occurring substance use and mood/anxiety disorders.^{21,37–39} However, none explicitly compared blacks and whites with co-occurring substance use and mood/anxiety disorders for their patterns of service utilization and asked whether these differed by the type of disorder for which treatment was obtained. Treating comorbidity and racial/ethnic minority status separately may obscure important subgroup differences in patterns of service utilization.

Given the generally increased likelihood of service utilization among individuals with co-occurring disorders, differences in rates of service use for mood/anxiety disorders might be reduced or eliminated between blacks and whites with such comorbidity. Conversely, other black/white differences in patterns of service utilization might emerge, including the persistence of treatment disparities for only a subset of disorders or type of services (e.g., self-help vs. outpatient). Such information is essential in the development of more targeted prevention and intervention efforts to address the specific disparities in service utilization between blacks and whites. The aim of the present study was therefore to compare blacks and whites who had co-occurring disorders on service utilization for mood/anxiety, alcohol, and drug use disorders. In order to address this aim, we used data from the NESARC, a face-to-face epidemiologic survey with a large sample size, general population-based sampling scheme, and careful measurement of *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (DSM-IV)⁴⁰ diagnoses of substance use, mood, and anxiety disorders.

METHOD

Sample

The sample was drawn from participants in the 2001–2002 NESARC, a nationally representative United States survey of 43,093 civilian noninstitutionalized participants aged 18 years and older. Details of the sampling frame are described elsewhere.^{1,2,4,41} The National Institute on Alcohol Abuse and Alcoholism (NIAAA) sponsored the study and supervised the fieldwork, which was conducted by the U.S. Census Bureau. Young adults, Hispanics, and African Americans were oversampled, and the study achieved an overall response rate of 81%. To adjust for nonresponse and selection probability, the sample was weighted and adjusted to reflect the U.S. population from the 2000 Decennial Census in terms of age, race, sex, and ethnicity. The research protocol, including informed consent procedures, received full ethical review and approval from the U.S. Census Bureau and the U.S. Office of Management and Budget.

Previous studies from the NESARC have indicated that whites have a higher lifetime prevalence of alcohol disorders,⁵ depression,¹² anxiety,² and drug disorders⁶ compared with blacks. Additionally, in the entire NESARC sample, there is a higher percentage of whites with a comorbid diagnosis (i.e., substance use disorder and mood/anxiety disorder) compared to blacks (14.6% vs. 8.5%, respectively). However, because we were specifically interested in only those respondents with substance use disorders *and* mood and/or anxiety disorders, we included only the subset of the sample with a dual lifetime diagnosis. Thus, for this study, underlying differences in prevalence between blacks and whites did not affect the results, because all study respondents had a history of dual disorders. The final sample included 4250 participants with co-occurring substance use disorders and mood/anxiety disorders (3597 whites and 653 blacks). Racial/ethnic group membership was determined by respondents' self-report, following carefully developed standard Census Bureau procedures.

Interviewers, Training, and Field Quality Control

Interviewing was conducted by 1800 professional interviewers from the Census Bureau, using computer-assisted software with built-in skip, logic, and consistency checks. All interviewers had experience with other national health-related surveys, with an average of 5 years of experience, and were further trained for 10 days under the direction of the NIAAA. Regional supervisors recontacted a random 10% of all respondents for verification and quality control purposes. In the few cases in which accuracy was uncertain, the data were discarded, and a supervising interviewer repeated the interview. In addition, a randomly selected subset of respondents was reinterviewed with 1 to 3 complete sections of the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV (AUDADIS-IV).⁴¹ This strategy served as a test-retest reliability study of NESARC measures.⁴¹

Measures

Diagnoses were assessed with the AUDADIS-IV.⁴¹ This instrument was specifically designed for experienced lay interviewers and developed to advance measurement of substance use and other mental disorders in large-scale surveys.

The AUDADIS-IV used over 40 items to assess the criteria for DSM-IV substance abuse and dependence for alcohol as well as 10 different classes of drugs, including sedatives, tranquilizers, opiates (other than heroin or methadone), stimulants, hallucinogens, cannabis, cocaine (including crack cocaine), inhalants/solvents, heroin, and other drugs. Diagnoses were made according to DSM-IV⁴⁰ criteria: a respondent needed at least 1 of 4 criteria for a diagnosis of substance abuse, and 3 or more

of 7 criteria for substance dependence. Withdrawal syndromes were assessed via a 20-question list, which covered all withdrawal symptoms indicated in the DSM-IV for all substances; the presence of 2 or more symptoms as defined in the DSM-IV corresponding withdrawal category was necessary for a withdrawal diagnosis. For the present analysis, lifetime diagnoses were used. The substance use diagnoses have shown excellent reliability in clinical and general population studies in the United States and internationally, with alcohol diagnoses having a minimum κ of 0.74 and drug diagnoses having a minimum reliability of 0.79.⁴¹⁻⁴⁵ The validity of these diagnoses has been documented in numerous U.S. and international studies^{42,46-49} and other reports,^{22,45,50-56} including psychiatrist reappraisal.⁴³ There is substantial evidence for the reliability and validity of the alcohol and drug diagnoses across racial/ethnic groups,⁴⁵ including 1 study that specifically demonstrated that the reliability of alcohol use disorders as measured by the AUDADIS was not affected by race.⁵⁷ Data from the World Health Organization study conducted in 11 countries provides further evidence for the reliability and validity of alcohol and drug diagnoses across cultural groups.^{42,47,48,55}

The DSM-IV mood and anxiety disorders assessed by the AUDADIS-IV were major depression, dysthymia, mania, hypomania, generalized anxiety disorder, panic disorder with or without agoraphobia, social phobia, and specific phobia. Substance-induced disorders, those due to somatic illnesses, or (in the case of major depression) bereavement were ruled out. Diagnoses all met the DSM-IV criterion requiring distress or social/occupational dysfunction. The reliability and validity of mood and anxiety disorder diagnosis and symptom items range from fair (κ for specific phobia diagnosis = 0.42) to good (κ for major depressive disorder diagnosis = 0.65).^{41,43,44} In addition, depression diagnoses were found to be reliable and validated by comparison to diagnosis by a psychiatrist in Puerto Rico,⁴³ providing support for the instrument across racial/ethnic and cultural groups. Diagnoses were further validated using the Medical Outcomes Study Short Form Health Survey version 2, a mental disability score, in controlled linear regressions.^{1,2,12} The items included to assess mood and anxiety disorder diagnoses, including the Schedule for Affective Disorders and Schizophrenia⁵⁸ and the Structured Clinical Interview for DSM-III-R,⁵⁹ are similar to those found in other large, national surveys.

Outcome variables consisted of service use for specific DSM-IV disorders. In the AUDADIS-IV, alcohol services and drug services are each assessed in detail in separate modules. All lifetime drinkers (i.e., ≥ 1 drink ever) and drug users (illicit or nonmedical use of prescription drugs at least 1 time) were asked about 13 types of service utilization in 2 time frames: during the last 12 months and prior to the last 12 months. These were combined to create lifetime variables. These service types fall into 4 main

categories: (1) self-help (e.g., Alcoholics Anonymous), (2) social services (family services, employee assistance program, or clergy), (3) alcohol/drug services (alcohol/drug detoxification, inpatient ward, outpatient clinic, rehabilitation program, halfway house, crisis center, private physician, psychiatrist, psychologist, social worker, or other professional), and (4) emergency room. Drug users were additionally asked about methadone programs (categorized as a drug service). Participants were also asked whether they thought that they should have sought treatment for either alcohol or drugs at any point but did not.

Respondents were asked about mental health service utilization for depression, dysthymia, mania, panic attacks, social phobia, specific phobia, and generalized anxiety disorder in separate modules administered to all respondents screened into the diagnostic module for that disorder. The service utilization questions covered outpatient (counselor, therapist, physician, or other professional), inpatient (staying overnight or longer in a hospital) and emergency room settings, and prescribed medication.

Statistical Analysis

The full sample ($N = 4250$) was first analyzed when service use for mood/anxiety disorders was considered, as all respondents had one of these disorders by definition. We used χ^2 for a bivariate examination of the association of race/ethnicity with other predispositional as well as enabling and need factors. Racial/ethnic differences in service use for mood and anxiety disorders were initially considered separately but were ultimately combined, because the direction and magnitude of effect were so similar across diagnoses. We then used χ^2 for a bivariate examination of the association of service utilization for alcohol use disorders with race/ethnicity among the subset of comorbid individuals who had a diagnosis of an alcohol use disorder ($N = 3935$). Similarly, we then used χ^2 for a bivariate examination of the association of service utilization for drug use disorders with race/ethnicity among the subset that had a diagnosis of a drug use disorder ($N = 1704$). These 3 subsets were used for all cross tabulations and logistic regressions. All analyses were conducted using SUDAAN software version 9.1 (Research Triangle Institute, Research Triangle Park, N.C.) to obtain standard errors adjusted for the complex sample design.

Odds ratios (ORs) and 95% confidence intervals were derived from logistic regressions to study the associations between race/ethnicity and likelihood of service use for a disorder while controlling for known predispositional, enabling, and need factors that were based on the Andersen model of health services.^{18,19} Predispositional factors consisted of sex and age. Enabling factors consisted of income, education, region, urbanicity, and current insurance status. Further, to address need for treatment, each model

contained a disorder-specific clinical covariate to control for the severity of the disorder. Severity of mood/anxiety disorders was indicated by the total number of mood/anxiety symptoms. Severity of alcohol and drug use disorders was indicated by frequency of use.^{60,61} For alcohol disorders, this was the frequency of 5 or more drinks/occasion (binge drinking) during the period of heaviest drinking. For drug disorders, the variable was the peak lifetime frequency of the most frequently used drug (dichotomized as once per week or more during the period of heaviest use versus less than once per week). We defined mood/anxiety disorders using symptoms and alcohol/drug disorders using frequency of use, because in the literature on clinical trials, the outcome measures used most commonly consist of symptom severity for mood and anxiety disorders (e.g., the Hamilton Rating Scale for Depression) but severity indicators by use (e.g., frequency or percentage of days used) for alcohol and drug disorders.

RESULTS

Bivariate Associations With Race/Ethnicity and Predispositional, Enabling, and Need Factors

Predispositional factors. There was no significant relationship observed between race/ethnicity and sex ($\chi^2 = 0.01$, $df = 1$, $p = .93$) or age ($\chi^2 = 7.5$, $df = 3$, $p = .07$).

Enabling factors. Whites were more likely to be in high-income categories ($\chi^2 = 40.8$, $df = 3$, $p < .001$), to have more educational achievement ($\chi^2 = 25.8$, $df = 2$, $p < .001$), to live in rural areas ($\chi^2 = 15.7$, $df = 1$, $p < .001$), and to have current insurance ($\chi^2 = 8.3$, $df = 1$, $p = .005$), compared with blacks. Regional differences were also observed ($\chi^2 = 27.5$, $df = 3$, $p < .001$); specifically, there was a higher proportion of blacks in the South (48.8%, $SE = 5.5$) compared to other regions (Northwest, 16.6% [$SE = 4.2$]; Midwest, 22.2% [$SE = 5.3$]; and West, 12.4% [$SE = 3.9$]), and a higher proportion of whites in the Midwest (30.1%, $SE = 3.2$) compared to other regions (Northwest, 18.3% [$SE = 2.8$]; South, 28.4% [$SE = 2.6$]; and West, 23.3% [$SE = 3.0$]).

Need factors. With regard to variables indicating need for services, there was no significant relationship observed between race/ethnicity and number of lifetime symptoms of a mood disorder ($t = 1.6$, $p = .13$), number of lifetime symptoms of an anxiety disorder ($t = 0.82$, $p = .41$), frequency of binge drinking during period of heaviest alcohol use ($\chi^2 = 2.9$, $df = 1$, $p = .10$), and frequency of drug use during period of heaviest use ($\chi^2 = 0.16$, $df = 1$, $p = .69$).

Mood or Anxiety Service Use

A significantly higher proportion of whites than blacks with lifetime comorbidity received services for mood/anxiety disorders (52.7% vs. 35.2%; Table 1). When type of service was examined separately, whites were significantly more likely than blacks to receive out-

Table 1. Prevalence (SE) of Services Utilization in Whites and Blacks With Lifetime Comorbidity

Mood/anxiety service utilization (N = 4250)	Group With Mood/Anxiety Disorders (all respondents)			
	White (N = 3597)	Black (N = 653)	χ^2 (df = 1)	p Value
Used any mood/anxiety service	52.7 (1.1)	35.2 (2.5)	34.6	< .0001
Was outpatient for mood/anxiety	41.1 (1.0)	22.8 (2.0)	40.5	< .0001
Was inpatient for mood/anxiety	9.6 (0.5)	8.7 (1.3)	0.4	.52
Went to an emergency room for mood/anxiety	10.7 (0.6)	11.2 (1.5)	0.1	.78
Took medication for mood/anxiety	35.1 (1.0)	20.3 (1.8)	34.5	< .0001
Alcohol service utilization (N = 3935)	Group With Alcohol Use Disorders			
	White (N = 3365)	Black (N = 570)	χ^2 (df = 1)	p Value
Used any alcohol service	17.1 (0.8)	17.2 (2.1)	0.0	.96
Used any 12-step self-help for alcohol	13.4 (0.7)	13.5 (2.0)	0.0	.96
Used any social services for alcohol	7.4 (0.5)	7.8 (1.6)	0.1	.79
Used any alcohol-specific service	13.7 (0.7)	14.1 (1.9)	0.0	.84
Went to an emergency room for alcohol	5.4 (0.4)	4.3 (1.0)	1.0	.32
Thought should go for alcohol treatment but did not	13.4 (0.7)	14.5 (1.7)	0.4	.54
Drug service utilization (N = 1704)	Group With Drug Use Disorders			
	White (N = 1429)	Black (N = 275)	χ^2 (df = 1)	p Value
Used any drug service	18.3 (1.2)	21.8 (2.9)	1.3	.27
Used any 12-step self-help for drugs	11.1 (1.0)	17.5 (2.6)	4.5	.04
Used any social services for drugs	7.5 (0.9)	14.0 (2.3)	5.7	.02
Used any drug-specific service	16.8 (1.1)	20.4 (2.9)	1.4	.25
Went to an emergency room for drugs	5.5 (0.7)	7.0 (1.8)	0.6	.45
Thought should go for drug treatment but did not	16.5 (1.1)	24.9 (2.9)	6.4	.01

patient treatment and to take medication for a mood/anxiety disorder. However, there were no differences between comorbid blacks and whites with respect to other forms of mood or anxiety services, including inpatient and use of emergency rooms.

Alcohol Service Use

A much lower proportion of whites and blacks with co-occurring disorders utilized alcohol services than services for mood or anxiety disorders. Rates for any alcohol services were very similar for whites and blacks (Table 1). There were no significant differences between whites and blacks in the proportion utilizing any specific type of alcohol services. Further, whites and blacks did not differ in reporting that they should have sought help for problem alcohol use but did not.

Drug Service Use

The rates of service utilization for drug use disorders were also low overall (Table 1). Compared to whites, blacks were significantly more likely to have used self-help services (17.5% of blacks vs. 11.1% of whites, $p = .04$) and social services (14.0% of blacks vs. 7.5% of whites, $p = .02$) and were significantly more likely to think they should have sought help for problem drug use but did not (24.9% of blacks vs. 16.5% of whites, $p = .01$).

Odds of Service Utilization: Logistic Regression Models

Two models were constructed to examine the effect of race/ethnicity on service utilization. The first is an unadjusted model with race/ethnicity as the sole predictor of

service utilization. In the second model, predispositional, enabling, and need factors were controlled for to determine whether the confounding effects of these variables accounted for observed differences. As indicated by Table 2, in both unadjusted and adjusted models, whites were more likely to utilize services for mood and anxiety disorders. Controlling for relevant service-related factors did not attenuate the associations between race/ethnicity and service utilization. In fact, controlling for these differences revealed even stronger disparities (see Table 2). Whites were 2.55 times more likely than blacks to utilize mood/anxiety services, 2.67 times more likely to receive outpatient treatment, and 2.63 times more likely to take medication for a mood/anxiety disorder (see Table 2). Moreover, in models adjusted for predispositional, enabling, and need factors, whites with an alcohol use disorder did not differ from blacks with an alcohol use disorder in utilization of any type of alcohol services. Whites with a drug use disorder were significantly less likely than blacks with a drug use disorder to use self-help intervention for drug use disorders (OR = 0.54) or social services for drug disorders (OR = 0.49) and were significantly less likely to think that they should obtain treatment (OR = 0.50). There was no evidence of effect modification by income, such that the effects of race/ethnicity on service utilization were relatively stable for each income category.

Mood/Anxiety Service Use Versus Alcohol/Drug Service Use

Blacks and whites with co-occurring disorders were more likely to seek services for a mood/anxiety disorder

Table 2. Odds of Services Utilization, Comorbid Whites Compared to Comorbid Blacks^a

Type of Service Utilization	OR	95% CI	AOR	95% CI
Mood/anxiety service utilization among all respondents (N = 4250)				
Used any mood/anxiety service	2.05	1.63 to 2.58	2.55	1.83 to 3.56
Was outpatient for mood/anxiety	2.34	1.85 to 2.96	2.67	1.97 to 3.61
Was inpatient for mood/anxiety	1.11	0.79 to 1.57	1.41	0.93 to 2.15
Went to an emergency room for mood/anxiety	0.95	0.67 to 1.35	1.01	0.67 to 1.52
Took medication for mood/anxiety	2.12	1.67 to 2.70	2.63	1.98 to 3.51
Alcohol service utilization among those with an alcohol use disorder (N = 3935)				
Used any alcohol service	0.99	0.73 to 1.35	1.09	0.77 to 1.53
Used any 12-step self-help for alcohol	0.99	0.70 to 1.39	1.11	0.76 to 1.62
Used any social services for alcohol	0.94	0.59 to 1.50	1.04	0.63 to 1.70
Used any alcohol-specific service	0.97	0.70 to 1.33	1.10	0.76 to 1.60
Went to an emergency room for alcohol	1.16	0.72 to 1.88	1.41	0.80 to 2.50
Thought should go for alcohol treatment but did not	0.92	0.69 to 1.22	0.87	0.63 to 1.20
Drug service utilization among those with a drug use disorder (N = 1704)				
Used any drug service	0.80	0.56 to 1.16	0.81	0.53 to 1.23
Used any 12-step self-help for drugs	0.59	0.40 to 0.88	0.54	0.34 to 0.87
Used any social services for drugs	0.50	0.32 to 0.80	0.49	0.29 to 0.82
Used any drug-specific service	0.79	0.54 to 1.15	0.81	0.52 to 1.25
Went to an emergency room for drugs	0.84	0.44 to 1.58	0.84	0.40 to 1.76
Thought should go for drug treatment but did not	0.59	0.42 to 0.84	0.51	0.34 to 0.75

^aControl variables, which were included only in the final model with AORs, included Andersen model predisposing (sex, age), enabling (income, education, current insurance status, urbanicity, region) and need (number of symptoms of anxiety disorders, number of symptoms of mood disorders, frequent binge drinking, and frequent use of drug of choice) factors. Abbreviations: AOR = adjusted odds ratio, OR = odds ratio.

than for a substance use disorder: 13.6% of the total sample sought services for both substances and for mood/anxiety; 37.6% sought services for mood/anxiety but not for substances; 5.8% sought substance services but not mood/anxiety services; and 42.9% sought neither type of services ($\chi^2 = 79.2$, $df = 3$, $p < .0001$).

DISCUSSION

Among blacks and whites with co-occurring substance use disorders and mood or anxiety disorders in a general population sample, the results of this analysis indicated differential lifetime patterns of service utilization for psychiatric and substance use disorders. Specifically, among individuals with these comorbidities, whites were more likely to receive services for mood and anxiety disorders than blacks. This overall pattern of results held across types of service use for mood and anxiety disorders, including outpatient treatment and taking medication.

The large sample size of the NESARC enabled us to control for several clinical, socioeconomic, demographic, and geographic covariates, an important advantage of the current study. Importantly, the differential lifetime patterns of mental health service utilization were unaffected even after adjusting for these variables. For example, there are differences in the racial/ethnic makeup of regions in the United States.⁶² These differences were reflected in the subset of the NESARC sample with co-occurring disorders described above. Because we controlled for region in the logistic regression models, we were able to show that differential patterns of mental

health treatment persisted despite regional differences. In addition, it is of particular interest that disparities in mental health treatment persisted despite controlling for income, as several past studies have indicated that racial/ethnic differences in some mental health service use are substantially attenuated by socioeconomic status differences.^{35,63,64} Our results suggest that while income may mediate racial/ethnic differences to some extent, the entire findings on disparities cannot be fully explained by this factor.

In demonstrating that comorbid blacks underutilize mental health services for mood and anxiety disorders compared with comorbid whites, this study extends prior research indicating similar disparities among blacks with mood and anxiety disorders that did not focus specifically on individuals with co-occurring disorders.^{3,30,32,35} The present research extends these findings by (1) demonstrating this effect in a comorbid sample and (2) specifically indicating the types of service utilization that are driving this effect. That is, among comorbid individuals with a mood/anxiety disorder, whites are approximately 3 times more likely to have ever received outpatient treatment or to have ever taken medication for their disorder, but no significant or visible differences emerged for the odds of receiving inpatient treatment.

In contrast to service use for mood/anxiety disorders, no black/white differences were found for use of alcohol services, while blacks were more likely than whites to use 12-step self-help and social services for drug use disorders and more likely to think they should have sought help but did not go. These results contradict the general

assumption that blacks are less likely to utilize any type of intervention.^{29,33-35} While Keyes et al. (K.M.K., M.L.H., P. Alberti, Ph.D., et al.; unpublished data, 2007) found parallel results in the general population not selected for comorbidity, research with representative comorbid samples examining racial/ethnic differences in specific types of service utilization that included substance use disorders has not been conducted previously. Thus, these findings represent important new information.

To our knowledge, this is the first study to document black/white differences in service utilization among individuals with co-occurring substance use and mood/anxiety disorders in a general population sample. Given the novelty of these findings, little is known regarding the processes leading to the discrepancies in types of services received. Possible mechanisms could include differences in the recognition of, and reaction to, externalizing versus internalizing symptoms, racial/ethnic differences in social pressure to enter treatment for different types of disorders,^{65,66} coercion resulting from drug policies and laws that disproportionately affect blacks,^{67,68} and differing conceptions of the causes and treatment of mental health problems among blacks and whites.⁶⁹ Most of these mechanisms, however, have been postulated to account for the global black/white disparities in service utilization. Consequently, research has not been conducted to discern how and whether these mechanisms explain the persistence of disparities for mental health, but not for substance use, disorders. The results therefore highlight the need for more theory-driven research that addresses why certain mechanisms are associated with disparities in service utilization for some disorders, but not others.

Importantly, the results of the current analysis indicated that regardless of black/white status, all respondents with co-occurring disorders were less likely to utilize services for substance use disorders than for mood or anxiety disorders. In fact, comorbid respondents were nearly twice as likely to utilize services for mood or anxiety disorders than for substance use disorders. This result parallels patterns of service use found in 2 recent general population samples, which confirmed that use of mental health services for disorders such as depression is far more common than treatment for substances, both for individuals with independent psychiatric disorders⁵ and for those with co-occurring psychiatric conditions.³⁹ In addition, over a third of all comorbid respondents did not receive services for either disorder. Given the association of comorbidity with many adverse clinical and health outcomes,^{7,8,16} these results suggest the need for vigorous dissemination efforts to reach individuals with a clear need for treatment services. While the reasons underlying the relative lack of service utilization for alcohol and drug use disorders among comorbid respondents remain unclear, one likely possibility is that efforts to de-stigmatize depression and increase awareness of the illness and its treatment,^{70,71}

which have significantly impacted rates of service use for mood/anxiety disorders,⁷² have not been successfully implemented in the area of alcohol and drug use disorders.^{5,6} This failure represents an important direction for future research aimed at reducing disparities in service utilization for substance use disorders.

The results of the present study suggest several important avenues for future research. First, further studies are needed to determine the individual, cultural, societal, and legal factors that contribute to the black/white service utilization disparities shown here. Second, there is an urgent need to identify the barriers that prevent individuals with co-occurring disorders from receiving services for substance use disorders at the same rate that they receive services for mood and anxiety disorders. This information is essential in order to better assist prevention and intervention strategies to reduce these overall disparities. Third, studies are needed regarding other important racial/ethnic groups with different cultural beliefs and health utilization issues, such as Hispanics, to determine whether the same disparities are present. Such analyses, currently underway, should help identify similarities and differences in patterns of service use in other ethnic groups. These may help illuminate the processes mediating differences in service utilization between blacks and whites in this sample.

Potential study limitations are noted. First, recall bias might affect the estimates of lifetime service use, especially among older respondents. To examine this possibility, we reran the analyses on past-year services utilization among the subset of respondents with current (past 12 months) disorders. While smaller sample sizes reduced power to detect statistical differences, the overall magnitude and direction of effects did not change, suggesting that recall bias did not affect the estimates. Second, additional detail on different types and sources of treatment for mood/anxiety disorders would be helpful and should be added to future surveys. Nevertheless, differences in questions regarding mood/anxiety service use and alcohol/drug service use reflect true differences in both the services and service delivery systems for these disorders. Third, the study did not assess differences in treatment adequacy between the comorbid black and white respondents. Questions of treatment adequacy involve a related but different research focus than the one motivating the present study. This issue therefore represents an important avenue for future research. Finally, these data were cross-sectional. Prospective investigation of factors predicting treatment entry would be valuable and can be conducted when NESARC 3-year follow-up data become available.

Two potential limitations concerning sampling of blacks in the NESARC also warrant discussion. First, individuals institutionalized throughout the period of data collection were not included in the NESARC, possibly re-

sulting in an underestimation of service utilization among blacks, who have higher incarceration rates. However, the literature is not consistent regarding whether treatment rates are actually higher for those who are incarcerated: some studies show that racial/ethnic minorities in prison receive fewer mental health services,^{73,74} while other studies do not.^{75,76} Thus, it is unclear how inclusion of incarcerated blacks would affect our estimates. Additionally, although data from the recent Census show higher rates of incarceration among blacks than among whites in the United States, 95% of black men are not incarcerated (with an even higher percentage of women not incarcerated),⁷⁷ suggesting that our results can be generalized to the vast majority of blacks with co-occurring disorders. Nevertheless, more research on racial/ethnic differences in service utilization among those not available for general population surveys is warranted in order to address whether black incarceration biases our findings.

Second, some research has indicated that blacks are overrepresented in inpatient mental health treatment programs.⁷⁸ If black respondents were more likely to be excluded from the survey because of inpatient treatment, then a bias could be introduced into our results. This prospect is unlikely, however, because respondents would need to have been in an inpatient facility for 2 years (the entirety of the data collection period) to be excluded from this survey. Every effort was made to interview selected respondents after temporary institutionalization, so it is unlikely that our effect estimates were biased due to differential long-term institutionalization for a mental health condition among blacks compared to whites. Further, some studies in the United States have shown that blacks are not overrepresented in inpatient mental health treatment.⁶⁴ Thus, it is unclear that the potential for such a bias is present.

The study had considerable strengths that extend our knowledge about black/white disparities in service use in several important ways. First, the general population data overcome biases inherent in convenience samples recruited from treatment clinics, including generalizability and low power to detect effects and therefore represent an important advantage of the present study. Second, the size of the NESARC overall allowed defining an unprecedentedly large subset of blacks and whites with co-occurring psychiatric and alcohol/drug disorders ($N = 4250$) that allowed examination of whether blacks receive less treatment for all psychiatric disorders or only for a subset. Sample sizes in previous epidemiologic surveys were limited for studying specific types of service use for specific disorders by racial/ethnic groups, particularly among individuals with psychiatric comorbidity.^{3,32} Third, all individuals who drank or used substances were assessed fully for dependence as well as abuse, avoiding a limitation in other national and international surveys^{79,80} that skipped assessment of dependence among those with

no abuse symptoms, undercounting dependence generally and disproportionately among women and minorities.^{81–83} Thus, the present study provides a statistically powerful investigation of black/white differences in service utilization among individuals in the general population diagnosed with co-occurring psychiatric conditions.

Racial/ethnic disparities in the American health care system have increasingly been a focus of research,⁸⁴ and the present study represents an important contribution to these efforts. In particular, the study determined that patterns of service use among comorbid whites and blacks depend on the type of disorder and service considered. Taken together, the results strongly suggest that steps should be taken to address the specific black/white disparities in service use for mood and anxiety disorders. Further, as previously mentioned, efforts to destigmatize depression^{70,71} have impacted rates of service use for mood/anxiety disorders.⁷² The present study adds to the evidence of the need for similar efforts to increase service use for drug and alcohol use disorders among blacks and whites alike to diminish the overall disparity in service utilization for drug and alcohol problems compared with that for mood/anxiety disorders among individuals with co-occurring psychiatric conditions.

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