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Disordered gambling among racial and ethnic groups in the US: Results from the National Epidemiologic Survey on Alcohol and Related Conditions

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Abstract

Introduction—Prior research suggests that racial minority groups in the US are more vulnerable to develop a gambling disorder than Whites. However, no national survey on gambling disorders exists that has focused on ethnic differences.

Methods—Analyses of this study were based on the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), a large (n=43,093) nationally representative survey of the adult (18+ years) population residing in households during 2001–2002 period. DSM-IV diagnoses of pathological gambling, mood, anxiety, drug use and personality disorders were based on the Alcohol Use Disorder and Associated Disabilities Interview Schedule-DSM-IV Version (AUDADIS-IV).

Results—Prevalence rates of disordered gambling among Blacks (2.2%) and Native/Asian Americans (2.3%) were higher than that of Whites (1.2%). Demographic characteristics and psychiatric comorbidity differed among Black, Hispanic and White disordered gamblers. However,

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all racial and ethnic groups evidenced similarities with respect to symptom patterns, time course and treatment seeking for pathological gambling.

Conclusions—The prevalence of disordered gambling, but not its onset or course of symptoms, varies by racial and ethnic group. These varying prevalence rates may reflect, at least in part, cultural differences in gambling and its acceptability and accessibility. These data may inform the need for targeted prevention strategies for high-risk racial and ethnic groups.

INTRODUCTION

Pathological gambling is one of the psychiatric conditions classified as an impulse control disorder by DSM-IV that is gaining increasing attention from patients, clinicians and policy makers. It is characterized by persistent and recurrent maladaptive gambling behavior resulting in damage to vocational, employment, family and social interests. It is also associated with financial losses and legal problems, along with medical and psychiatric comorbidity.¹ Distinct from pathological gambling, “problem gambling” refers to a condition in which individuals meet three or four DSM-IV criteria, rather than five or more required for the formal diagnosis of pathological gambling.² Previous research has showed that problem gambling is associated with elevated rates of gambling-related fantasy, lying, gambling to escape and preoccupation² and has shown to be more prevalent than pathological gambling,³ affecting up to 5% of the population.⁴ “Disordered gambling” is used to describe the combination of problem and pathological gambling. All individuals meeting 3 or more DSM-IV criteria for the diagnosis of pathological gambling are considered as suffering from disordered gambling.⁵ Disordered gambling is associated with substantial interpersonal, financial and legal difficulties as well as increased rates of substance abuse, mood and anxiety disorders, and suicidality.^{3, 6}

Several studies in the United States^{5–10} and other countries including Canada, New Zealand, Australia and Sweden^{11–14} have reported higher prevalence rates in racial and ethnic minorities. Specifically, Native Americans,^{7–9} Asians,¹¹ Blacks,^{6, 12} and Hispanics¹², showed greater prevalence of disordered gambling when compared to Whites suggesting that these groups may be at increased risk for disordered gambling. However, very few studies have examined in detail gambling behaviors in racial and ethnic minority groups^{10, 15} or compared the behaviors of those groups with those of the majority group.^{7–9} Studies that did compare minority groups to the majority found differences on the type of game preferred, level of involvement, gambling expenditures and gambling related problems among indigenous people from New Zealand (Maoris) and North Dakota (Native Americans) when compared with the majority group in each country.⁷ For example, Zitzow⁸ compared the gambling behavior of Native American adults and adolescents living on or near a reservation with those of non-Native American peers. Findings showed that Native American adults initiate gambling later in life but progressed more quickly to display problem gambling characteristics than their non-Native American peers,⁸ indicating the presence of telescoping, similar to what has been described for female pathological gamblers.^{4, 16–18} However, in the adolescent sample, Native American adolescents had earlier onset of gambling activities and greater level of involvement in gambling than their White peers.⁹ Another study also found that approximately 10% of Black, Native American, and Hispanic youth gambled daily, compared to only 4% of White and 5% of Asian youth.¹⁹ Because early onset of gambling is associated with more severe problems,²⁰ these studies^{9, 19} suggest that minority groups in the US are more vulnerable to develop a gambling disorder than their White counterparts.

A limitation of those studies is that they all were based on small, geographically localized samples that cannot be generalized to the general population. Only three prior national surveys of pathological gambling exist in US, and none of them focused on racial and ethnic minority differences.^{21, 22} The purpose of the present study was to fill this gap in our knowledge about

the relationship between race and ethnicity and disordered gambling using data from a major national survey. The National Institute on Alcohol Abuse and Alcoholism's (NIAAA) National Epidemiological Survey on Alcohol and Related Conditions (NESARC) is the largest psychiatric epidemiology survey ever conducted; it assessed DSM-IV pathological gambling,³ nine independent mood and anxiety disorders, and substance use disorders in a nationally representative sample of 43,093 adults. This study, therefore, provides a unique opportunity to evaluate racial and ethnic differences among disordered and pathological gamblers. Specifically, we sought to: 1) Investigate the prevalence of disordered gambling across different racial and ethnic groups; 2) Compare the socio-demographic characteristics, comorbid psychiatric conditions, medical disorders and functioning among disordered gamblers of different racial and ethnic groups; and 3) Estimate the most common pathological gambling criteria endorsed, and patterns in gambling behavior, recovery rates, and treatment seeking across pathological gamblers of different racial and ethnic groups.

METHODS

NESARC Sample

The 2001–2002 National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) is a survey of a representative sample of the USA sponsored by the NIAAA. The NESARC methods have been described in detail elsewhere.^{23, 24} The target population was individuals aged 18 years and over in the civilian non-institutional population residing in households and group quarters. The survey included those residing in the continental United States, District of Columbia, Alaska and Hawaii. Wave 1 response rate was of 43,093. All participants completed face-to-face personal interviews. Data were weighted to reflect design characteristics of the NESARC survey and to account for oversampling and non-response.

Sociodemographic measures

Sociodemographic measures included age, sex, race-ethnicity, marital status, place of residence and region of the country. Socioeconomic measures included education and family income. In the NESARC, race and ethnicity were determined by self-report. For the purpose of our analyses, we report estimates for Black, Hispanics, non-Hispanic whites, and a combined category of Asian (N=24) and Native Americans (N=15). This latter category contained two racial and ethnic groups to increase statistical power and stability of estimates.

DSM-IV pathological gambling, problem gambling and disordered gambling

The NESARC included the NIAAA Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV version (AUDADIS-IV).²⁵ The AUDADIS-IV was computerized and responses were entered directly into laptop computers. All respondents who had gambled five or more times in at least one year of their life were asked about the symptoms of DSM-IV pathological gambling. That subgroup of individuals (N=11,153) formed the denominator of our assessment of conditional prevalence of pathological gambling and disordered gambling, defined as the prevalence of pathological gambling and disordered gambling among those who had been engaged in gambling. Conditional prevalence provides a measure of vulnerability among those who engaged in the behavior, because it is impossible to develop problem or pathological gambling without having prior been exposed to gambling.

Consistent with DSM-IV, lifetime AUDADIS-IV diagnoses of pathological gambling required the respondent to meet at least five of the 10 DSM-IV criteria. Fifteen symptom items operationalized the 10 pathological gambling criteria. In addition, the DSM-IV criterion for chasing one's losses was expanded to include chasing one's winnings. Internal consistency of the symptom items and criteria for pathological gambling and test-retest reliability of lifetime symptoms were both excellent.^{3, 26} Validity of AUDADIS-IV pathological gambling

diagnosis was also excellent. Pathological gambling was a significant ($p < .0354$ to $p < .0089$) predictor of mental disability.³

In order better understand the full spectrum of the disorder and to increase our statistical power we combined problem gambling (i.e. individuals meeting 3 or 4 DSM-IV criteria for pathological gambling) with pathological gambling and classified this sample as “disordered gambling”⁵ consistent with previous analyses of the NESARC²⁷ and other epidemiological studies²

DSM-IV assessment of other psychiatric disorders

The AUDADIS-IV included an extensive list of symptom questions that operationalized DSM-IV criteria for nicotine dependence, alcohol and drug-specific abuse and dependence, as well as mood, anxiety and personality disorders. The test-retest reliability of AUDADIS-IV alcohol and drug diagnoses ranged from good to excellent ($\kappa = 0.70$ – 0.91) and is documented in clinical and general population samples,^{26, 28–33}. Convergent, discriminant, and construct validity of AUDADIS-IV substance use disorder diagnoses were also good to excellent, ($\kappa = 0.54$ – 0.76).^{29–43} Test-retest reliabilities for AUDADIS-IV mood, anxiety, and PD diagnoses in general population and clinical samples were fair to good ($\kappa = 0.40$ – 0.77).^{28, 30, 44} Convergent validity was good to excellent for all mood and anxiety diagnoses.^{45–51} Personality disorders (PDs) were assessed on a lifetime basis and included DSM-IV avoidant, dependent, obsessive-compulsive, paranoid, schizoid, histrionic, and antisocial personality disorders. Diagnoses required long term patterns of social and occupational impairment, and exclusion of substance-induced cases, as explained in detail elsewhere. Convergent validity of PDs assessed was good to excellent and is reported in detail elsewhere.^{52–54}

Assessment of medical conditions, stressful life events and disability

The NESARC included a Medical Condition Section. Respondents were asked whether they experienced 11 different medical conditions (e.g., hypertension, arthritis) in the 12 months prior the survey. Only diagnoses reported having been made by a physician or other health professional were considered positive. Consistent with previous NESARC studies^{57, 58} we also included measures of stressful life events obtained from the Social Readjustment Rating Scale (SRRS)⁵⁹ in our analyses. Respondents were asked whether they had experienced 12 different types of stressors in the 12 months preceding the interview. We examined a composite variable of the total number of these conditions and events reported, ranging from 0 to 11 for medical conditions and 0 to 12 for stressful live events. The goal of these variables was to provide an overall measure of physical illness burden and cumulative stress, rather than assess a latent construct that could cause the different physical illnesses or stressors.

The NESARC interview used the Short Form 12v2 (SF-12v2) to generate global measures of psychosocial functioning and disability. In this study 12-month physical and mental health was assessed by the 1) General health, 2) Physical functioning, 3) Social functioning, and 4) Mental health scores of the SF12v-2. The Short Form-12v2 is a reliable and valid measure of disability. Reliability coefficients of SF-12 rating scales ranged from 0.73 to 0.87 in the general population and content, concurrent and predictive, and construct validity was shown to be good across a wide variety of populations and purposes.^{55, 56}

Course and treatment measures

Questions regarding age of onset and age of remission were queried to respondents meeting DSM-IV criteria for pathological gambling. Age of onset was ascertained by asking “About how old were you the first time these experiences (PG criteria) began to happen at the same time?” Age of remission was obtained by asking “About how old were you when you finally stopped gambling or stopped having these experiences (PG criteria)? By finally stopped I mean

they never started again” Respondents were classified as receiving treatment for pathological gambling if they visited a doctor, counselor, therapist or psychologist to get help with their gambling in their lifetime. Respondents were classified as receiving treatment for mood disorders, anxiety disorders, alcohol use disorders or drug use disorders if they: (1) visited a doctor, counselor, therapist or psychologist to get help for the specific mental disorder; (2) were a patient in a hospital for at least one night; (3) visited an emergency room; or (4) were prescribed medications for the specific mental disorder.

Statistical Analysis

Lifetime prevalence rates of disordered gambling, and pathological gambling explicitly, were derived for the 4 racial and ethnic groups outlined earlier. Conditional prevalence rates were also derived, using only the 11,153 respondents who reported gambling five or more times in a year. Weighted percentages and means were computed to derive sociodemographic, psychiatric, and medical characteristics of disordered gambling respondents stratified by racial and ethnic category, with Whites as the reference group. For the pathological gamblers only, gambling venues, histories, course and treatment participation rates were compared across racial and ethnic groups. We consider the percentages or means of any two groups to be significantly different if their 95% confidence intervals (95% CI) do not overlap.⁶⁰ All analyses, including estimation of proportions and 95% CIs were conducted using SUDAAN,⁶¹ to adjust for design characteristics of the survey.

RESULTS

Prevalence and conditional prevalence of disordered and pathological gambling

The lifetime prevalence rate of disordered gambling in the general population, using all 43,093 respondents (regardless of exposure to any gambling) varied by racial and ethnic group. The lifetime prevalence of disordered gambling among Native Americans/Asians was 2.3% (95% Confidence Interval: 1.5–3.3), and 2.2% (1.8–2.6) among Blacks. Both these groups differed significantly from Whites ($p=0.01$ and $p<0.0001$ respectively), who had an overall prevalence of disordered gambling of 1.2% (1.0–1.3). The lifetime prevalence among Hispanics was 1.0% (0.8–1.4), which did not differ significantly from the prevalence among Whites. However, among racial and ethnic minority groups, Hispanics showed significantly less prevalence of disordered gambling than other groups: 1.0% (0.8–1.4) vs. 2.2% (1.8–2.6) among Blacks ($p=0.0001$), and 2.3% (1.5–3.3) among Native Americans/Asians ($p=0.007$). In addition, the conditional prevalence rate of disordered gambling (i.e. among gamblers only) also varied by racial and ethnic group. The lifetime conditional prevalence of disordered gambling, (i.e., the prevalence of disordered gambling among those who had gambled five or more times in one year of their life) among Blacks (9.0%, CI: 6.4–12.4) and Native Americans/Asians (8.2%, CI: 6.8–9.7) were both significantly higher than among Whites (4.0%, CI: 3.5–4.6) ($p<0.0001$ and $p=0.001$ respectively). The lifetime conditional prevalence of disordered gambling among Hispanics (5.5% CI: 4.1–7.4) did not differ significantly from that of Whites.

The lifetime prevalence of pathological gambling among Blacks was 0.9% (0.6–1.1), significantly higher than the lifetime prevalence among Whites, which was 0.4% (0.3–0.5) ($p=0.0006$). The lifetime prevalence of pathological gambling among Native Americans/Asians was 0.56% (0.3–1.2); this rate did not differ from any of the other racial and ethnic groups. The rate among Hispanics 0.3% (0.1–0.5) did not differ significantly from the lifetime prevalence among Whites, but it was significantly different than the rate among Blacks ($p=0.0002$).

The conditional prevalence rate of pathological gambling also varied by racial and ethnic group. The lifetime conditional prevalence of pathological gambling among Blacks (3.2% CI: 2.4–

4.2) was significantly higher than among Whites (1.3% CI: 1.0–1.7) ($p=0.0001$). The lifetime conditional prevalence of disordered gambling among Hispanics (1.4% CI: 0.8–2.5) and Native Americans/Asians (2.2% CI: 1.1–4.4) did not differ significantly from that of Whites (1.3% CI: 1.0–1.7).

Differences in the distribution of demographic variables among disordered gamblers by racial and ethnic group

Table 1 presents the distribution of demographic characteristics in each of the racial and ethnic groups. Among disordered gamblers, there were significant differences in the distribution of demographic variables between Blacks and Hispanics (as demonstrated by the non-overlapping 95% CIs across these groups), but not Native Americans/Asians, when compared to Whites.

Among disordered gamblers, significantly more Blacks than Whites were women (45.9% vs. 27.9% respectively; p -value 0.0032). Marital status and education level differed between Hispanics and Whites but not other racial and ethnic groups. Significantly fewer Hispanics than Whites were widowed or separated/divorced (7.3% vs. 23.0%; p -value 0.008). Additionally, more Hispanics than Whites had less than high school (43.0% vs. 15.0%; p value 0.01). Annual income differed between Black, Hispanics, and Whites. Black disordered gamblers were more likely to fall into the lowest income bracket than Whites (64.9% vs. 45.0%; p -value 0.001), whereas Hispanics were less likely than Whites to have a personal income of over \$70 000 (0.4% vs. 8.3%; p -value 0.001). Black disordered gamblers were more likely than Whites to live in the South (48.3% vs. 23.7%; p -value 0.0007) and less likely to live in the West (9.2% vs. 28.2%; 0.0003). There were no racial and ethnic differences in age or urbanicity among disordered gamblers. Supplementary analyses examining differences in demographic characteristics between Asian and Native American disordered gamblers showed no significant differences (data available from Dr. Blanco).

Substance use, comorbid psychopathology and health conditions among respondents with disordered gambling

As shown in Table 2, lifetime psychiatric comorbidity also varied by racial and ethnic group among the disordered gamblers. Although over 50% of the individuals in each group presented a lifetime alcohol use disorder, Black disordered gamblers were significantly less likely than their White counterparts to have a lifetime alcohol use disorder (51.3% vs. 73.5%; p -value 0.001). Furthermore, Blacks (35.6%) and Hispanics (22.0%) were less likely than Whites (55.4%; p -values 0.003 and 0.0001 respectively) to have lifetime nicotine dependence. There were no significant differences in lifetime mood, anxiety and personality disorders or drug use disorders between Whites and Blacks or Hispanics disordered gamblers.

Overall health status, as measured by the general health (GH) scale of the SF-12 differed between Black and White disordered gamblers. Black disordered gamblers had significantly lower scores on general health compared to Whites (43.5 vs. 48.2; p -value 0.004). There were no significant differences between Whites and other racial and ethnic groups in scores of the mental health (MH), physical functioning (PF) and social functioning (SF) scales of the SF-12, lifetime number of medical conditions and number of stressful life events in the last 12 months. Our supplementary analyses comparing substance use, psychiatric comorbidity and health conditions between Asian and Native American disordered gamblers only showed lower scores on the Mental Health scale of the SF-12 in the latter group (p -value 0.002). (Data available from Dr. Blanco).

As shown in Table 3, the endorsement rates for specific DSM-IV pathological gambling criteria were similar among disordered gamblers across racial and ethnic groups.

Course, treatment and types/venues of gambling among racial and ethnic groups with pathological gambling

The NESARC also included information on course of the disorder and treatment rates in individuals meeting DSM-IV criteria for pathological gambling (N=195). Among pathological gamblers, no differences were found across racial and ethnic groups regarding course, number of diagnostic criteria endorsed, or rates of treatment-seeking. The mean number of lifetime pathological gambling criteria met was 6.4. The mean age of onset was 31.3 years old while the mean age of remission was 37.4 years old. Overall, 36.7% of lifetime pathological gamblers did not meet any DSM-IV pathological gambling criteria within the 12 months prior to the interview. Rates of remission did not differ across the racial and ethnic groups.

There were no differences between racial and ethnic groups with respect to the types of gambling in which individuals with DSM-IV pathological gambling engaged or the types of gambling venues they visited. Overall, pathological gamblers in any racial and ethnic group are more engaged in casino gambling than in non-casino gambling (71.0% vs. 53.0%) (data available from Dr. Blanco).

Rates of treatment seeking were also obtained. Overall, only 9.3% of pathological gamblers in any racial and ethnic group sought treatment for gambling disorders, whereas the 17.4% of pathological gamblers sought treatment for alcohol use disorder, 10.7% for drug use disorders, 34.4% for mood disorders and 32.1% for anxiety disorders. There were no differences across racial and ethnic groups in treatment-seeking rates for any of the psychiatric disorders mentioned above (data not shown, available from Dr. Blanco).

DISCUSSION

This is the first national study to examine the prevalence and characteristics of disordered gambling across racial and ethnic groups. We found that: 1) the prevalence of disordered gambling varies by racial and ethnic group; 2) differences exist across racial and ethnic groups with respect to sociodemographic characteristics and psychiatric and medical comorbidities in disordered gamblers, but these differences parallel those of the racial and ethnic groups in the general population; 3) there are no racial and ethnic differences in onset/course of the disorder, number or pattern of criteria or treatment rates of pathological gamblers of different racial and ethnic groups.

The study found that Blacks and Native American/Asians had significantly higher prevalence of disordered gambling than Whites. Our findings are consistent with those of geographically localized clinical and community samples.^{8, 15, 62} Several reasons may contribute to the racial and ethnic differences in prevalence. Although we found a large number of differences in demographic variables between Black, Hispanic and White disordered gamblers in the present study, those differences are generally consistent with previously documented racial and ethnic differences in characteristics of individuals in the US general population,⁶³ including income, level of education and geographic distribution. Differences in nicotine dependence, alcohol use, drug use, mood, anxiety and personality disorders and general medical health condition in racial and ethnic groups of disordered gamblers are generally consistent with the race and ethnic-related differences in physical and mental health of individuals in the United States found in previous studies.^{64–70} Several of the sociodemographic characteristics (e.g., socioeconomic status) and comorbidity patterns (e.g., alcohol use disorders) of these groups are well-known risk factors for pathological gambling.^{3, 6, 21, 71} For example, Native Americans have been consistently found to have higher prevalence of psychiatric and substance use disorders than any other racial and ethnic group,^{68, 72–74} factors strongly associated with pathological gambling.^{3, 75} Our findings suggest that pathological and disordered gambling may share the same risk factors and that the increased risk for disordered gambling in certain

racial and ethnic groups is partially due to the highest prevalence of these risk factors in those groups.

Cultural factors also appear to influence the prevalence of disordered gambling. For example, gambling is part of the tradition, history, and lifestyle of some Asian cultures.^{71, 76, 77} As a result children often have increased exposure to and parental approval for gambling,⁷⁷ which has been shown to increase the risk for disordered gambling.^{78, 79} In other cultures, acceptance of magical thinking and existence of fate may allow such beliefs to be extended to gambling.⁹ Disordered gamblers have been previously shown to have cognitive distortions related to gambling.⁸⁰

Difficulties related to post-immigration adjustment, which affect many members of most racial and ethnic minorities, such as unemployment, language barriers, and social isolation have been associated with disordered gambling in Asians.^{81, 82} In the case of Native Americans, the establishment of casino gambling on several reservations through 1988 Federal Indian Gaming Regulatory Act Disparity^{83, 84} increased exposure to gambling activities in this population, leading to increased risk for disordered gambling¹⁰ among vulnerable individuals. An alternative explanation for the higher risk among these racial and ethnic minority groups is that, consistent with the prospect theory,^{85, 86} minority individuals, being often from disadvantaged backgrounds may place higher value on winning than Whites, while they see losses as a less adverse consequence. This differential value of risk would lead to increased proneness to gambling, as well as problem and pathological gambling.

An important exception to this pattern of higher prevalence of disordered gambling among racial and ethnic minorities is found among Hispanics. Despite social adversity and high prevalence of risk factors for disordered gambling among Hispanics living in the US (e.g. poverty, low educational attainment, discrimination), findings of this study showed that neither disordered nor pathological gambling were more prevalent in this population than among Whites. Moreover, disordered gambling was significantly less prevalent among Hispanics than among other minority groups. This finding suggests the existence of protective factors among Hispanics that buffer the effect of their risk factors, and is consistent with the “Hispanic paradox”,⁸⁷ i.e., the presence of better health outcomes among Hispanics compared with Whites, despite lower socioeconomic conditions and poorer access to care.^{54, 88, 89} Although the Hispanic paradox has been widely documented, its underlying mechanisms are unknown. Identification of those mechanisms could help devise effective, theory-based prevention programs for Hispanics and possibly other racial and ethnic groups, to the extent that those factors are present or can be developed in those groups.

The findings of this study should be interpreted in light of several limitations. First, the assessment of problem and pathological gambling was based on self-report, and not subject to verification by collateral informants or other objective indicators. However, a growing body of research indicates that self-reports of gambling behavior may be more accurate than reports by third parties, provided there is no contingency attached to the gambling behavior reported⁹⁰. Second, the NESARC samples the civilian non-institutional population residing in households and group quarters age 18 years and older, and does not provide information on other groups that may be at increased risk for disordered gambling, such as youth under the age of 18 and individuals in jail.

Third, to ensure stability of estimates due to the small sample sizes of Native Americans and Asian respondents, we combined these two groups, which could conceal differences between them. However, we conducted supplementary analyses comparing the outcomes of these two groups and found no significant differences between the two groups other than greater lifetime prevalence drug use disorder, nicotine dependence and personality disorder among Native

American than Asian disordered gamblers, suggesting the similarity of those two groups with respect to other variables examined in this study. Fourth, most but not all of the results presented in this study do not refer to DSM-IV Pathological gambling but to Disordered gambling which includes individuals meeting more than 3 criteria rather than 5 or more required for the diagnosis of Pathological gambling by the DSM-IV. Although the validity of this broader category needs additional confirmation, research supporting this category, includes the finding of a continuous liability model for genetic risk for problem and pathological gambling,⁸⁹ as well as previous analysis of the NESARC data suggesting a that gambling disorders should be best thought as lying on a continuum^{2, 92–94} (Fifth, analyses of onset, types of gambling and venues, and treatment seeking behavior were limited to only those individuals who met DSM-IV criteria for pathological gambling. Finally, the NESARC, like most large-scale surveys, assumes that a nosological construct, in this case disordered gambling, is valid across cultures. Although the diagnosis seemed to applied equally well for Whites and Blacks in a recent study,⁹⁵ an important direction for future research will be the examination of this assumption and the degree to which language bias, and other cultural factors may lead to differential response patterns between gamblers from different racial and ethnic groups. Prior research suggests that the presentation of the psychiatric disorders may differ by racial and ethnic group,^{96, 97} which may lead to biased estimates when particular screeners⁹⁸ or universal nosological frameworks⁹⁹ are used.

Despite these limitations, this study constitutes a critical step improving the understanding of the prevalence and characteristics of disordered gambling across the major ethnic and racial groups in the US. The study found important differences in gambling behavior among racial and ethnic groups in a large nationally representative sample of the general population. As gambling opportunities continue to expand, the findings from this study should help inform future preventive and treatment interventions among minority racial and ethnic groups.

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Table 1
Distribution of demographic variables of disordered gambling by ethno-racial group

Socio-demographic characteristic	Disordered gambling (N=567)					
	White N=279		Black N=167		Nat. American and Asian N=39	
	%	95% C.I.	%	95% C.I.	%	95% C.I.
Sex						
Men	72.1	(65.5–77.9)	54.1	(45.0–62.9)	76.7	(56.4–89.3)
Women	27.9	(22.1–34.6)	45.9*	(37.1–55.0)	23.3	(10.7–43.6)
Age (yr)						
18–29	28.2	(21.4–36.2)	26.3	(18.2–36.4)	19.4	(8.3–39.1)
30–44	32.1	(25.4–39.6)	34.1	(24.7–44.9)	36.6	(21.0–55.8)
45–64	30.0	(24.0–36.8)	28.3	(21.2–36.6)	44.0	(29.2–59.9)
65+	9.8	(6.1–15.3)	11.3	(6.9–18.1)	0.0	(1.4–14.7)
Marital Status						
Married/cohabiting	50.0	(42.1–57.8)	38.4	(29.0–48.8)	55.0	(34.3–74.1)
Widowed/separated/divorced	23.0	(17.6–29.4)	23.8	(16.9–32.3)	22.9	(9.5–45.9)
Never married	27.1	(20.5–34.9)	37.8	(28.4–48.3)	22.1	(10.0–41.8)
Education						
Less than high school	15.0	(10.4–21.2)	24.9	(18.6–32.3)	23.1	(10.3–44.2)
High school	32.9	(26.4–40.1)	35.6	(27.3–44.8)	24.9	(13.3–41.6)
Some college or higher	52.1	(44.8–59.3)	39.6	(30.5–49.5)	52.0	(33.1–70.3)
Personal Income						
\$0–19 999	45.0	(37.4–52.8)	64.9*	(56.2–72.7)	40.6	(22.0–62.4)
\$20 000–34 999	24.5	(19.0–30.9)	21.5	(14.8–30.1)	21.3	(9.6–40.8)
\$35 000–69 999	22.3	(16.2–29.8)	10.8	(6.6–17.2)	21.2	(7.3–47.9)
\$70 000+	8.3	(4.8–13.9)	2.9	(1.0–8.1)	16.9	(6.8–36.2)
Urbanicity						
Urban	81.9	(74.5–87.5)	80.4	(70.7–87.5)	84.7	(60.4–95.2)
Rural	18.1	(12.5–25.5)	19.6	(12.5–29.3)	15.4	(4.8–39.6)
Region						

Socio-demographic characteristic	Disordered gambling (N=567)							
	White N=279		Black N=167		Nat. American and Asian N=39		Hispanic N=82	
	%	95% C.I.	%	95% C.I.	%	95% C.I.	%	95% C.I.
Northeastern	20.6	(13.4–30.4)	19.0	(10.0–33.2)	15.0	(5.0–37.2)	27.8	(11.1–54.2)
Midwest	27.5	(19.4–37.5)	23.4	(13.7–37.2)	17.2	(7.4–34.9)	10.6	(4.1–24.6)
South	23.7	(16.8–32.3)	48.4*	(35.8–61.3)	9.4	(3.4–23.4)	21.0	(9.0–41.8)
West	28.2	(19.7–38.7)	9.2*	(4.1–19.2)	58.5	(37.0–77.2)	40.7	(23.3–60.7)

* Indicates results significantly different from Whites

Table 2
Substance use, psychopathology, medical conditions and other correlates of disordered gambling by ethno-racial group

Clinical characteristic	Disordered gambling (N=567)					
	White N=279		Black N=167		Nat. American and Asian N=39	
	%	95% C.I.	%	95% C.I.	%	95% C.I.
Lifetime drug use disorder	39.9	(32.9–47.3)	31.1	(23.3–40.0)	30.5	(15.6–51.1)
Lifetime alcohol use disorder	73.5	(66.4–79.6)	51.3*	(40.7–61.8)	57.6	(39.2–74.1)
Lifetime mood disorder	35.8	(29.3–43.0)	43.3	(35.3–51.7)	34.7	(20.3–52.5)
Lifetime anxiety disorder	40.0	(32.3–48.3)	41.3	(32.9–50.2)	36.1	(18.6–58.2)
Lifetime nicotine dependence	55.4	(48.0–62.6)	35.6*	(26.9–45.4)	48.4	(28.6–68.7)
Lifetime personality disorder	47.0	(39.5–54.6)	52.6	(43.2–61.8)	50.3	(32.0–68.4)
Number of medical conditions in the last 12 months (mean)	0.7	(0.7–0.8)	0.7	(0.7–0.8)	0.6	(0.5–0.7)
Current general health condition	48.2	(46.5–49.9)	43.5*	(41.0–46.0)	49.0	(44.4–53.5)
Current physical functioning condition	49.5	(48.0–51.0)	47.3	(45.2–49.4)	50.0	(46.6–53.5)
Current mental health condition	49.3	(48.0–50.7)	45.9	(43.2–48.5)	48.9	(45.6–52.3)
Current social functioning condition	49.4	(47.8–51.0)	46.5	(44.0–49.1)	50.0	(46.6–53.4)
Number of stressful life events in the last 12 months (mean)	1.6	(1.5–1.6)	1.9	(1.8–2.0)	1.5	(1.4–1.7)

* Indicates results significantly different from Whites

Table 3
Prevalence of pathological gambling criteria of disordered gambling by ethno-racial group

DSM-IV pathological gambling criteria	Disordered gambling (N=567)					
	White N=279		Black N=167		Nat. American and Asian N=39	
	%	(95% C.I.)	%	(95% C.I.)	%	(95% C.I.)
Hispanic N=82						
Preoccupation with gambling	92.1	(88.0–94.9)	90.4	(84.7–94.1)	80.0	(56.9–92.4)
Chasing one's losses or winnings	74.1	(67.0–80.1)	79.0	(70.6–85.5)	87.8	(66.1–96.4)
Need for increased amount of money to gamble	67.3	(59.2–74.4)	67.7	(58.1–76.0)	66.6	(46.2–82.3)
Gambling to escape problems or relieve depressed mood	49.2	(41.4–57.0)	46.6	(36.8–56.6)	54.4	(37.9–70.0)
Lies to conceal involvement with gambling	48.2	(39.8–56.6)	45.2	(36.3–54.3)	52.4	(36.1–68.2)
Unsuccessful efforts to control gambling	31.1	(24.3–38.8)	43.2	(33.8–53.1)	32.4	(19.6–48.6)
Relies on others to provide money to remedy desperate financial situation due to gambling	22.0	(16.5–28.8)	25.7	(18.3–34.7)	13.3	(4.2–34.7)
Restless or irritable when attempting to cut down/stop gambling	19.0	(13.9–25.3)	25.7	(18.6–34.3)	17.5	(7.7–35.1)
Jeopardized relationship/career opportunity because of gambling	14.1	(9.9–19.6)	25.2	(18.5–33.3)	3.6	(0.4–24.0)
Committed illegal acts to finance gambling	7.5	(4.2–12.9)	9.0	(4.6–16.9)	0.0	(1.6–10.9)