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Nicotine dependence and psychiatric and substance use disorder comorbidities among American Indians/Alaska Natives: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions

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ABSTRACT

Background: American Indians and Alaska Natives (AI/ANs) have high rates of tobacco use compared to the general population. AI/ANs also have elevated rates of psychiatric and substance use disorders associated with nicotine dependence. However, very few studies have examined the comorbidity between nicotine dependence and psychiatric and substance use disorders within this population.
Methods: This study analyzes the comorbidity of lifetime nicotine dependence with both current and lifetime psychiatric disorders and substance use disorders in a nationally representative sample of 701 AI/AN women and men.
Results: Using 95% confidence interval testing, lifetime nicotine dependence (29.5%) was associated with all main diagnostic categories (any mood disorder, any anxiety disorder, any personality disorder, any alcohol use disorder, and any drug use disorder) both at the lifetime level and current (12-month) level. Of the lifetime disorders, the strongest associations were with psychosis and drug dependence. For (current) 12-month disorders, the strongest associations were with alcohol dependence and drug dependence. Differences were noted between genders regarding personality disorders.
Conclusions: Culturally appropriate tobacco screening, prevention, and treatment curricula for adult AI/ANs with dual diagnoses are recommended. Understanding historically based factors that may contribute to psychiatric illness and substance use disorders may assist in more effective nicotine treatments for AI/ANs.

1. Introduction

In the United States, American Indians/Alaska Natives (AI/ANs) have the highest rates of commercial and recreational tobacco (smokeless and smoking forms) use in comparison to the general U.S. population aged 18 and over (U.S. Surgeon General, 2014; Goodwin et al., 2009). To date, research has been relatively limited regarding smoking characteristics among the 562 federally recognized tribes in the U.S. However, studies conducted thus far have revealed higher smoking rates among Northern Plains tribes in comparison to Southwest tribes (Nez Henderson et al., 2009, 2005). Also, smoking rates are higher among Alaska Natives compared to the general U.S. population [41% vs. 19%, respectively; Centers for Disease Control (2012)]. Smoking cessation expectancies also may differ among AI/ANs compared to other racial/ethnic groups in the U.S. For example, in a study conducted by Hendricks et al. (2014), American Indians (and African Americans) were less likely than Whites to expect withdrawal effects and more likely to anticipate that quitting would be unproblematic. Furthermore, studies analyzing the benefits of currently available evidence-based behavior and pharmacological treatments for AI/ANs with nicotine dependence are very limited (Lawrence et al., 2003; Cox et al., 2011).

One of the postulated reasons for substantive addiction issues among AI/ANs are the effects associated with various historical-based traumas experienced by AI/ANs throughout United States

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history (i.e., forced removal from Native lands, coerced placement into boarding schools, and laws prohibiting Indigenous spiritual practices; Walters et al., 2002; Duran and Duran, 1995; Whitesell et al., 2012). According to this theory, the effects of historically based traumas have been inter-generational, meaning these influences have had ongoing deleterious effects on the health and well-being of this population, including significant substance use and smoking, high suicide rates, and lower levels of family cohesion (Wiechelt et al., 2012; Brave Heart et al., 2011; Walters et al., 2002). To date, studies analyzing potential genetic explanations as it relates to elevated tobacco consumption among AI/ANs are limited (True et al., 1999). Since the reasons for higher smoking rates among AI/ANs remains elusive, there is a critical need for investigations that analyze potential association with other disease states, including psychiatric and substance use disorders, within this population.

Epidemiological research has revealed high rates of comorbidity between tobacco use and psychiatric disorders in the general U.S. population. For example, 44% of cigarettes used in the U.S. are by those with a past or current psychiatric disorder (Lasser et al., 2000). Individuals with a current or past mental health diagnosis are nearly twice as likely to smoke than those without one (Lasser et al., 2000). Furthermore, psychiatric disorders including alcohol and drug dependence, depression, anxiety, and personality disorders are associated with higher rates of tobacco use and increased difficulty with smoking cessation (Grant et al., 2004a, 2004b; Williams and Ziedonis, 2004).

To our knowledge, the only study analyzing both psychiatric and substance use comorbidities among AI/ANs with nicotine dependence is a study conducted by our group among a sample of AI/AN male veterans (Dickerson et al., 2009). In that study, the association of both lifetime and 12-month nicotine dependence with both lifetime and 12-month psychiatric and substance abuse disorders, respectively, was analyzed. Significant comorbidities were found among those with lifetime disorders (significant for any alcohol use disorder, any drug use disorder, any anxiety disorder, any mood disorder, post-traumatic stress disorder, anti-social personality disorder, and gambling disorder). Regarding 12-month prevalence rates, nicotine dependence was only associated with any affective disorder and gambling disorder. Sawchuk et al. (2012) examined the relationship between lifetime smokeless tobacco use and lifetime PTSD, panic disorder and depression in a cohort of Northern Plains AI's; only PTSD was associated with lifetime smokeless tobacco use. Additional research analyzing nicotine dependence and comorbidities has primarily focused on substance use disorders (Compton et al., 2007; Falk et al., 2006; Hasin et al., 2007). For example, data from a national survey indicated AI/ANs had the highest rate of nicotine dependence and concurrent tobacco and alcohol use relative to all ethnic groups in the U.S. (Falk et al., 2006).

This study seeks to analyze lifetime nicotine dependence (recreational tobacco use; all forms of tobacco) with both psychiatric and substance use disorder comorbidities utilizing similar methodologies from our groups' prior study conducted among AI/AN male veterans (Dickerson et al., 2009) but with a more representative AI/AN sample which also includes females. In addition to analyzing these comorbidities, we also seek to examine the differences in comorbidities between AI/AN males and females.

2. Methods

2.1. NESARC survey

The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) was a national survey administered by the National Institute on Alcohol Abuse and Alcoholism from 2001 to 2002; it is referred to as "Wave 1 NESARC" (herein it is referred to as "NESARC"; National Institutes of Health, 2006). Utilizing data from the 2000/2001 Census, NESARC captured the civilian, noninstitutionalized public residing in all 50 of the United States and the District of Columbia. Military servicemen and women living off base during data collection and those residing in community housing settings including shelters, dormitories, and boarding houses were also included in NESARC. After housing-unit residents were identified as NESARC participants, one individual listed as living at the residence was selected at random to participate in the survey via an in-person interview at their respective residence. In contrast to survey methodologies, the face-to-face delivery of the NESARC allowed extensively trained field interviewers to use a highly reliable instrument and make formal clinical diagnoses (see "Measures"; Grant et al., 2003). In total, 43,093 individuals aged 18 years and older were interviewed, for an overall response rate of 81% (National Institutes of Health, 2006).

2.2. Study sample: American Indian/Alaska Native

We used the race-ethnicity variable imputed by the U.S. Census Bureau for this study. Race-ethnicity was determined in the NESARC face-to-face interviews through the use of the following questions: (1) "Are you of Hispanic or Latino origin?" and (2) "Please select one or more categories to describe your race" from the following racial categories: AI/AN, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, and White. Since many participants chose multiple racial categories, an algorithm was used by the Census Bureau to identify a single race category in the following predetermined order of priority: (1) Hispanic/Latino, (2) Black, (3) AI/AN, (4) Native Hawaiian/Pacific Islander, (5) Asian, and (6) White.

Among the 43,093 NESARC participants, 1,304 individuals identified themselves as AI/AN or multi-racial. After removing 457 Hispanic/Latino and 146 Black participants from the initial 1,304 individuals based on the multi-racial imputation as described above, 701 individuals were finally identified as AI/AN.

Measures: The NESARC utilized the Alcohol Use Disorder and Associated Disabilities Interview Schedule–DSM-IV Version (AUDADIS-IV) to assess for alcohol use disorders (National Institutes of Health, 2006). Lifetime nicotine dependence was assessed in a separate section in the AUDADIS-IV. The AUDADIS-IV has shown good reliability for lifetime nicotine dependence (kappa = 0.60; Grant et al., 2003). Nicotine dependence was evaluated by the consumption of any tobacco product, including cigarettes, cigars, chewing tobacco, pipes, and snuff (National Institutes of Health, 2006). A diagnosis of nicotine dependence required at least three of the seven DSM-IV criteria for the disorder in the past 12 months, including tolerance, withdrawal, using tobacco more than intended, foregoing activities for tobacco use, excessive amounts of time using tobacco, a desire to cut down or stop tobacco use, and tobacco use despite physical or psychological consequences caused by its use (Grant et al., 2004a; American Psychiatric Association, 2000). Substance use disorders were also assessed using respective DSM-IV criteria.

Lifetime and current (12-month) diagnoses of psychiatric disorders, except psychosis, were also established using the AUDADIS-IV. Psychosis was indicated when participants had ever been told by a doctor or other health professional that they had schizophrenia or a psychotic illness or episode.

Lifetime and current (12-month) psychiatric disorders evaluated in this study were as follows: (1) substance use disorders (alcohol abuse/dependence and drug abuse/dependence); (2) mood disorders (major depressive disorder, dysthymic disorder, bipolar I disorder, and bipolar II disorder); (3) anxiety disorders (panic disorder with agoraphobia, panic disorder without agoraphobia, agoraphobia without history of panic disorder, social