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SELF-REPORTED VERSUS ADMINISTRATIVE IDENTIFICATION OF AMERICAN INDIAN AND ALASKA NATIVE ARRESTEES: EFFECTS ON RELATIVE ESTIMATES OF ILLICIT DRUG USE AND ALCOHOL ABUSE

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Abstract: Arrestee Drug Abuse Monitoring program data were used to consider the effects of two methods of racial classification upon estimates of illicit drug use and alcohol abuse among American Indian/Alaska Native (AI/AN) arrestees. Overall, compared to arrestees who self-identified as Black, White, Asian/Pacific Islander, or Hispanic, arrestees self-identifying as AI/AN were most likely to be identified administratively as something other than AI/AN. Results of 'difference of difference' analyses indicate that differences in estimates of AI/AN versus non-AI/AN arrestees' illicit drug use and alcohol abuse were much more extreme when identification was based on administrative records than when based upon arrestees' self-reports.

The complexity of American Indian and Alaska Native (AI/AN) identity contributes to the difficulties of studying behaviors such as illicit drug use and alcohol abuse within those populations. A panoply of factors underlie the identification of oneself or others as AI/AN, including biological, legal, cultural, geographic, and historic considerations (Gone, 2006; Mihesuah, 1998; Peroff & Wildcat, 2002). The lack of a commonly utilized demarcation of the AI/AN population makes for uncertain specification of study populations, which can limit the external validity of research results. Clearly, empirical conclusions regarding AI/AN substance use are, in part, a function of the parameters used to establish the study population. In this article, the patterns of substance use among two alternatively delineated groups of AI/AN arrestees were considered in order to understand how variation in identification methods affects estimates of AI/ANs' illicit drug use and alcohol abuse. Specifically, the illicit drug use and alcohol abuse of participants in the Arrestee Drug Abuse Monitoring (ADAM) program who were identified administratively as AI/AN were compared with the same behaviors of participants who self-identified as AI/AN.

PREVIOUS RESEARCH INVOLVING CATEGORIZATION OF AI/ANS

Numerous methods have been used to identify individuals as AI/AN for inclusion in social science and public health research. These methods typically fall into one of three categories. In some studies, AI/ANs are identified on the basis of *tribal enrollments*. Alternatively, respondents' *self-identification* as AI/AN is common in most surveys. Finally, *administrative identification* of individuals as AI/AN by health, social service, or criminal justice agency personnel also is used commonly.

Tribal Enrollment

A few different techniques are used to select research participants who are acknowledged as AI/AN through tribal enrollment. Some researchers have used membership lists as sampling frames, including tribal enrollment lists (May & Gossage, 2001) and AN regional corporation shareholder rosters (Wood & Magen, 2009). Similarly, samples of AI/ANs have been chosen from the records of institutions devoted to a tribally enrolled AI/AN clientele, including rosters of students attending reservation schools (Cockerham, 1975) and patients treated at Indian Health Service (IHS) clinics (Kunitz, Levy, McCloskey, & Gabriel, 1998). In urban areas, this method has also involved the use of samples of clients of AI/AN health and human service agencies (Buchwald et al., 2000; Chester, Mahalish, & Davis, 1999). In a similar fashion, individual study participants have been identified using eligibility rosters of a variety of federally funded programs that require sworn statements of tribal membership. A notable example of this approach is the survey of AI/AN youth in Seattle in which the sample was drawn from public school students whose parents had completed a *Title VII Student Eligibility Certification Form* (Walker et al., 1996) that attested to the youths' membership in a federally recognized tribe.

Although these sources are useful because of their governmental imprimatur and the discrete delineation they provide, there are problems with using tribal enrollment to identify AI/ANs for research. Because enrollment requirements vary from tribe to tribe, the characteristics that qualify individuals for tribal citizenship are anything but standardized. Combined permutations of requirements regarding AI/AN blood quantum, tribal blood quantum, residency, parental enrollment, adoption, and multiple membership, as well as rules for resignation, relinquishment, and disenrollment (Berger, 2013; Goldberg, 2002; Gover, 2010) make for tremendous differences in regulations used to decide tribal citizenship. Variations in eligibility for holding shares of AN regional corporations—some corporations' shareholders may include only those born before December 18, 1971, while others have extended ownership to children of those original shareholders (Case & Voluck, 2012)—create a similar lack of uniformity. Additionally, citizenship provisions written in response to federal regulations regarding tribal recognition that require members' participation in cultural and political activities (Goldberg, 2002) exclude those who would otherwise be enrolled if not for geographic separation. For instance, in an analysis of responses to the *California Health Interview Survey*, Satter, Seals, Chia, Gatchell, and Burhansstipanov (2005) estimated that only 16% of AI/ANs reporting heritage in a non-Californian tribe were enrolled in that tribe. Tribal enrollment requirements are also subject to change. Faced with dwindling numbers, a few tribes have reduced the required blood quantum, thereby easing enrollment requirements (Foster, 1997). Others, however, struggling with gaming windfalls, have made the rules much more stringent (Neath, 1995), increasing the number of citizens being disenrolled (Dao, 2011; Weeber, 2013). The use of tribal enrollment records may, therefore, not be as valid as could be expected.

Self-Identification

Subsamples of AI/ANs derived from general population surveys usually rely on self-identification of race (e.g., Akins, Mosher, Rotolo, & Griffin, 2003). For example, in the Behavioral Risk Factor Surveillance Survey, AI/ANs are identified by a response to the question "What is your race?" (Denny, Holtzman, & Cobb, 2003). Although self-identification is the U.S. government standard and is generally the preferred method for gathering data on race/ethnicity (Mays, Ponce, Washington, & Cochran, 2003), the reliability of self-reported ancestry for AI/ANs has been questioned. The results of a pair of re-interview studies indicate a lack of consistency in respondents' self-reports of AI/AN ancestry. According to a U.S. Census Bureau (1979) report cited by Ericksen (1997), roughly 10% of residents of Gallup, New Mexico, who identified themselves as AI on the 1970 U.S. Census failed to do so when re-interviewed in 1974. There was even less test/retest agreement over the two waves of the National Health and Nutrition Examination Survey (NHNES). In that survey, 85.6% of respondents who initially self-identified as AI reported another ancestry in a reinterview a decade later (Hahn, Truman, & Barker, 1996). Subsequently, while self-identification may be considered the standard in much research on AI/ANs, it carries validity problems of its own.

Administrative Classification

Alternatively, some research on AI/ANs has used administrative records from institutions serving the general population in which the classification of individuals as AI/AN is generally made by a public official without reference to self-identification or tribal enrollment. In other words, AI/AN identification is often determined by public officials' own subjective assessments of other individuals' racial/ethnic background, which may be biased or inaccurate for a host of reasons. An obvious example is the measurement of racial/ethnic variations in criminal behavior or public drunkenness using arrest records generated by the police (Perry, 2004), in which classifications are left to the best guess of an arresting officer or overburdened jail clerk. In a similar fashion, state-level interracial comparisons of student suspension or expulsion rates may be based upon public school administrators' classification of student race/ethnicity (e.g., DeVoe & Darling-Churchill, 2008). In addition to errors of personal observation by data collectors, administrative misclassification of AI/ANs often results from use of Hispanic surnames to determine race or from a lack of an AI/AN response category on intake forms (Burhansstipanov & Satter, 2000).

Tribal Enrollment Compared With Self-Identification

Numerous studies have observed that measures based upon both self-reports and administrative records differ substantially from those based upon tribal enrollments only. The considerable disagreement between measures relying on self-reported AI/AN heritage and measures based on tribal enrollments becomes apparent, for example, when one considers the results of the U.S. Census relative to indicators of tribal enrollments. Typically considered to be a tally of self-reported AI/ANs, the U.S. Census allows respondents to report being all or part AI/AN and allows, but does not require, respondents to specify a tribal affiliation (Snipp, 2002). According to the 2000 U.S. Census, one quarter of the respondents who reported being AI/AN did not report tribal affiliation (Ogunwole, 2002). As a result, the number of individuals who self-reported being AI/AN was much greater than the number of individuals who were enrolled in an AI/AN tribe. Based on comparisons of tribal enrollment figures with U.S. Census results, Thornton (1997) estimated that one third of those who reported being AI/AN in the 1980 U.S. Census, and two fifths of those who reported likewise in the 1990 U.S. Census, were not members of a federally recognized tribe. Of these, many reported Mexican, Central American, or Canadian indigenous heritage, while others reported membership in a tribe without federal recognition. In an analysis of restricted-use micro-data, Liebler and Zacher (2013) found that tribal nonresponse in the 2000 U.S. Census was especially prevalent among those reporting less education or a lack of English proficiency, those who probably misunderstood the question about race (e.g., single-race AIs who reported West Indian or South Asian Indian ancestry), and those with other racial and/or ethnic heritages (e.g., multiracial individuals, Hispanics, or the foreign born) for whom a tribal identity is secondary.

Tribal Enrollment Compared With Administrative Classification

While estimates of the AI/AN population are greater when based on self-identification rather than on tribal enrollments, they are both considerably lower than estimates based upon administrative identification by government or medical record keepers. For instance, a number of validation studies using IHS records as indicators of tribal enrollments have shown that state surveillance systems understate the incidence and/or prevalence of numerous maladies among AI/ANs, including HIV/

AIDS (Bertolli, Lee, & Sullivan, 2007; Lieb, Conway, Hedderman, Yao, & Kerndt, 1992), cancer (Espey et al., 2008; Foote, Matloub, Strickland, Stephenson, & Vaughan-Batten, 2007; Gomez & Glaser, 2006; Johnson et al., 2009), sexually transmitted diseases (Thoroughman, Frederickson, Cameron, Shelby, & Cheek, 2002), cardiovascular disease (Rhoades, 2005), and traumatic injury (Sugarman, Soderberg, Gordon, & Rivara, 1993). Studies comparing death certificates against tribal enrollments (Graber, Corkum, Sonnenfeld, & Kuehnert, 2005; Stehr-Green, Bettles, & Robertson, 2002) provide further indication of the degree to which AI/ANs are differentially classified and of the effects such incongruence has upon estimates of mortality. In some cases, there is even incongruence between different forms of administrative records, as evidenced in research examining the differential identification of AI/ANs by comparing race recorded on death certificates with race recorded on birth certificates (Epstein, Moreno, & Bacchetti, 1997; Harwell et al., 2002; Watson, Bennett, Reed, McBroom, & Helgerson, 1993).

Self-Identification Compared With Administrative Classification

Finally, and most important for the purposes of this article, there are the considerable inconsistencies between the categorization of individuals as AI/AN by self-identification and in administrative records. Survey responses that have been cross-referenced with a number of administrative record sources, including the Department of Veterans Affairs (VA; Kressin, Chang, Hendricks, & Kazis, 2003), Medicare (McAlpine, Beebe, Davern, & Call, 2007; Waldo, 2004), and health maintenance organizations (Gomez, Kelsey, Glaser, Lee, & Sidney, 2005), have shown that, relative to African American, White, and Asian American patients, AI/AN patients are the most likely to have disparate classifications. For instance, a comparison of survey data with VA records found that self-identified AI dental outpatients were much more likely to be classified as another race by the VA (70.5%) than were dental outpatients who self-identified as White, Black, or Asian (1.5%, 5.0%, and 13.8% were classified as another race by the VA, respectively; Boehmer et al., 2002). There was a similar pattern of inconsistences between self-reports in the National Longitudinal Mortality Study survey and the records of the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) population-based cancer registry; more than three fourths (78%) of patients who self-identified as AI/AN were categorized as belonging to another race by SEER—much greater than what was found for Hispanic (21%), Asian/Pacific Islander (7%), Black (6%), or White (1%) patients (Clegg et al., 2007). West et al. (2005) reported an even greater level of inconsistency between self-reports and medical records, finding that 94.4% of mastectomy patients who self-identified as AI/AN were categorized as another race in the records of six integrated health care delivery systems (the next largest inconsistency was for self-identified Latina patients, who were categorized differently 36% of the time).

Validation studies of death certificate records have shown a similar pattern. For instance, a national survey used to validate death certificate data found that approximately one quarter (23.8%) of decedents classified as AI/AN by their relatives were not classified as such on their death certificates (Poe et al., 1993). Comparisons of data in the U.S. Census Bureau's Current Population Survey with information reported on death certificates also showed a similar rate of disagreement (26.4%) for AI/ANs (Sorlie, Rogot, & Johnson, 1992). Finally, the NHNES actually found that *none* of the respondents who self-reported AI ancestry in the initial survey wave and subsequently passed away were classified as such on their death certificates, but were instead categorized as African American or White (Hahn et al., 1996).

Overall, it is clear that there are substantial inconsistencies among the various methods of classifying AI/ANs, especially when comparing self-identification with administrative records. Research also indicates that these inconsistencies often result in widely varied estimates of the prevalence of disease in AI/AN populations. Subsequently, it appears that estimates of disease among AI/ANs are much more likely to be influenced by the definition of the population at risk than is the case for other races.

For the most part, consideration of inconsistencies in classification of AI/ANs has been limited to vital statistics or research on chronic disease. To expand the scope of this line of research, this article considers the effects of two different methods for identifying individuals as AI/AN when estimating rates of illicit drug use and alcohol abuse among those in contact with the criminal justice system. Specifically, records from the Arrestee Drug Abuse Monitoring (ADAM) program were used to consider the similarity between arrestees' self-reported race and their race as recorded by third parties in administrative (jail) records in order to determine what effect the method of racial identification had upon relative estimates of arrestees' patterns of illicit drug use and alcohol abuse. Based upon the literature reviewed above, we expected that (1) AI/ANs would be the racial group with the greatest discrepancy between self-reported and administratively ascribed race and (2) estimates of differences between the illicit drug use and alcohol abuse of AI/AN arrestees and that of non-AI/AN arrestees would vary according to the method used to classify arrestees as AI/AN.

METHODS

The data utilized in this research were originally gathered in 43 cities between 2000 and 2003 for the ADAM program, which was designed to provide quarterly estimates for surveillance of local patterns and trends in illicit drug use and alcohol abuse by those accused of criminal behavior (Hunt & Rhodes, 2001). As a tool to estimate the prevalence of illicit drug use and alcohol abuse among the criminally accused, the ADAM program was unique because it combined urine tests to detect recent drug use with interviews of a sample of recent adult arrestees about their illicit drug use and alcohol abuse. In addition to their intended use as part of a local-level arrestee drug use surveillance system, data from the ADAM program have been considered in aggregate across all of the study sites in analyses of the offense and drug use patterns of foreign-born arrestees (Kposowa, Adams, & Tsunokai, 2010), the effects of concentrated disadvantage and race upon arrestees' methamphetamine use (Fox & Rodriguez, 2010), the number of crimes that could be averted given the national prevalence of arrestees requiring drug and alcohol treatment (Bhati & Roman, 2010), and the overall prevalence of illicit drug use and alcohol abuse by American arrestees (Brecht, Anglin, & Lu, 2003). The results presented below are based on all interviews and urine tests of male arrestees gathered between 2000 and 2003. Overall, interviews were completed with 90,717 male arrestees; 82,305 of those interviewed also provided urine samples.

The sample of male ADAM program participants was chosen using probabilistic methods intended to allow for generalizability to all male arrestees at the county level for each ADAM site. To enhance representativeness, arrestees were selected proportionally on the basis of time of day and day of week of arrest as well as by jurisdiction within a county. The response rate of arrestees who were asked to participate ranged from 81% to 83% over the period 2000-2003 (National Institute of Justice [NIJ], 2001, 2002, 2004a, 2004c). Arrestee participation in ADAM—both the interview component and the urine testing—was completely voluntary. To maintain confidentiality of individual arrestee responses, interviewers hired specifically for the ADAM program gathered all interview data and urine samples.

The ADAM data are ideal for this research because they provide information on arrestee race that comes from two different sources: administrative records and self-identification. First, information transcribed from booking files in which arrestee race is classified by police or jailors serves as the administrative record of whether an arrestee was identified as AI/AN. (Given that police records of arrest in *some* ADAM sites combined race and ethnicity into a single indicator, information on administrative identification of race gathered from booking files from *all* ADAM sites used this least common denominator [NIJ, 2004b]. Effectively, the ethnic category Hispanic/Latino(a) in the booking records is treated as if it is equivalent to a race even though those who are Hispanic could belong to any race.[1]) Second, responses to ADAM interviewers' questions regarding race were used to differentially measure self-identification of AI/AN ancestry (NIJ, 2004b). This approach to measuring race and ethnicity follows the accepted practice of first asking about ethnicity and then asking about race so that the two concepts are distinct. Unfortunately, given the lack of information about arrestees' tribal membership in the ADAM data, we were unable to compare the effects of that form of identification upon estimates of illicit drug use and alcohol abuse.

For the purposes of comparing illicit drug use and alcohol abuse estimates, the two methods of identification were collapsed into dichotomous measures. Each arrestee was categorized as either self-identified AI/AN or non-AI/AN and as either administratively identified AI/AN or non-AI/AN. Furthermore, because arrestees could be identified as multiracial, dichotomous measures for single-race or multiracial AI/AN versus non-AI/AN arrestees for both methods of identification were used.

Different sets of outcome measures were used to consider the relative effects of the two different methods of identifying arrestees as AI/AN. The first set of outcome measures are based on urine tests that were completed within 48 hours of booking for a fairly reliable estimate[2] of arrestees' consumption of commonly used illicit drugs prior to the time of arrest. All other outcome measures come from arrestees' self-reported illicit drug use and alcohol abuse, and risk for drug and alcohol dependence. The majority of these measures came from questions in the National Household Survey on Drug Abuse[3] (Hunt & Rhodes, 2001) that focused on heavy and binge drinking, and the use of marijuana, crack cocaine, powder cocaine, heroin, or methamphetamine (over one's lifetime, the past year, and the past month). Questions measuring the risk for drug and alcohol dependence originated in a subset of questions from the Substance Use Disorder Diagnostic Schedule clinical assessment tool, which were based on criteria for dependence as defined in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition* of the American Psychiatric Association (APA, 2000).

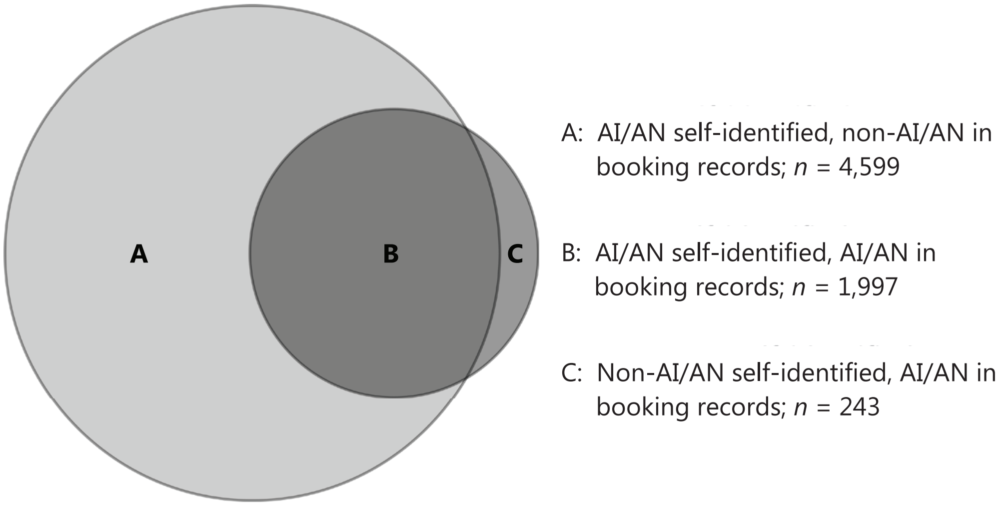
Two sets of analyses were conducted. First, we considered the correspondence between self-reported race and administratively identified race. For these analyses, we calculated the proportion of arrestees who self-identified as a specific race and who were similarly identified in administrative records. Second, we calculated cross-tabulations to measure the effect of the two methods of classifying AI/ANs upon estimates of their illicit drug use and alcohol abuse. Unadjusted binary odds ratios (OR) were calculated as measures of association (Morris & Gardner, 1988) to estimate the magnitude of difference between AI/AN arrestees' drug use or alcohol abuse rates and those of non-AI/AN arrestees for each method of classification. Confidence intervals (CI) of the odds ratios from each set of comparisons of illicit drug use or alcohol abuse were then examined for overlaps, the lack of which indicated the statistical significance of the differences of differences (Schenker & Gentleman, 2001). Although this technique is overly conservative because it increases the chances of a Type II error, where the null hypothesis is incorrectly accepted as true when it really is false (Payton, Greenstone, & Schenker, 2003), its use was necessary given a lack of accepted methods for testing the statistical significance of the difference in odds ratios taken from non-independent samples.

RESULTS

Sample

The analyses were conducted without use of the case weights typically employed when dealing with ADAM data because the primary concern was the consideration of the effects of two methods of racial identification upon illicit drug use and alcohol abuse estimates, rather than the generalization of outcomes to the population of all arrestees in a given ADAM site. While ADAM case weights are intended to ensure that the arrestees who were interviewed and urine-tested were reflective of all individuals who were arrested and booked during the data-gathering period, those weights were calculated to insure local representativeness across the days and times of arrest (Heliotis, Kuck, & Hunt, 2001) rather than across the sociodemographic characteristics that are usually of importance when assigning post-sampling stratification weights. A means comparison indicates that the use of ADAM case weights would bias illicit drug use and alcohol abuse estimates toward arrestees identified as AI/AN in jail booking records. Those classified administratively as AI/AN represented nearly three times as many arrestees (mean weight = 179.6 arrestees) as those who self-identified as AI/AN, but who were classified administratively as some other race (mean weight = 64.0 arrestees); this difference was statistically significant, $t(3041) = 3.81$, $p < .001$. Given that the set of arrestees who self-identified as AI/AN includes nearly all of the arrestees who were classified administratively (see Figure 1[4]), estimates of the substance use patterns of the former would actually be more indicative of substance use patterns of the latter if the ADAM case weights had been used.

Figure 1
Proportional Distribution of ADAM Arrestees by AI/AN Identity and Source of Identification



Of the 90,717 arrestees who were interviewed, 2,219 were identified administratively as only AI/AN and another 21 were identified administratively as being a combination of AI/AN and some other race. As shown in Figure 1, and as the literature reviewed above might lead us to expect, a larger proportion of arrestees self-identified as AI/AN than were identified administratively as AI/AN, such that 4,720 arrestees declared AI/AN as their only race and 1,876 declared partial AI/AN ancestry. On the other hand, nearly all arrestees who were identified administratively as AI/AN also self-identified as AI/AN. Nonetheless, the majority of arrestees who self-identified as AI/AN (either single race or multiracial) were identified as some other race during booking.

The two methods of racial classification were each operationalized as dichotomous variables to indicate whether an arrestee was or was not AI/AN. The first method, administrative identification, categorized 2.5% of the arrestees as single race or multiracial AI/AN, while the remainder were categorized as non-AI/AN. When using interview responses for classification, however, 7.3% of arrestees self-identified as single-race or multiracial AI/AN. Excluding those categorized as multiracial, roughly 1 in 40 arrestees (2.4%) was classified as AI/AN during booking while more than 1 in 20 (5.2%) self-identified as AI/AN during interviews.

Correspondence Between Self-Reports and Administrative Records of Race/Ethnicity

Relative to other races, the disagreement between self-reports and administrative records was greatest for AI/AN arrestees. Considering only those arrestees who self-reported a single race (see Table 1), there was very strong correspondence between self-reports and administrative records of race for White and Black arrestees, with somewhat weaker agreement for Hispanic and Asian/Pacific Islander arrestees. Among AI/AN arrestees, however, administrative classification was more likely to ascribe a category of race other than what they self-reported; only two in five (40.7%) arrestees who self-reported AI/AN heritage were also classified administratively as such.

Generally speaking, there was greater agreement between AI/ANs' self-reports and administrative identification in those locations with higher proportions of AI/AN arrestees. Across the 43 ADAM sites, there was a fairly strong association, $r(41) = .73$, $p < .001$, between the proportion of interviewed arrestees who were AI/AN at a site and the likelihood of agreement between self-reports and administrative identification for AI/ANs. There was considerable agreement between self-reports and administrative identification at sites with sizable proportions of AI/AN arrestees (e.g., 77% agreement in Anchorage, and 51% agreement in Albuquerque). Among the 43 ADAM sites, there was a moderately strong positive association between (1) the level of correspondence between self-identification and administrative identification for AI/AN arrestees and (2) the proportion of the county population that reported being AI/AN in the 2000 Census, $r(41) = .50$, $p < .001$. In eight of the sites, zero self-identified AI/ANs were identified administratively, which resulted in a total lack of correspondence between the two classifications (See Appendix A). While it is possible that some of the sites with no AI/ANs identified administratively used record-keeping systems that did not include AI/AN as an option for identifying arrestees, in five of these eight sites (Atlanta, Houston, Los Angeles, Kansas City, and Washington, DC) arrests of AI/ANs were reported by the police to the Federal Bureau of Investigation (FBI) during 2000-2003 (FBI, 2009a, 2009b, 2009c, 2010).

Table 1
Agreement between Self-reported Race and Administrative Records on Race among Single-race Arrestees (N = 83,188)

	Self-reported Race				
Administrative Record of Race/Ethnicity	AI/AN	Asian/Pacific Islander	Black	Hispanic[a]	White
AI/AN	**40.7%**[b]	4.8%	0.1%	0.4%	0.1%
Asian/Pacific Islander	0.3%	**73.1%**	0.0%	0.6%	0.1%
Black	6.2%	4.9%	**97.4%**	2.0%	2.4%
Hispanic	25.9%	3.4%	1.2%	**70.9%**	0.6%
White	26.9%	13.8%	1.3%	26.1%	**96.7%**

[a] Even though those who are Hispanic can belong to any race, the ethnic category Hispanic/ Latino(a) in some police agencies' booking records is treated as if it is equivalent to a race. As a result, information on administrative identification of race gathered from booking files from all ADAM sites used this least common denominator (National Institute of Justice, 2004b). [b] Agreement between the two data sources is shown in **bold type**.

Differences in Differences of Estimated Illicit Drug Use and Alcohol Abuse

Results of analyses considering the effects of the two different identification methods upon illicit drug use and alcohol abuse estimates of AI/ANs relative to non-AI/ANs are presented in Tables 2 and 3. These results indicate that identification method did have an impact upon the estimates. The differences between AI/AN and non-AI/AN arrestees were larger when using administrative identification than when arrestees self-identified.

Comparisons Based on Urine Testing

As shown in Table 2, the results indicate that, for some illicit drugs, but not others, the method of identification did have an impact on the relative proportions of arrestees with positive urine test results. With the exception of marijuana, AI/AN arrestees were generally less likely to test positive for common street drugs when compared to non-AI/AN arrestees. When considering those arrestees identified as single-race AI/AN, there were statistically significant differences between the odds ratios for the comparisons based on administrative identification versus the comparisons based on self-identification for arrestees' use of cocaine, methamphetamine, or for at least one NIDA-5 drug[5], such that AI/AN arrestees were significantly less likely than non-AI/ANs to test positive when identification was based on administrative records rather than self-report. For instance, the odds of AI/AN arrestees testing positive for methamphetamine use were 58% less than the odds for non-AI/AN arrestees when the comparison was based on administrative identification, but only 6% less when the comparison was based on self-identification; given that the confidence intervals of the two odds ratios did not overlap, this difference can be considered statistically significant.

Table 2
Positive Urine Test Results for Commonly Used Illicit Drugs for AI/AN versus Non-AI/AN Arrestees by Method of Racial Identification

	Administrative Identification of Race				Self-identification of Race			
	% Testing Positive				% Testing Positive			
Commonly Used Illicit Drugs by Level of Racial Identification	AI/AN	non-AI/AN	Odds Ratio	95% CI	AI/AN	non-AI/AN	Odds Ratio	95% CI
Single-race	*n* = 2,061	*n* = 80,244			*n* = 4,374	*n* = 77,931		
Marijuana	42.2	42.3	1.00	(0.91-1.09)	42.2	42.3	1.00	(0.94-1.06)
Cocaine	14.5	29.2	**0.41**[a]	**(0.36-0.46)**	19.4	29.4	**0.58**	**(0.53-0.62)**
Methamphetamine	5.6	12.3	**0.42**	**(0.35-0.51)**	11.5	12.2	**0.94**	**(0.86-1.03)**
Opiates	4.7	7.8	0.59	(0.48-0.72)	6.1	7.8	0.76	(0.67-0.87)
Phencyclidine (PCP)	0.4	1.9	**0.21**	**(0.10-0.41)**	1.0	1.9	**0.51**	**(0.37-0.69)**
Any NIDA-5 Drug	51.9	66.6	**0.54**	**(0.50-0.59)**	58.6	66.6	**0.71**	**(0.67-0.75)**
Single-race or Multiracial	*n* = 2,079	*n* = 80,226			*n* = 6,083	*n* = 76,222		
Marijuana	42.2	42.3	1.00	(0.91-1.09)	44.1	42.2	1.08	(1.03-1.14)
Cocaine	14.5	29.2	**0.41**	**(0.36-0.46)**	20.8	29.5	**0.63**	**(0.59-0.67)**
Methamphetamine	5.6	12.3	**0.43**	**(0.35-0.52)**	12.7	12.1	**1.06**	**(0.98-1.15)**
Opiates	4.7	7.8	0.59	(0.48-0.72)	6.1	7.8	0.76	(0.68-0.85)
Phencyclidine (PCP)	0.4	1.9	**0.20**	**(0.10-0.41)**	1.3	1.9	**0.66**	**(0.52-0.83)**
Any NIDA-5 Drug	52.0	66.6	**0.54**	**(0.50-0.59)**	61.7	66.6	**0.81**	**(0.77-0.86)**

[a] Values in **bold type** are for non-overlapping 95% confidence intervals, indicating that the difference between odds ratio for administrative identification and odds ratio for self-identification is statistically significant.

As presented in the bottom half of Table 2, similar results were seen when the illicit drug use of non-AI/AN arrestees was compared to that of single-race or multiracial AI/AN arrestees. There were statistically significant differences between the odds ratios for comparisons using administrative identification and the odds ratios for comparisons using self-identification for arrestees testing positive for cocaine, methamphetamine, phencyclidine (PCP), and at least one NIDA-5 drug. Once again, the differences between AI/AN arrestees and non-AI/AN arrestees were greatest when comparisons were based on administrative identification rather than on self-identification. Regarding methamphetamine use, there was no difference between AI/AN and non-AI/AN arrestees when the comparison was based upon self-identification (OR = 1.06, 95% CI [0.98, 1.15]), whereas the odds ratio for the comparison based on administrative identification indicates that the odds of testing positive were 57% less for AI/AN arrestees relative to non-AI/AN arrestees (OR = 0.43, 95% CI [0.35, 0.52]).

Table 3
Self-reported Illicit Drug Use and Alcohol Abuse and Risk for Substance Dependence for AI/AN versus Non-AI/AN Arrestees by Method of Racial Identification

	Administrative Identification of Race				Self-identification of Race			
	% Reporting				% Reporting			
Form of Illicit Drug Use or Alcohol Abuse by Level of Racial Identification	AI/AN	non-AI/AN	Odds Ratio	95% CI	AI/AN	non-AI/AN	Odds Ratio	95% CI
Single-race Identity	*n* = 2,219	*n* = 88,498			*n* = 4,270	*n* = 85,997		
Binge Drinking Past Month[a]	76.2	47.8	**3.50**[c]	**(3.16-3.87)**	64.3	47.6	**1.98**	**(1.87-2.11)**
Heavy Drinking Past Month[b]	46.5	27.0	**2.35**	**(2.15-2.56)**	38.6	26.9	**1.71**	**(1.61-1.82)**
Past Year Marijuana Use	52.9	52.1	1.03	(0.95-1.12)	52.8	52.1	1.03	(0.97-1.09)
Past Year Cocaine Use	22.1	25.9	0.82	(0.74-0.90)	23.4	25.9	0.88	(0.82-0.94)
Past Year Heroin Use	4.7	7.2	**0.63**	**(0.52-0.77)**	6.6	7.2	**0.90**	**(0.80-1.02)**
Past Year Methamphetamine Use	10.2	15.1	**0.64**	**(0.56-0.74)**	15.6	15.0	**1.05**	**(0.97-1.14)**
Past Year Use of At Least 1 of the Above Illicit Drugs	58.9	63.8	0.81	(0.75-0.88)	61.7	63.8	0.91	(0.86-0.97)
At Risk for Alcohol Dependence	56.8	28.4	**3.31**	**(3.04-3.62)**	45.1	28.2	**2.09**	**(1.97-2.22)**
At Risk for Other Drug Dependence	31.7	38.9	0.73	(0.67-0.80)	35.1	38.9	0.85	(0.80-0.91)
Single-race or Multiracial Identity	*n* = 2,240	*n* = 88,477			*n* = 6,596	*n* = 84,121		
Binge Drinking Past Month	75.9	47.8	**3.44**	**(3.11-3.79)**	61.3	47.5	**1.75**	**(1.67-1.85)**
Heavy Drinking Past Month	46.3	27.0	**2.33**	**(2.14-2.54)**	36.7	26.8	**1.59**	**(1.50-1.67)**
Past Year Marijuana Use	53.0	52.1	1.03	(0.95-1.12)	55.2	51.9	1.14	(1.09-1.20)
Past Year Cocaine Use	22.1	25.9	0.81	(0.74-0.90)	24.3	25.9	0.92	(0.87-0.98)
Past Year Heroin Use	4.7	7.2	**0.62**	**(0.51-0.76)**	6.4	7.2	**0.87**	**(0.79-0.96)**
Past Year Methamphetamine Use	10.2	15.1	**0.64**	**(0.56-0.74)**	17.4	14.8	**1.21**	**(1.13-1.29)**
Past Year Use of At Least 1 of the Above Illicit Drugs	58.9	63.8	**0.81**	**(0.75-0.89)**	64.4	63.6	**1.03**	**(0.98-1.09)**
At Risk for Alcohol Dependence	56.6	28.4	**3.28**	**(3.01-3.58)**	41.4	28.1	**1.81**	**(1.72-1.90)**
At Risk for Other Drug Dependence	31.7	38.9	**0.73**	**(0.67-0.80)**	36.9	38.8	**0.92**	**(0.87-0.97)**

[a] ≥ 5 drinks/setting. [b] ≥ 5 drinks/setting on ≥ 5 out of 30 days. [c] Values in **bold type** are for non-overlapping 95% confidence intervals, indicating that the difference between odds ratio for administrative identification and odds ratio for self-identification is statistically significant.

Comparisons Based on Self-reported Illicit Drug Use and Alcohol Abuse

With the exception of alcohol abuse patterns, the results based upon arrestee interviews (i.e., self-reports) correspond with data from arrestee urine tests. For some illicit drugs, as seen in the top half of Table 3, differences in single-race AI/AN and non-AI/AN arrestees' self-reported illicit drug use were greater when based upon administrative identification rather than self-identification. Although there was no statistically significant difference between self-identified AI/AN and non-AI/AN arrestees for heroin use, the odds of self-reported past year use of heroin were 37% less for AI/AN arrestees compared to non-AI/AN arrestees when based on administrative identification. A similar pattern was found for methamphetamine, with no statistically significant difference for comparisons based on self-identification and a 36% difference when comparisons were based upon administrative identification. With an overlap of the confidence intervals for the odds ratios, a comparison of differences for a composite measure of past year illicit drug use (including self-reported use of marijuana, cocaine, heroin, and/or methamphetamine) indicated no statistically significant difference in reported use based on method of classification. Thus, it initially appears that there are fewer and smaller significant differences in illicit drug use between self-identified AI/ANs and non-AI/ANs.

As with illicit drugs, the differences in self-reported alcohol abuse between single-race AI/AN arrestees and non-AI/AN arrestees were greater when based upon administrative identification rather than self-identification. These differences, however, are in the direction opposite that for illicit drugs, with AI/ANs (either self-identified or administratively identified) *more* likely than non-AI/ANs to report alcohol abuse. For binge drinking over the past month (i.e., having 5 or more drinks at 1 sitting), the odds were 3.5 times higher for AI/AN arrestees relative to non-AI/AN arrestees when identified administratively, but were twice as high when self-identification was used. While not as dramatic, the differences in estimates of heavy drinking (defined at the time ADAM was conducted as having 5 or more drinks in a day 5 or more times in the past month) and the risk for alcohol dependence were also greater in analyses using administrative identification rather than self-identification.

When comparisons of single-race or multiracial AI/AN identity (as seen in the bottom portion of Table 3) were considered, patterns of self-reported illicit drug use and alcohol abuse were similar to those for comparisons using single-race AI/AN identity in some regards, and were more pronounced in others. For alcohol abuse, AI/ANs were much more likely than non-AI/ANs to report problem drinking patterns or being at risk for alcohol dependence when the comparison was based upon administrative identification, rather than upon self-identification. On the other hand, AI/AN arrestees were less likely than non-AI/AN arrestees to report having used heroin, methamphetamine, or any other illicit drug when comparisons were based on administrative identification rather than self-identification. For example, when questioned about ever using heroin, the odds of AI/AN arrestees reporting its use were 38% less and 13% less than the odds for non-AI/AN arrestees when comparisons were based on administrative identification and self-report, respectively. Estimates of lifetime methamphetamine use among AI/AN arrestees were contradictory depending upon the method of classification, as the odds of it being reported by AI/AN arrestees were less than the odds for non-AI/AN arrestees when administrative records were the basis for classification (OR = 0.64, 95% CI [0.56, 0.74]), while the odds of it being reported by AI/AN arrestees were greater than the odds of it being reported by non-AI/AN arrestees when the comparisons were based upon self-identification (OR = 1.21, 95% CI [1.13, 1.29]).

DISCUSSION AND CONCLUSION

As expected given earlier research on the incongruence between multiple methods of identifying AI/AN populations for research purposes, the mismatch between self-identified and administratively identified race was greatest for AI/ANs. More often than not, arrestees who participated in the ADAM program and who self-identified as AI/AN were classified administratively as something other than AI/AN. At the same time, however, when arrestees were classified administratively as AI/AN during the booking process, they almost always identified themselves as AI/AN as well.

The lack of congruence between self-reports and administrative reports of AI/AN identity was not randomly distributed, but instead varied across locations participating in ADAM. Generally, correspondence was closest where the number of AI/ANs was large relative to the general population. In those locations it is possible that jail staff would be more aware of subtle differences in physical and behavioral characteristics that distinguish some AI/ANs from other groups and would have been more likely to recognize certain surnames as markers of AI/AN heritage (e.g., “Yazzie” or “Begay” among the Navajo or names consisting of a noun modified by an adjective or adverb among the Lakota). Jail staff at ADAM sites with large AI/AN populations might also have been more likely to be AI/AN themselves, which could be expected to increase the chances of corresponding identification. Finally, it is possible that sites with stronger correspondence between administrative identification and self-identification of AI/ANs have policies that require booking officers to ask arrestees their race instead of making an assumption.

Two different pictures of AI/AN arrestees’ illicit drug use and alcohol abuse emerge depending upon the method of classification. For the most part, the differences between AI/AN and non-AI/AN arrestees’ illicit drug use and alcohol abuse were greatest when administrative identification was used to determine who was AI/AN, compared to when self-identification was used. With the general exception of marijuana use, urine test results and interview responses indicated that AI/AN arrestees' illicit drug use was substantially less than that of the general population of arrestees when identification was based on administrative records rather than self-report. For interview measures of alcohol abuse, the same types of differences by method of classification were found, only in the opposite direction than those found for illicit drugs. Relative to comparisons based on self-identification, AI/AN arrestees were much more likely than non-AI/AN arrestees to report alcohol abuse when identification was based on administrative records. All of these patterns—for both illicit drug use and alcohol abuse—held true regardless of whether the comparisons involved only single-race AI/ANs or multiracial AI/ANs as well.

Overall, it is clear that the method of identification did affect estimates of AI/AN arrestees' illicit drug use and alcohol abuse patterns compared to the patterns of non-AI/AN arrestees. The divergence was greatest when administrative identification served as the basis for comparisons. AI/AN arrestees who were identified administratively as such had much lower odds relative to non-AI/AN arrestees for testing positive for common illicit drug use and for reporting illicit drug use in the past year. At the same time, however, the odds that AI/AN arrestees would report problematic alcohol use (i.e., binge drinking, heavy drinking, alcohol dependence) were much higher. The magnitude of differences in estimates of AI/AN and non-AI/AN arrestees' patterns of illicit drug use and alcohol abuse was reduced when those comparisons were based upon ADAM participants' self-identification. Although self-identified AI/ANs were more likely than non-AI/ANs to report alcohol abuse, the difference was much less substantial than when the comparison was based upon administrative identification. For a few of the illicit drugs analyzed, the self-identified AI/AN arrestees actually reported higher rates of past year use than did non-AI/AN arrestees.

While our results provide clear indication that the method of identification can influence the outcomes of research involving AI/ANs, these results should be considered in light of a few limitations. A primary issue with our analyses is that we have used the ADAM data in a way that goes beyond the program's original intent of providing quarterly estimates of local drug use trends. Despite claims to the contrary (e.g., Cooper, Fox, & Rodriguez, 2012, p. 25), ADAM data are not a *nationally* representative sample of recent arrestees in metropolitan counties and, therefore, cannot be seen as a source of reliable national estimates of arrestee substance use (Heliotis et al., 2001). Our multisite pooled analyses essentially treat the participating ADAM arrestees as a convenience sample which, ultimately, precludes generalization of our results beyond the sample considered.

A second limitation of this study is that the AI/AN arrestees who were part of the ADAM sample are not likely to be representative of AI/AN arrestees in general. The ADAM sample is comprised mostly of arrestees who resided in metropolitan areas: Roughly 94% of all arrestees were residents within an urban ZIP code, and those with residence in a rural ZIP code were outnumbered by homeless or transient arrestees (i.e., those without a residential ZIP code). The proportion of AI/AN arrestees from urban ZIP codes was greater than the 70% of the general AI/AN population residing in urban areas according to the 2000 U.S. Census (Urban Indian Health Institute, 2004); the odds of an AI/AN ADAM study participant having an urban residence were more than six times greater (OR = 6.71) than the odds for AI/ANs in general. An additional limitation of our study is that the results could be affected by nonresponse bias, i.e., the one in five arrestees who refused participation in ADAM could have had different illicit drug use and alcohol abuse patterns relative to those arrestees who did participate. Furthermore, given that the only measures of race in ADAM were based upon self-reports or upon administrative identification, we were unable to consider the effect of identification by tribal membership on estimates of illicit drug use and alcohol abuse. Finally, it is necessary to reiterate that even if the sample were nationally representative and there was little nonresponse bias, it would only be an accurate reflection of the population of male arrestees. As such, the estimates of illicit drug use and alcohol abuse would apply only to those males who have been accused of a criminal act that has brought them to the attention of the police, and would not apply to the general population.

Despite these limitations, the findings presented above support the argument that the methods used to identify study participants as AI/AN ultimately can affect research outcomes. Had the comparisons been made only on the basis of administrative identification, the differences between AI/AN and non-AI/AN arrestees' illicit drug use and alcohol abuse would have appeared to be rather extreme. On the other hand, had those comparisons been made based solely upon self-identification, we would have observed mixed results, with the odds of AI/AN arrestee illicit drug use and alcohol abuse being lower than the odds of non-AI/AN arrestee illicit drug use and alcohol abuse for some substances and higher for others.

The substantial discrepancies between self-identification and administrative identification for AI/ANs during initial booking following arrest have ramifications for the study of decision making throughout the disposition of criminal cases because the identification of race made at the booking stage is duplicated for later criminal justice decisions in most paper (e.g., Illinois Bureau of Identification, 2010) and electronic (e.g., Draper, 2002) record-keeping systems in the U.S. As a result, the reliability of demographic information about AI/ANs in studies of disparities in criminal justice decision-making (e.g., when police refer cases for prosecution, when prosecutors decide to lay charges, or when judges impose sentences) is particularly precarious. Ultimately, just as it has consistently been demonstrated in the field of public health, the way that AI/ANs are identified for research purposes should also be of concern in the study of criminal justice.

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FOOTNOTES

[1] In the mid-1970s, for instance, in California the “Race” for a given arrestee would be (1) White, (2) Mexican-American, (3) Negro, (4) American-Indian, (5) Chinese, (6) Japanese, or (7) Other (California Bureau of Criminal Statistics, 1976). By the time that the ADAM program was being conducted a quarter century later the variable was referred to as “Race/Ethnicity” while continuing to treat Hispanics as a racial group (California Criminal Justice Statistics Center, 2004).

[2] Although urine testing is a direct measure of drug use, it is not a perfectly reliable measure of drug use. The enzyme multiplied immunoassay test used in ADAM has a false positive rate between 4 and 5% for cocaine and marijuana, as confirmed by gas chromatography/mass spectrometry tests (which are said to be totally accurate; Harrison, 1995).

[3] This is now called the National Survey on Drug Abuse and Health.

[4] The Venn Diagram Plotter software used to make Figure 1 was freely provided by the Proteomics Research Resource for Integrative Biology of the Pacific Northwest National Laboratory. It can be downloaded from http://omics.pnl.gov/software/VennDiagramPlotter.php.

[5] The NIDA-5 (National Institute of Drug Abuse) drugs include cocaine, marijuana, methamphetamine, opiates, and phencyclidine (PCP; Zhang, 2004). (When using ADAM data to report estimates of illicit drug use, it is common practice to report on individual drugs comprising the NIDA-5 as well as the NIDA-5 as a whole; therefore, in this study, analyses were also done separately on each drug.)

Appendix A
Correspondence between Methods of Identification of AI/AN Arrestees, by ADAM Site, 2000-2003

ADAM Site[a]	Total Number of Interviews	AI/AN Arrestees Interviewed		Percentage Self-identified also Administratively Identified[b]
		Self-identified	Administratively Identified	
Albany, NY	1,777	84	8	6.0
Albuquerque, NM	1,938	394	214	50.8
Anchorage, AK	1,929	662	537	76.6
Atlanta, GA	2,196	58	0	0.0
Birmingham, AL	1,880	25	7	24.0
Boston, MA	111	9	1	11.1
Charlotte, NC	1,739	61	4	6.6
Chicago, IL	2,875	23	5	4.3
Cleveland, OH	3,656	72	5	2.8
Dallas, TX	3,519	106	4	0.9
Denver, CO	2,895	223	82	35.0
Des Moines, IA	1,708	68	14	17.6
Detroit, MI	985	16	1	6.3
Fort Lauderdale, FL	352	12	0	0.0
Honolulu, HI	2,005	87	7	4.6
Houston, TX	852	47	0	0.0
Indianapolis, IN	2,774	66	3	3.0
Kansas City, MO	550	10	0	0.0
Laredo, TX	770	14	2	14.3
Las Vegas, NV	4,349	275	36	10.5
Los Angeles, CA	460	34	0	0.0
Miami, FL	950	26	0	0.0
Minneapolis, MN	2,986	238	135	50.0
New Orleans, LA	2,553	11	0	0.0
New York, NY	3,505	83	6	3.6
Oklahoma City, OK	2,793	341	127	33.4
Omaha, NE	2,030	111	37	29.7
Philadelphia, PA	2,256	70	1	0.0
Phoenix, AZ	6,399	585	331	49.7
Portland, OR	2,851	222	43	15.8
Rio Arriba County, NM	201	35	10	22.9
Sacramento, CA	2,593	224	20	5.8
Salt Lake City, UT	2,643	226	130	52.7
San Antonio, TX	2,677	352	1	0.0
San Diego, CA	2,959	233	27	11.2

continued on next page

Appendix A, Continued
Correspondence between Methods of Identification of AI/AN Arrestees, by ADAM Site, 2000-2003

ADAM Site	Total Number of Interviews	AI/AN Arrestees Interviewed		Percentage Self-identified also Administratively Identified
		Self-identified	Administratively Identified	
San Jose, CA	3,173	267	10	1.5
Seattle, WA	3,423	309	107	31.7
Spokane, WA	1,807	232	81	28.0
Tampa, FL	800	29	1	0.0
Tucson, AZ	2,514	315	120	31.4
Tulsa, OK	1,357	277	95	31.8
Washington, DC	665	24	0	0.0
Woodbury County, IA	262	40	28	67.5

[a] Not all sites participated in all 4 years considered. [b] Some arrestees administratively identified as AI/AN did not self-identify as AI/AN, so these percentages do not necessarily equal the number of administratively identified AI/ANs divided by the number of self-identified AI/ANs.

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HEALTH PERCEPTIONS AMONG URBAN AMERICAN INDIANS WITH TYPE II DIABETES

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Abstract: Since the 1940s, American Indians (AIs) have increasingly urbanized, moving off of reservations in large part due to federal policies of tribal termination and relocation. Though previous AI research has largely focused on reservation-associated challenges, many of these same challenges persist among urban AI populations. One mutual concern is the growing prevalence and incidence of type II diabetes mellitus (T2DM). While behavioral, genetic, and socioeconomic determinants of T2DM have been explored, much less is known about the influence of cultural and psychosocial factors. Recent studies suggest that the way AIs perceive diabetes may affect their health trajectory and explain their poor prognosis. Through the use of the Illness Perception Questionnaire, we explored this hypothesis in a pilot study of urban AI with T2DM living in Los Angeles County. We found that the majority of participants have a neutral perception about their diabetes: They view their condition to be long lasting yet treatable and indicate reasonable understanding of its symptoms and progression. We also identified "personal control," the level of perceived control one has over his or her disease, as a strong correlate of overall illness perception and, thus, a potentially useful psychological metric.

INTRODUCTION

Type II diabetes mellitus (T2DM) is the fourth leading cause of death among American Indians (AIs) in the U.S. (Kochanek, Xu, Murphy, Minino, & Kung, 2011). This phenomenon is not ethno-specific: An increase in obesity rates, malnutrition, and sedentary lifestyles—among both adults and children—has rendered T2DM an epidemic across multiple ethnic groups (Burrows, Geiss, Engelgau, & Acton, 2000; McNamara, Sanson-Fisher, D'Este, & Eades, 2011; Urban Indian Health Institute [UIHI], 20040). Acute complications include retinopathy, blindness, nephropathy, and lower extremity amputations, leading to incapacitation and a significant health burden (Kahn, 2003). T2DM is perceived as both a genetic and an environmental disease, and interventions focus on glycemic control through a combination of medications and lifestyle modifications (McCarthy, 2010; Tuomilehto et al., 2001).

The past 50 years have witnessed a rise in T2DM incidence among AIs especially, for which Westernization of diet (increased intake of high-calorie foods) and the adoption of more sedentary lifestyles are partially responsible. Worryingly, incidence and prevalence continue to grow while outcomes remain poor (Burrows et al., 2000; Haman et al., 2010; UIHI, 2004), with prevalence as high as 33% among certain AI groups (Centers for Disease Control and Prevention, 2011). One of the challenges to reducing this burden is the segmentation of the AI population: The U.S. Census from 2000 recorded a total of 4.3 million people who identified as AI, of which more than two thirds did not reside on reservations and approximately half lived in urbanized areas (National Urban Indian Family Coalition, 2008). Unfortunately, because federal funding is largely directed towards reservation-based AIs, the needs of urban AIs are often unmet. To add, there is little research surrounding the socioeconomic condition and cultural connectedness of urban AIs, impeding efforts to provide resources or rework policy measures.

However, T2DM is one concern that disproportionately affects both reservation and urban AIs (UIHI, 2011), raising the question of whether findings from reservation studies also apply to urban settings. One explanation of this disparity is that AI perceptions of disease may be misaligned with Western medical expectations and practice. Several reservation-based studies have revealed that, among certain AI groups, diabetes is viewed as a disease that is inevitable and culminates in death (Cavanaugh, Taylor, Keim, Clutter, & Geraghty, 2008; Sahota, 2012). According to the extended parallel process model, a framework for predicting how individuals will respond to fear or danger, this perception of reduced competence and increased vulnerability promotes a fear control response that prioritizes reducing anxiety over adopting healthy behavior (Mazzotti, Sebastiani, & Marchetti, 2012).

In the broader health context, it has been well documented that the way patients perceive disease conditions their experiences and responses (Ciechanowski, Katon, & Russo, 2000; Eaton, Armenian, Gallo, Pratt, & Ford, 1996; Gonder-Frederick, Cox, & Ritterband, 2002; Lin et al., 2004). Among various disease groups (e.g., HIV, diabetes, cancer), psychological factors play a critical role in disease progression: Patients with more negative beliefs about their condition often have a worse prognosis (Albarracín, Gillette, Earl, & Glasman, 2005; Broadbent, Donkin, & Stroh, 2011; Mazzotti et al., 2012; Rees et al., 2012). As T2DM exists largely as a chronic condition and requires extended adherence to medicinal and behavioral regimens, patient misperceptions or negative perceptions may complicate effective, long-term care.

One of the models widely used to assess illness perceptions (patients' beliefs about their illness) is the Self-Regulatory Model of Illness Behavior (Rees et al., 2012), which consists of five general dimensions to assess cognitive representations of illness: cause (perceived cause[s] of the illness), control (degree to which individuals believes they can control their illness), timeline (perceived length of the illness), consequences (perceived outcomes of the illness), and identity (how the illness is described and which symptoms are associated with it). According to the Self-Regulatory Model, the representation of illness formed upon these axes constitutes the first stage of illness perception and has a significant impact on subsequent health behavior. Understanding the nature of these representations and how they influence the trajectory of health will help in elucidating the role of perceptions in disease management and, in turn, developing culturally appropriate health care services. In this study, we examine how urban AIs perceive diabetes using the Brief Illness Perception Questionnaire (IPQ), a survey based upon the Self-Regulatory Model (Broadbent, Petrie, Main, & Weinman, 2006).

METHODS

Participants

Men and women who met the following criteria were eligible for participation in the study: above the age of 18 years, self-identified as AI, and previously diagnosed with T2DM.

Participants were recruited from five powwows in Los Angeles County through active (i.e., research team members approached passersby) and passive soliciting of eligible participants (potential participants also came up to the booth seeking other services). Our sample constituted a convenience sample.

The survey was administered with the help of the American Indian Healing Center (AIHC), based in Whittier. A research team member administered the survey at the AIHC booth at each powwow (chairs and tables were provided). Before the survey was administered, the research team member informed participants of the nature of the study. Participants also were told to skip those questions they did not understand or did not feel comfortable answering. All provided written informed consent prior to participation and completed the survey independently.

A total of 75 participants were recruited, though only 69 surveys were fully completed. Incomplete surveys were not used for analysis. Survey data were recorded anonymously. All portions of the research protocols were reviewed and approved by the Institutional Review Board at Harvard University.

Survey Design

Disease perception was measured through the use of the nine-item Brief IPQ (Broadbent et al., 2006) (Page 1: question 7; Page 2: questions 1-8; see Appendix A). The Brief IPQ extends the Self-regulatory Model of Illness by incorporating additional measures of illness representation (patients' beliefs and expectations about their illness): treatment control (belief in the treatment to cure or contain the illness), personal control (level of autonomy in shaping the course of illness), emotional representation (how the illness affects the individual emotionally), and coherence (general understanding of the illness, its symptoms, and its course). Emotional representation is further split into "emotional response" and "concern" (Broadbent et al., 2006). The dimensions and relevant questions of the Brief IPQ are depicted in Table 1. The Brief IPQ was adopted primarily for its brevity, understandability, and numerical output (described in Data Analysis below). Additionally, it has also been shown to have good test-retest reliability and concurrent validity with other, longer versions of the IPQ (Broadbent et al., 2006).

Table 1
Illness Perception Questionnaire Components

Item Number	Question	Category
1	How much does your diabetes affect your life?	Consequences
2	How long do you think your diabetes will continue?	Timeline
3	How much control do you feel you have over your diabetes?	Personal Control
4	How much do you think your treatment can help your diabetes?	Treatment Control
5	How much do you experience symptoms from your diabetes?	Identity
6	How worried are you about your diabetes?	Concern
7	How well do you feel you understand your diabetes?	Coherence
8	I get depressed when I think about my diabetes.	Emotional Response
9	What do you feel is the main cause of your diabetes?	Cause

The ninth component of the Brief IPQ, which asks about perceived cause of disease, was modified to have the participant select up to two options from a list of causes. The other components were not modified. (The original survey asked participants to list possible causes, so this section was modified to limit response heterogeneity.) Additionally, because the ways of characterizing a disease or its cause(s) can vary from patient to patient and culture to culture, we wanted to ensure that the list of causes was culturally comprehensible. To this end, we sought input from the AIHC advisory board, made up of community volunteers, clinic administrators, and AI elders, to develop general phrases that would be easily recognized and understood.

The survey also included demographic questions on education level, diet, height, weight, and exercise routine, and five additional questions (Page 2: questions 9-13; Appendix A) to further explore the emotional representation and control components (e.g., how having diabetes has affected daily activities). Completion time was approximately 5-10 minutes. For most questions, a Likert scale from 0-10 was used to measure participant response.

Data Analysis

The data were analyzed according to the suggested scoring guidelines of the IPQ (Broadbent et al., 2006). Responses were analyzed on the axes of disease consequences, timeline, personal control, treatment control, identity, coherence, concern, emotional response, and cause. The perception index (overall perception score) was calculated by reverse scoring items 3, 4, and 7, and adding them to items 1, 2, 5, 6, and 8, and then taking their average: the higher the score, the more threatening the disease outlook. Additional categorical analysis was performed on these axes. All other responses were treated independently and analyzed categorically. The data were analyzed through *t*-tests and correlation analysis to determine correlation coefficients. Responses to the individual dimensions of perception are reported according to gender, due to gender-based epidemiological differences reported in existing literature (Burrows et al., 2000). We additionally stratified by age, education level, and body mass index (BMI). Correlation coefficients (r) ≥ 0.70 or ≤ -0.70 and p values < 0.05 were considered significant.

RESULTS

Sixty-nine participants fully completed the survey. The average age of respondents was 50 years, the average highest year of school completed was 12th grade, the average BMI was 35, and 45% were female. A full summary of the gross demographic and perception data is depicted in Table 2.

Lifestyle

The majority of those surveyed were overweight or obese, as determined through BMI classifications (18-25, Normal; 25-30, Overweight; 30-35, Class I Obese; World Health Organization, 2013). Hours of exercise per week—both aerobic and anaerobic—were approximately equal to the national averages (Gallup, 2013). Respondents averaged approximately 30 minutes of exercise (walking) per week; walking was the main form of indicated exercise. Very few engaged in significant other exercise.

Table 2
Survey Summary (*N* = 69)

Indicator					
Demographics	**Mean (*SD*)**				
Education (grade)	12.7 (2.0)				
BMI[a]	34.7 (7.5)				
Age (years)	50.2 (12.6)				
Sex	45% female[b]				
Behavioral					
Weekly Exercise	**None**	**<30 min.**	**30-60 min.**	**1-3 hours**	**>3 hours**
Weight lifting	63.3	23.3	6.7	6.7	0.0
Walking	7.4	44.1	23.5	14.7	10.3
Endurance (swimming, bicycling)[c]	76.3	15.3	3.4	5.1	0.0
Exercise (other)	62.5	12.5	12.5	10.0	2.5
Diet	**Mean (*SD*)**				
Cooked dinners/week	4.2 (2.1)				
"Fast-food" purchases/week	3.4 (2.3)				
Frozen meals/week	1.1 (1.3)				
Breakfast/week	5.5 (2.0)				
Sugary drinks/day	1.1 (1.5)				
		Percentage of Participants			
	None	**Sometimes**	**Quite Often**	**A Lot of Times**	
Snacks/day	1.4	71.0	23.2	4.3	
Health and Disease Perceptions (0-10)	**Mean (*SD*)**				
Effects of disease on daily life	5.4 (3.0)				
Longevity of disease	6.7 (3.3)				
Feelings of control	6.5 (2.5)				
Treatment efficacy	7.1 (3.0)				
Experience of symptoms	4.7 (2.9)				
General worry	6.9 (3.1)				
General understanding	7.2 (2.9)				
Depressed about disease	4.1 (3.4)				

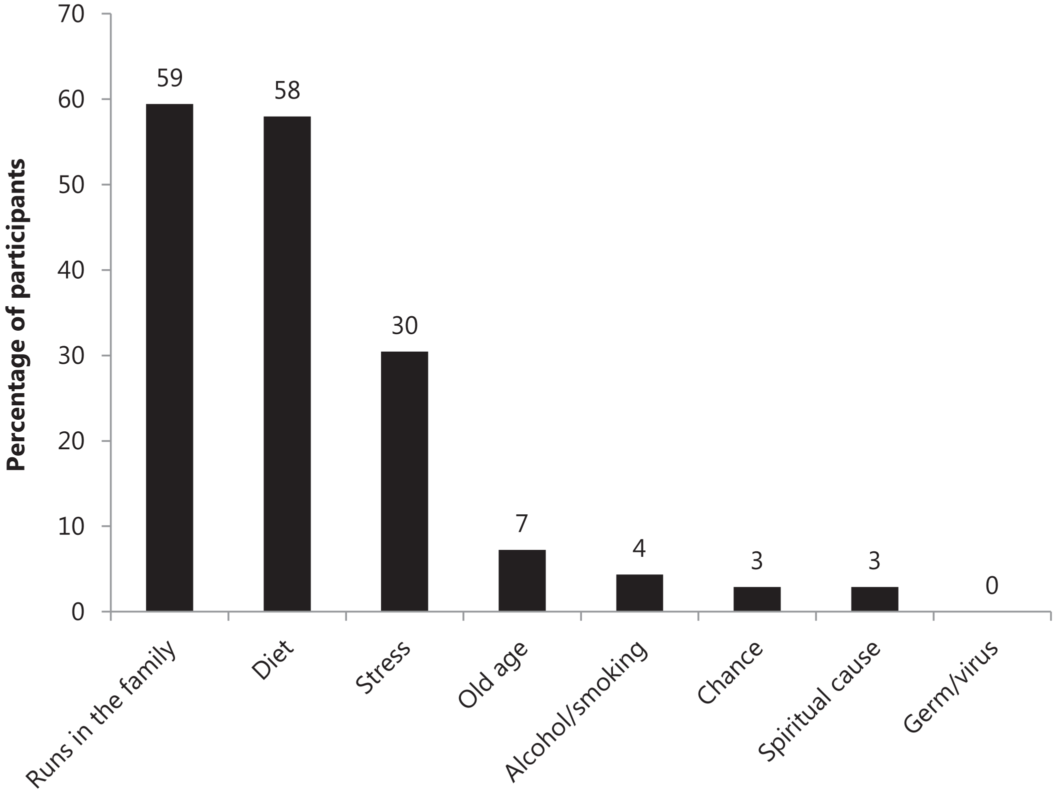
[a] BMI calculated at weight (kg) / [height (m)]^2. [b] This value is an exact value, not a mean. [c] Percentages were rounded to the nearest 0.1%, so totals do not equal 100.0%.

With respect to weekly dietary behavior, respondents cooked an average of four dinners at home, purchased fast-food meals approximately three times, ate an average of one frozen meal for dinner, and ate breakfast, on average, five days. Further, when participants were asked how often they snack in between meals—a general driver of overeating and obesity (Duffey & Popkin, 2011)—they responded "sometimes." Sugary drinks were consumed, on average, one time per day. These dietary and exercise indicators constituted a general lifestyle profile of the respondents.

Perceived Cause of Disease

Respondents were surveyed for what they believed to be the main cause of their diabetes (with the preface that up to two options could be selected). The top three causes selected by respondents were "it runs in the family" (59%), "diet or eating habits" (58%), and "stress" (30%). Other psychosocial or behavioral factors, including "chance or bad luck" and "alcohol/smoking," had smaller representation (3% and 4%, respectively; see Figure 1).

Figure 1
Perceived Cause of Disease



Disease Perception

Perception was gauged on the axes of 8 components of illness representation, as defined by the IPQ. The corresponding questions and respective averages are shown in Table 2. The average perception index of the respondents was 4.6, indicating a neutral belief about diabetes. Scores were highest for the dimensions "treatment control" and "coherence" (7.1 and 7.2 out of 10, respectively).

(As a reminder, responses for "treatment control," "coherence," and "personal control" were reverse scored in calculating overall perception.) Scores were moderately high for "timeline," "personal control," and "concern" (6.7, 6.5, and 6.9 out of 10, respectively). Participants felt worried but not depressed with regard to their diabetes: "Consequences" had an average score of 5.4 out of 10.

Numerous reports suggest the existence of a gender divide when examining disease incidence and health outcomes. For example, women have approximately 3% higher rates of diabetes prevalence than do men and tend to fare worse, developing much more severe cardiovascular problems (Burrows et al., 2000). To determine whether this disparity also extends to health perceptions, we stratified responses by gender (Table 3). The women in our participant pool tended to be older, had a lower mean BMI, and exercised slightly more. With regard to perception dimensions, however, there was little difference; women and men had comparable overall perception indices of 4.6. However, on the dimension "treatment control," the average score for men was 7.9, whereas the average for women was 6.3. In other words, men believed more strongly than women that treatment could help diabetes. These scores differed significantly with a *p* value of 0.04 (below our chosen alpha of 0.05). The *t*-test analysis revealed no other significant gender differences. As mentioned above, stratification by age, education level, or BMI did not yield noticeable patterns across the eight dimensions of perception (data not shown).

Table 3
Gender Differences

	Male	Female	*p* Value
Physical Indicators			
Age	46.1	55.2	0.00
Highest education level	12.7	12.9	0.75
BMI	35.1	27.9	0.68
Hours of cardio exercise/week	1.6	2.0	0.20
Cooked dinners/week	3.7	4.9	0.02
Perception Indicators			
Consequences	5.3	5	0.70
Timeline	7.1	6	0.17
Personal control	6.9	6.2	0.30
Treatment control	8.1	6.2	0.01
Identity	4.8	4.3	0.49
Concern	6.4	6.9	0.54
Coherence	6.8	7.4	0.42
Emotional response	3.7	4.2	0.55
Overall Perception Index	4.6	4.6	0.91

Dimensional Analysis

Next, we wanted to determine which dimension(s) among the eight represented in the IPQ most tightly correlated with the overall perception index. These specific dimensions could presumably serve as psychological metrics for predicting patient prognosis or developing individual, holistic interventions. We conducted correlation analysis on the data and determined correlation coefficients for individual dimensions (Table 4). The dimensions "personal control" and "identity" exhibited the strongest correlation, with *r* values of -0.70 and 0.72, respectively. "Consequences" and "emotional response" demonstrated moderate correlation with overall perception index (0.65 and 0.68, respectively). "Timeline" and "concern" exhibited modest correlation, while "treatment control" and "coherence" showed little to no correlation. Correlation coefficients were comparable between men and women, and, hence, coefficients of the gross data are reported.

Table 4
Dimensional Analysis

Perception Indicators	Correlation with Overall Perception Index (*r* value)
Consequences	0.65
Timeline	0.41
Personal control	-0.70
Treatment control	-0.25
Identity	0.72
Concern	0.57
Coherence	-0.12
Emotional response	0.68

DISCUSSION

Through the IPQ, we examined disease perception among urban AIs with diabetes in Los Angeles County. We observed, generally, high levels of concern and strong beliefs of disease longevity, and equally strong responses to treatment control in men and women. The average overall perception index was 4.6, indicating a neutral perception of disease. Participants indicated having a deep understanding of diabetes as an individual disease and a community issue, as indicated by a relatively high "coherence" score. Additionally, when examining the components of perception individually, we found that the dimensions of "personal control" and "identity" most tightly correlated with the overall perception index, with *r* values at or above 0.70. These data are aligned with numerous studies that posit the importance of personal control in mediating coping behavior and influencing disease progression (Chlebowy, Hood, & LaJoie, 2010; Fukunaga, Uehara, & Tom, 2011; Mazzotti et al., 2012; Rees et al. 2012). Below, we examine in depth some of the implications of the data.

Personal Control

One of the dimensions that we found to correlate most tightly with overall perception index was "personal control," or the level of perceived control the patient has over his or her diabetes. Broadly, having control over one's disease generally manifests in the adoption of healthy behavior and a better prognosis: Women with breast cancer with higher levels of perceived control, and diabetics with stronger beliefs of control, have demonstrated better adaptation to illness and adherence to positive self-care regimens, respectively (Mazzotti et al., 2012; Rees et al., 2012). In our study, correlation analysis yielded a correlation coefficient of -0.70, indicating a strong correlation of "personal control" with overall perception index. In other words, those with higher levels of perceived control tended to have lower perception indices (i.e., had a less negative outlook on their condition), and vice versa. Several studies involving diabetics in urban settings attest to the importance of personal control in self-management (Chlebowy et al., 2010; Fukunaga et al., 2011). For example, in a pilot study of African American adults with T2DM, Chlebowy et al. showed that reduced personal control is associated with inward behaviors and nonadherence.

These inward behaviors—relinquishing personal control to chance or to higher powers—also have been documented in AI individuals with T2DM (Cavanaugh et al., 2008). According to Rothbaum, Weisz, and Snyder (1982), they constitute a secondary response to derive meaning from or accept otherwise uncontrollable events. It is unclear, however, how such a response influences health outcomes: Mazzotti et al. (2012) cite secondary responses as important to the development of effective coping strategies, whereas Ciechanowski et al. (2000) argue that such inward behaviors prevent patients from actively managing their disease. Understanding this dialectic among AI/AN patients warrants further research.

Identity

Another significant finding of our study was the tight correlation between "identity" and overall perception index. In other words, participants who tended to experience more symptoms of their disease had higher (i.e., more negative) overall perception scores, with a correlation coefficient of 0.72.

The identity component of illness perception is especially important in less common illnesses and in cross-cultural care: Occasionally, there is a clash between the patient's and doctor's views of the symptoms caused by disease—a discrepancy that then affects the treatment regimen, the patient's response to the treatment, and even future patient-doctor interactions. Additionally, psychological effects secondary to the disease may be somaticized, resulting in inexplicable or untreatable physical symptoms.

One explanation of our findings is that those participants with higher "identity" scores (and negative overall perception scores) had explanatory models incongruous with those of Western physicians. These models, which are frameworks through which to interpret disease, are culturally patterned: According to Arthur Kleinman, "how we perceive, experience, and cope with disease is based on our explanations of sickness, explanations specific to the social positions we occupy and systems of meaning we employ" (Kleinman, Eisenberg, & Good, 1975, p. 252). Hence, despite receiving conventional treatment, those patients with higher "identity" scores may have felt that the way their disease was being managed conflicted with their understanding of the disease.

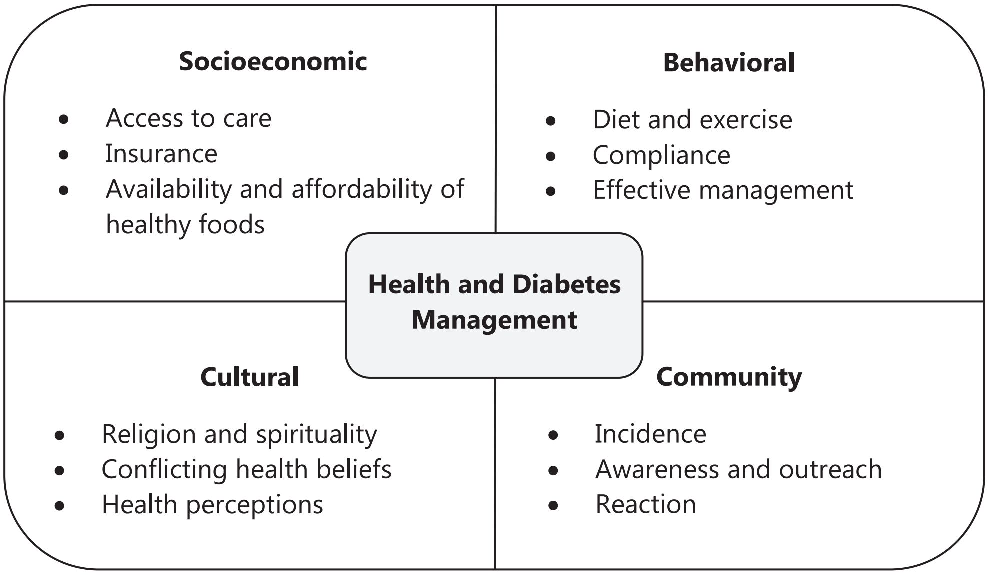
Continuing in this vein, Kleinman also makes a useful distinction between "illness" and "disease," with the former referring to the patient's psychosocial view of sickness; and the latter, the doctor's biological view. This distinction has a major bearing on what constitutes an effective therapy: A treatment that alleviates the patient's symptoms but not the cause of the disease may be perceived as a success by the patient but not by the physician. In this regard, traditional medical care, which operates more within the explanatory model of the patient, may be both more accessible and beneficial. A 1976 paper by Kleinman notes that Taiwanese patients with chronic diseases experienced greater perceived improvement with traditional doctors than with Western doctors (Kleinman, 1976). However, these patients had little change in symptoms (and in one patient, the symptoms worsened), suggesting that the most effective therapies may be those that most ably negotiate these two explanatory models.

Limitations

There are several limitations within this study that must be addressed. Though we made efforts to include culturally specific and recognizable terms in the survey, we could not guarantee full comprehension. Additionally, because our sample size was small and because our study was conducted in only one urban AI community, we cannot be certain whether our results are reflective of the urban AI community at large. Our ability to detect small differences within the data also suffered from having a small sample size and low power. Finally, other potentially confounding variables were not addressed in this study but merit further research, including the duration of time spent in an urban setting and the degree of cultural connectedness.

These limitations notwithstanding, our data reveal both level of personal control and degree to which a patient experiences symptoms as tight correlates of overall disease perception. These relationships indicate a complexity to diabetes management that cannot be understood on a purely physical, symptoms-manifestation level. Rather, successful intervention requires engagement and understanding of these other factors that influence health outcomes—namely, how the disease is perceived individually and within the community (Figure 2).

Figure 2
Holistic View of Health and Disease[a]



[a] Understanding diabetes in the context of the four components represented here may help AI/ANs who are not responsive to standard care.

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CLIENT AND PROVIDER VIEWS ON ACCESS TO CARE FOR SUBSTANCE-USING AMERICAN INDIANS: PERSPECTIVES FROM A NORTHERN PLAINS URBAN CLINIC

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Abstract: In addition to disparities in rates of substance use problems, American Indians (AIs) report multiple barriers to receiving treatment services. The present study utilized intake questionnaire data and focus groups to gain perspectives from 152 clients (65% male, 35% female; mean age 30 years) and 6 female providers on access to treatment for Northern Plains AIs in an urban, non-Native program. AI clients acknowledged the need for treatment more often than did substance users in general, but faced greater resource barriers. Both clients and providers offered specific recommendations for improving access to substance use treatment for AI populations in the Northern Plains.

INTRODUCTION

Despite well-documented disparities in rates of alcohol- and other substance-related problems (Centers for Disease Control and Prevention, 2011a, 2011b, 2011c; Substance Abuse and Mental Health Services Administration [SAMHSA], 2012b), American Indians (AIs) receiving substance use treatment reportedly experience benefits and treatment outcomes that are similar to those of other racial groups (Dickerson et al., 2011; Evans, Spear, Huang, & Hser, 2006; Kidney, Alvarez, Jason, Ferrari, & Minich, 2011). However, previous research indicates that AIs face multiple barriers to accessing healthcare, including resource barriers, such as transportation needs, poverty, and lack of sufficient insurance (Goodkind et al., 2010; Johnson, Carlson, & Hearst, 2010; Lau, Lin, & Flores, 2012; Moulton, Miller, Offutt, & Gibbens, 2007; Zuckerman, Haley, Roubideaux, & Lillie-Blanton, 2004); health system barriers, such as underfunded care systems, less availability of specialized services, and lack of cultural competence among systems and providers (Dennis & Momper, 2012; Goodkind et al., 2010; Tripp-Reimer, Choi, Kelley, & Enslein, 2001); and patient/provider interpersonal barriers, such as medical mistrust and discrimination (Call et al., 2006;

Guadagnolo et al., 2009). Recent studies indicate that similar resource and system barriers exist for substance-using AIs (Dennis & Momper, 2012; Kropp et al., 2013; Venner et al., 2012), as well as other barriers common to substance users in general, such as comorbid mental health issues (Abbott, 2007; Kropp et al., 2013), stigma, and the belief that treatment is not necessary (Venner et al., 2012). Additionally, AIs seeking help for substance use problems face more limited treatment options, particularly options that address cultural beliefs, values, and practices (Gone, 2004; Jones-Saumty, Thomas, Phillips, Tivis, & Nixon, 2003; McFarland, Gabriel, Bigelow, & Walker, 2006; Radin, Banta-Green, Thomas, Kutz, & Donovan, 2012). Tribal nations are diverse, however, and some investigators have found evidence that factors associated with receiving substance use treatment may differ according to tribe, geographic region, and urban versus reservation location (Beals et al., 2005; Duran et al., 2005; Herman-Stahl & Chong, 2002; McFarland et al., 2006).

To address the need for additional data regarding alcohol and drug use in AI/AN communities, the National Institute on Drug Abuse's National Drug Abuse Treatment Clinical Trials Network (NIDA CTN) funded several projects in order to develop collaborative research partnerships with AI/AN communities (see Thomas, Rosa, Forcehimes, & Donovan, 2011 for a description of the overall project). As part of this larger project, researchers at the University of Cincinnati (NIDA CTN Ohio Valley Node; OVN) investigated substance use patterns and associated issues for AI substance use treatment clients at an urban, non-Native program in the Northern Plains. The OVN project was a joint effort of the CTN's OVN at the University of Cincinnati, the Northern Plains Tribal Epidemiology Center (NPTEC) of the Great Plains Tribal Chairmen's Health Board, and the City/County Alcohol and Drug Programs in Rapid City, South Dakota. Ongoing guidance was provided by a Community Advisory Board, which consisted of tribal members involved in substance abuse treatment and/or prevention on three area reservations and by a consultant from the Prairielands Addiction Technology Transfer Center, who was also an enrolled member of a Northern Plains tribe. Representatives from each of these groups collaborated to identify the study aims and procedures, which were endorsed through formal resolution by the Great Plains Tribal Chairmen. The overall project was reviewed and approved by the University of Cincinnati Institutional Review Board – Social and Behavioral Sciences (UC IRB-S) and by the Aberdeen Area Indian Health Service IRB, which provided approval specifically for activities occurring on Tribal lands; study activities represented in the present analyses were performed at a non-Tribal location and, therefore, were under the approval of the UC IRB-S. Details regarding the overall project, along with its primary findings, are described in Kropp et al. (2013).

One aim of the overall project was to gain the perspectives of AIs seeking treatment for methamphetamine and other substance use on issues related to treatment and the personal impact of use. This aim was met in two ways: first, by summarizing deidentified intake data from the participating clinic, and second, by conducting focus groups with AIs in treatment. Another aim of the overall project was to gain the perspectives of urban treatment providers on issues of concern in providing treatment services for methamphetamine and other substance use with AIs; this aim was accomplished by conducting a focus group with treatment providers. The present study utilized this mixed methods approach to identify and seek potential solutions for perceived access barriers for substance use treatment-seeking AIs in the Northern Plains. Findings presented here will help fill the knowledge gap around barriers to treatment for urban AI substance users; it is hoped that these findings will help inform decisions in urban treatment programs about potential methods to increase access to care for this population.

METHODS

Participating Clinic

The participating clinic is a state-accredited provider of substance use treatment services located in the second-largest urban area in South Dakota. Services provided by the clinic include assessment, DUI classes, medically supervised detoxification, inpatient treatment, outpatient and intensive outpatient counseling, and transitional housing. Most referrals to the clinic come through the criminal justice system, although many clients are self-referred as well. Approximately 75% of clients are AI; although the clinic staff members have received training in understanding AI cultures and make provisions for AI clients to access some community cultural resources, the treatment provided at the clinic is not specific to AI cultural or healing practices. At the time of the study, the clinic did not have any AI treatment providers on staff.

Deidentified Intake Data

Intake data were obtained from the clinic intake questionnaire, which is a self-completed paper questionnaire administered to every treatment-seeking person who is admitted into program services at the clinic. It is not, however, administered to persons obtaining an evaluation only, nor is it readministered to persons who have repeat admissions within the course of a year. The questionnaire utilizes both categorical and open-ended responses covering a wide variety of topics, including substance use and treatment history, physical health, education, employment, finances, legal and social issues, family, spiritual beliefs and practice, and cultural identification. The questionnaire has not been assessed for psychometric properties. As part of the intake process, all treatment applicants completed a release indicating that the data they provided may be used for research purposes. No patient refused to sign the release; refusal to sign would not have excluded a patient from receiving treatment services. Intake data from all (*N* = 143) self-identified AIs seeking treatment during the data collection period of the main study (2008-2009) were gathered by non-study-related clinic staff members, who then deidentified the data and provided them to the study team. Persons represented in the sample completed only those assessments normally collected during the intake process, and, thus, no study-specific informed consent was obtained. The study team selected a subset of questions from the deidentified intake questionnaire for analysis in the current study; because the data were deidentified, it is impossible to tell how many AIs completing the intake form actually attended their first treatment appointment. Some questions allowed the respondent to select more than one answer; as a result, respondents may be duplicated across the response options for such questions. Unanswered questions were coded as missing and removed from the sample size for that variable. To answer whether the setting in which the respondent was born and raised impacted the importance of cultural heritage, the study team categorized respondents by "Reservation only," "City only," "Rural/Ranch only," or "Mixed." The team then determined the percentage of respondents in each category who indicated that cultural heritage was "Important," "Not Important," or "Equivocal" (e.g., "not sure," "maybe"). Because the intake questionnaire's psychometric properties are unknown, information from it was summarized using only descriptive statistics.

Client Focus Groups

The second way in which we accomplished our aim of gaining perspectives of treatment-seeking AIs was by conducting gender-specific focus groups with AIs in treatment at the clinic. Candidates for the client focus groups were recruited from the pool of AI clients who were enrolled in services for methamphetamine and/or other substances at the clinic and had been receiving treatment for methamphetamine and/or other substances for the past 90 days or longer. A study team member who was a member of a local tribe made brief presentations to potentially eligible candidates at the beginning of group counseling sessions and invited interested persons to attend the focus groups.

Upon presenting for the focus groups, candidates were provided with information about the present study and, if interested, met with a study team member to review and ask questions about the informed consent form. Before signing, candidates demonstrated understanding of the information in the form by completing a brief comprehension tool. A study team member reviewed any missed questions to assist candidates in understanding the information.

A total of four male clients and five female clients presented for the focus group sessions, all of whom signed the consent and participated in the groups. No additional demographic information was collected for focus group participants; further, no information was available regarding differences between clients who chose to attend the focus groups and those who did not.

The research team, which included members of local tribes, developed a focus group manual; AI tribal treatment providers in the area provided additional input, and the Community Advisory Board provided a final review and approval. The manual provided a pool of potential questions from which the facilitators could select based on group composition and area of focus. Table 1 provides further descriptions of the areas of focus and question pool. The focus groups were facilitated by staff from the NPTEC, one of whom was a member of a local tribe. Both focus groups lasted approximately 2 hours and were audio recorded with participants' permission. Participants received retail gift cards worth $15 as reimbursement for their participation.

Transcripts of the focus groups were analyzed post hoc rather than with a priori assumptions or hypotheses. In the first phase, transcripts were analyzed qualitatively using the thematic analysis method (Rice & Ezzy, 1999). A study team member with training and experience in qualitative analysis identified concepts, categories, and themes, which were grouped to form more abstract categories. Relationships among the categories were then identified. Next, team members coded the transcripts for comparisons between the interactions to expose meaning and processes that exist within the data. The codes were then carefully scrutinized to fully elaborate them and identify each of the emergent issues. Finally, members of the study team and Community Advisory Board reviewed the analysis to confirm that the findings were culturally congruent. Themes associated with access to treatment are included in the present study.

Provider Focus Groups

To accomplish the aim of gaining providers' perspectives, staff members at the clinic who provided substance use treatment services to AI clients were approached and invited to participate in the focus group. As with the client focus groups, candidates who presented for the provider focus group received information about the present study and, if interested, were given an opportunity to review, inquire about, and sign the informed consent form. Six female, non-AI treatment providers presented for, consented to, and participated in the 2-hour focus group. No additional demographic information was collected; further, no information is available regarding differences between providers who chose to attend the focus group and those who did not. Table 2 provides the areas of focus and question pool for the provider focus group. As with the client focus groups, the session was recorded and transcripts were analyzed post hoc using the method described above.

Table 1
Client Focus Group Areas of Focus and Question Pool

Focus Area - Use Pattern

Tell me a little about your history of using drugs and alcohol?

- How long have you been using Meth/other substances?
- Did you usually use 1 drug at a time or in combination?
- Under what circumstances did you use?
- What is your preferred drug of choice? Any special reasons?
- Without mentioning names, please tell me how you got access to substances?
- Did you commonly use on or off the reservation?

Focus Area - Treatment Entry

What are some of the reasons that made you seek this most recent treatment?

- How long had you been seeking treatment before coming to this program?
- What difficulties did you face in obtaining treatment?
- Did you seek help through the tribal treatment centers before coming to this program?
- Have you been a [Clinic] client before?
- What made you choose this program over the other? Or both?

Focus Area - Treatment Satisfaction

Tell me your opinion of this treatment program so far?

- What are some of the problems or issues you have with the kind of treatment you are receiving at [Clinic]?
- What do you like about [Clinic]?
- Tell me about the impact of any cultural differences on your treatment at [Clinic]?
- What are some suggestions for what could be done differently to make your treatment experience better?
- Have you ever been in treatment at a tribal treatment center?
    (If yes) What are the major differences between the tribal treatment center and [Clinic]?
    (If no) How do you think your treatment program would have been different at a tribal treatment center?

Focus Area - Tribal Identification

Are there any cultural practices you believe would enhance or increase your recovery?

- Where are you most likely to seek support to prevent relapse?
- What role do your spiritual practices play in your recovery?
- How do you address your spiritual needs at this point in your recovery?

Table 2
Provider Focus Group Areas of Focus and Question Pool

Focus Area - Prevalence

Tell me about trends in substance use you are seeing:

Among your American Indian clients? Among your clients in general?

- What 3 substances are you seeing the most problem with right now?
- What substances are significantly increasing in use?
- What other drugs are you seeing clients use problematically?
- How would you compare the use of Meth to the other drugs that you treat?
- How would you explain the trends that you see in Meth and other drug use?

Focus Area - Access to Care

Tell me about barriers faced by American Indians in accessing treatment for substance abuse problems?

- How do American Indian clients access treatment at this center?
- How do you ensure continuity of care for American Indian clients?
- What do you think could be done to increase access to treatment for American Indian clients?

Focus Area - Treatment Effectiveness

What are some of the challenges you experience with regard to treating American Indian clients?

- What changes in treatment do you believe would be most appropriate in impacting your American Indian clients for the better? For your clients in general?
- What are some mechanisms that you believe, if put in place, would ensure better care for your American Indian clients? For your clients in general?

Focus Area - Consultation and Referral

How often do you work in tandem with American Indian tribal treatment centers?

- (If work in tandem) What circumstances call for that collaboration? How does that influence the treatment of American Indian clients?
- (If not working in tandem) Do you believe it would make a difference if you did?
- Do you believe it is important for American Indian tribal treatment centers to work hand-in-hand with urban treatment centers? What effect would that have?

Focus Area - Culturally Specific Issues

What role do you believe cultural issues play in the treatment you provide for American Indian clients?

- What role do you believe traditional ceremonies and healing practices play in treating American Indians with substance abuse problems?
- Tell me about the role of spirituality for your American Indian clients?

RESULTS

Participant Characteristics

During the data collection period, 143 clients completing intake questionnaires identified as AI. Table 3 provides the characteristics of respondents to the intake questionnaire. Nineteen clients indicated an additional racial designation; "White" was indicated most often. Clients represented 18 different tribes, although 4 clients indicated no tribal affiliation. Sixteen records were missing gender information. Of the remaining records, 83 (65.4%) represented males and 44 (34.7%) represented females. The average age was 30 years overall (range, 20-63 years). More than half of the clients (58.0%) indicated that they had been raised in the city, and approximately one third (29.4%) reported having been raised on a reservation; the remaining 12.6% were raised in a rural/ranch (i.e., non-reservation) setting.

The 4 male focus group participants differed in the type of services they were receiving at the clinic and reported alcohol as the primary problem leading to treatment; additional drugs used included marijuana, methamphetamine, and cocaine. In contrast, the 5 female focus group participants were drawn exclusively from the clinic's Intensive Methamphetamine Women's Treatment Program for those transitioning out of the state prison system. All female participants also indicated significant alcohol and marijuana use, with use of cocaine, heroin, and psychedelic mushrooms reported to a lesser extent. It is unknown whether focus group participants also provided data via the intake form.

Table 3
Characteristics of Respondents on Clinic Intake Questionnaire

Characteristic	
Gender	*N* = 127
Male	83 (65.4%)
Female	44 (34.6%)
Additional Race	*N* = 143
White	14 (9.8%)
African American	1 (0.7%)
Other	4 (2.8%)
No additional race	124 (86.7%)
Age (mean average)	*N* = 85
All	30 years
Male	30 years
Female	31 years

continued on next page

Table 3, Continued
Characteristics of Respondents on Clinic Intake Questionnaire

Characteristic	
Where were you born? (type of setting)	*N* = 143
Reservation	42 (29.4%)
Rural/ranch	18 (12.6%)
City	83 (58.0%)
Where were you raised? (type of setting)	*N* = 137
Reservation	43 (31.4%)
Rural/Ranch	19 (13.9%)
City	75 (54.7%)
Difference in setting born/raised	*N* = 35
Reservation/Rural	4 (11.4%)
Reservation/City	9 (25.7%)
Rural/Reservation	2 (5.7%)
Rural/City	3 (8.6%)
City/Reservation	12 (34.3%)
City/Rural	5 (14.3%)

Specific Barriers to Treatment Identified

Table 4 provides the subset of access-related questions from clinic intake questionnaire. In addition, specific barriers to treatment were identified in the focus group responses.

Felt Treatment Not Necessary

When asked why they had not sought treatment earlier, 59.4% (*n* = 85) of the AI clients completing the intake questionnaire indicated they had not believed treatment was necessary until now. Most participants in the male focus group indicated they had not sought help on their own, but were now in treatment as a result of legal charges stemming from their substance use. Most of the female focus group participants stated they had never thought about treatment until provided with the opportunity to receive it as a part of their sentence. Conversely, treatment providers indicated that a great number of AIs readily seek admission to their programs, but are stopped by other barriers.

Table 4
Subset of Access-related Questions from Clinic Intake Questionnaire

Question	Number Responding, of 143 AIs seeking treatment (%)
What problems/issues have prevented you from seeking treatment earlier? (Select all that apply)[a]	
Didn't think I had a problem	85 (59.4%)
Cost of treatment	41 (28.7%)
Lack of transportation	14 (9.8%)
Child care needs	9 (6.3%)
Afraid of what family/friends would say/Other stigma	12 (8.4%)
Afraid significant other would not be supportive	3 (2.1%)
Afraid of legal problems if drug use was discovered/Other legal	15 (10.5%)
Long waiting list	8 (5.6%)
None	12 (8.4%)
How long did you have to wait for an intake appointment here (from first contact to today)?	
Less than 1 week	62 (43.3%)
1-3 weeks	46 (32.2%)
1 month or longer	3 (2.1%)
No response	32 (22.4%)
Did you call any other program for help before deciding to come here?	
Yes	34 (23.8%)
No	84 (58.7%)
No response	25 (17.5%)
If yes, why did you choose to come here? (Select all that apply)[a]	
No wait/waiting list shorter here	12 (35.3%)
Other program costs too much	21 (61.8%)
Transportation issues	11 (32.4%)
More convenient hours here	9 (26.5%)
Treatment staff more familiar with my racial/ethnic group here	2 (5.9%)
Wanted specific type of treatment available here	3 (8.8%)
Legal requirements	7 (20.6%)
Other unspecified	5 (14.7%)

[a] Percentage totals are greater than 100% due to ability to select multiple answers

Resource Barriers

Lack of resources was the next most commonly indicated barrier to treatment by clients completing the intake questionnaire (44.8%; *n* = 64). Cost of treatment (28.7%; *n* = 41), transportation (9.8%; *n* = 14), and child care (6.3%; *n* = 9), were the resource needs most often mentioned in the intake data as barriers to treatment in the past. For those who had first sought treatment elsewhere (*n* = 34), most (79.4%; *n* = 27 unduplicated) indicated that resource barriers were a reason for completing the intake at the current clinic instead. Participants in the client focus groups also indicated lack of transportation as a barrier, as well as lack of access to other resources required to receive treatment, such as identification documents. Treatment providers indicated that transportation was particularly difficult for AI clients. For example, one provider noted that clients may need to travel to the reservation in order to obtain proof of tribal enrollment before accessing services. Putting herself in the client's shoes, she asked, "If I have to go get a tribal ID and need to go to [the reservation], how do I get there, how do I get back? Will I get back?" Treatment providers indicated that a lack of basic needs such as stable housing creates obstacles to entering treatment for many of their AI clients. A provider noted, "Native American clients that come in seeking treatment [...] might not have access to a phone, might not get their mail, you know, waiting lists can be anywhere from two weeks to two months [...] they don't get that phone call, or they don't get that letter until two weeks later, and so it's a logistics kind of issue, you know." Another indicated, "It's almost like you gotta start with the basic survival needs to help someone move through our basic process of getting treatment. Our [AI] clients, they don't have a whole lot of resources for that."

Stigma

Among clients completing the intake questionnaire, 10.5% (*n* = 15) indicated that stigma associated with substance use treatment had contributed to their not seeking treatment earlier. Specifically, most of these respondents indicated they had avoided entering treatment because they were afraid of what their family or friends would say; the remainder specified that they were afraid that their significant other would not support them receiving treatment. Providers indicated that stigma attached to receiving treatment, particularly treatment based in Western medicine, negatively impacts both treatment entry and retention for some AI clients.

Legal Issues

Among clients completing the intake questionnaire, 10.5% (*n* = 15) also indicated that legal issues had prevented them from seeking treatment earlier. Most of these respondents specified that they were afraid of getting into legal trouble if their substance use were discovered as a result of presenting for treatment. Clients in the focus groups, however, reported that engagement in the legal system facilitated access to treatment for them.

Treatment Availability

Only 5.6% (*n* = 8) of clients completing the intake questionnaire indicated that they had experienced difficulty with treatment availability prior to the current treatment episode, and 55.9% (*n* = 62) of the 111 clients responding to the question about length of wait indicated waiting less than a week to obtain their appointment for the intake interview. Approximately one third (35.3%; *n* = 12) of those 34 clients who had first sought treatment elsewhere indicated that the shorter wait list factored into their decision to enter treatment at the current clinic instead. Information from the client focus groups, however, indicated that accessing treatment can be quite problematic due to the lack of treatment slots in state, tribal, and Indian Health Service (IHS) treatment programs. One male client indicated "I had a hard time. I had to wait around town, 'cause everything was filled up, there wasn't no openings at the...round here in [City], so during that time, you know, I was, you know, trying to hang on but I kept relapsing on my own, just falling off the wagon. It took me a while, took me at least a couple of months, before I got into treatment." Participants in the provider focus group agreed that there are not enough treatment resources in the immediate area, noting that clients placed on a waiting list may lose motivation for treatment in the interim. Providers also indicated that the geographic distances involved in accessing most AI-specific treatment programs in the region render those options unavailable to many clients.

Cultural Differences

Clients were asked to describe the importance of their cultural heritage, with 129 responding to this question. Overall, respondents rated their cultural heritage as important (71.1%; *n* = 91), while 17.2% (*n* = 22) indicated it was not important and 11.7% (*n* = 16) gave equivocal responses. Importance of cultural heritage was then compared to setting born/raised; a total of 124 clients both gave complete responses to the setting born/raised questions and responded to the importance of cultural heritage question. Clients who had been born in one setting but raised in another tended to indicate that their cultural heritage was important more often (78.8%) than did clients who were both born and raised on a reservation (66.7%), in a city (69.5%), or in a rural/ranch setting (63.6%).

Although participants in all the focus groups recognized the value of having access to culturally specific elements in treatment, respondents varied in their estimation of the role cultural differences might play as a barrier to treatment. Male focus group participants consistently indicated a desire to incorporate Native ways into treatment for AI clients, and noted the frustration caused by not having access to those resources. One client noted, "Yeah, 'cause you know, once, um, you become sober, not everybody, but the majority of Native people want to get back into cultural stuff 'cause it's like, you know, part of being sober." Another added, "The Native people want, want to go into sweat and stuff and they don't have no, no access to none here and you have some but you have to go to rez or out of town..." In addition, some male clients indicated having difficulty opening up to non-AIs. Although all of the female participants agreed that including cultural elements to treatment would be beneficial, they did not view cultural differences as a barrier to treatment. Despite the clinic's lack of AI-specific services, participants in both client groups generally viewed their current treatment as beneficial. Participants in the treatment provider group cautioned that AI clients often differ in the importance they place on accessing elements of AI cultures. In addition, providers indicated that cultural differences exist in conceptualizing problems and approaching recovery. For example, one provider was discussing the differences in family relationships in AI culture as opposed to relationship concepts in mainstream substance abuse treatment. "Somebody could go to [non-tribal] treatment and have this extended family and certain roles of respect and you don't talk back and so on, you get labeled co-dependent. All of a sudden it's a problem in their treatment plan. So there's some basic differences in the dynamics that go on in family systems that we have to be sensitive to, because otherwise we tend to look at it as problematic." Another provider noted, "I was teaching a class at [Tribal College] and one of my people in class was white, sharing something she was dealing with and during the break, one of the Native American students came and didn't know how to take that, because that's not something you would share with people." Further, cultural differences exist among state, tribal, and IHS treatment programs, which impede communication and coordinating care. In speaking about attempting to refer AI clients to culturally specific programs, a provider noted, "We made the evaluation, we called that center, we get them placed, [but] because they don't accept our evaluations, they have to have a tribal evaluation, and it's a different process." Another noted, "When it comes to a tribal treatment program, I can't tell them much. I don't know much about the program. I couldn't tell them anything about the physical layout. If they have questions about what the treatment is going to be like, I can't answer a lot of them. I'm just more familiar with the system I've been working in so long. I know there's a real disconnect between the two systems."

Recommendations Made by Focus Group Participants

Focus group participants were asked to discuss ways in which urban, non-Native treatment programs in the Northern Plains could address the barriers to care noted above. Both clients and providers asserted that, in general, an increase in available treatment services and capacity is needed. There were no notable differences between client and provider focus group perspectives and recommendations on addressing barriers to care. In addition, participants offered the following specific recommendations:

1. Providing linkage services, such as case management, to clients on the waiting list would assist in stabilization and encourage ongoing motivation for treatment during the interim between the initial intake and treatment entry.

2. Providing assistance with transportation would increase clients' access to resources needed for treatment entry and program requirements, as well as allow clients greater access to AI cultural and spiritual resources during treatment.
3. Increasing outreach and education for clients' families and AI communities would help decrease the stigma associated with treatment for substance use and increase family support for client recovery.
4. Providing opportunities to incorporate elements of Native culture and spirituality into treatment through linkages to external resources (e.g., consulting with traditional healers, arranging for visits to purification lodges, inviting tribal elders to speak to client groups, finding local AIs in recovery to serve as sponsors or mentors) would help reduce cultural barriers by allowing individual clients to engage in AI practices at a level that is commensurate with their personal identification and interest. Further, increasing the number of AI staff members in the program would assist both AI clients and non-AI staff in bridging cultural gaps.
5. Increasing the exchange of information among state, tribal, and IHS programs would help reduce cultural barriers and improve coordination of care for AI clients. Providers stated, "Let's just get to know each other and maybe start there. That's what I need to do is, they come to our treatment facility and we talk about the commonalities we have and we go to theirs" and, "I think there's a lot of misunderstanding between people and things and businesses and whatever because they don't know." According to treatment providers, this process would involve multiple levels:
    a. Individual: Non-Native treatment providers would benefit from receiving education regarding local AI cultures, including the similarities and differences among various tribes and their approaches to healing;
    b. Institutional: Staff members in state, tribal, and IHS programs would benefit by visiting each other and gaining an understanding of services offered as well as issues related to intake, referral, and funding;
    c. Systemic: Regional efforts should be made to identify and reduce systemic barriers to coordination of care among state, tribal, and IHS treatment programs.

DISCUSSION

Results from this study add to our understanding of issues facing AI substance users seeking treatment in urban settings and provide some specific recommendations from both providers and consumers on methods for improving access to treatment services for AI clients in the Northern Plains region. In general, study participants indicated that AIs in treatment at this urban, non-Native program face similar challenges to treatment access to those reported by the U.S. substance-using population in general, although the extent to which some of these barriers are experienced may be different for AI clients.

Failure to acknowledge need for treatment is the primary roadblock for seeking treatment among substance users in the U.S. While this finding remained true for this study sample, 59.4% of clients indicated on the intake form that it had prevented them from seeking treatment—considerably less than the 95.3% reported for the U.S. overall (SAMHSA, 2012a). This difference may be due, in large part, to the fact that our finding came from retrospective information about AIs who had converted to a "treatment-seeking" status; we do not have information for substance-using AIs who did not present for treatment. However, information from the provider focus group supported a greater frequency of self-referral for treatment among their AI clients as compared to non-AI clients. The study findings offer no explanation for this difference; we postulate that the increased health disparities suffered by AI substance users may play a role. Tribes represented in the current study are part of the Aberdeen IHS catchment area, which has higher rates of substance-related health issues than both the U.S. general population and AIs in other IHS service areas (IHS, 2000). Other researchers (e.g., Dennis & Momper, 2012; Forcehimes et al., 2011) have reported that AI communities are concerned about the negative impact of substance use among their people and indicate that appropriate treatment services are needed.

As with other substance-using populations, resource barriers were prominently mentioned in this study. Transportation barriers contributed to difficulties in both entering treatment and meeting other resource needs. Because Native-specific treatment programs in the region are geographically dispersed, AIs seeking treatment in these facilities face numerous logistical problems, including the need to move away from their family and other support systems in order to enter treatment. AIs in treatment at the clinic also faced greater resource deficits in general (see Kropp et al., 2013).

While the clinic's Westernized treatment services were seen as beneficial, both providers and clients indicated that access to elements of Native culture and spirituality should be, at a minimum, an elective adjunct to treatment. In a review of the literature, Greenfield & Venner (2012) reported a growing trend to incorporate elements of AI healing practices into substance use treatment and to investigate the impact of these on treatment outcomes, and noted that these inclusions have been indicated as helpful in increasing the appeal and efficacy of treatment, as well as contributing to better engagement and outcome. The availability of culturally specific services for urban AIs, however, is hampered by a number of issues. Although the majority of persons identifying themselves as AI live in urban areas, most AI-specific programs in the U.S. are located in rural settings (SAMHSA, 2009). McFarland et al. (2006) suggested that urban AIs may be underrepresented in the allocation of federal funds that are earmarked for providing treatment to Native populations.

Further, findings from a study on barriers to accessing federal grant opportunities (U.S. Department of Health and Human Services [US DHHS], 2006) indicated that staff members at tribal organizations often lack sufficient experience or time for tracking these opportunities that could increase treatment options. In addition, the short time between grant announcements and their due dates does not allow adequate time for coordinating with potential partners, obtaining tribal and regulatory approvals, and writing grant proposals. Consequently, many urban AI clients are being treated in non-AI-specific programs, such as the facility participating in the current study, where staff members may struggle with understanding exactly what would be helpful to their clients and access is challenged by the need to navigate separate treatment systems.

Recommendations from the focus groups can be characterized by two main themes: 1) increasing resources for urban AIs, and 2) addressing cultural gaps. Considering the recommendation to increase resources, it is important to note that SAMHSA funding for substance use treatment has declined in the past several years and, although IHS overall funding has increased, IHS funding for urban AI health has remained unchanged (US DHHS, 2012). Given this lack of additional monies, it is necessary to find ways to maximize existing resources to accomplish these recommendations. Toward this end, the study team suggests the following potentially cost-effective methods for implementing recommendations from the focus groups:

Expand the reach of case management

The expansion of case management services has the potential to reduce barriers to treatment entry and retention, as well as to help address cultural gaps. Focus group participants indicated three specific areas in which case management services might be particularly beneficial: 1) keeping wait-listed clients engaged prior to intake; 2) working with clients' families and communities to increase support for recovery; and 3) linking clients to culturally specific resources not provided by the treatment program. There is precedence for the effectiveness of case management in the region. In a 2008 study utilizing case management with at-risk AI women in the Northern Plains, May et al. successfully reduced rates of fetal alcohol spectrum disorders and demonstrated improvements in several other psychosocial areas. By maximizing available resources through outreach, education, and linkages, case management may be particularly cost effective.

Increase coordination between treatment programs and the criminal justice system

Focus group participants indicated that legal involvement actually facilitated treatment entry for them. It may be that greater coordination between the criminal justice system and treatment entities will assist incarcerated AIs with substance use problems to transition back to the community more successfully. In a study of AIs in remission from alcohol dependence, Feldstein, Venner, & May (2006) reported that the participants experienced significantly more alcohol-related incarcerations than alcohol treatment episodes. Working together, the criminal justice system and the substance use treatment system could utilize their resources for mutual benefit. For example, funding treatment programs to provide intensive services within jail/prison facilities, even before release, could address a significant factor in the behaviors leading to incarceration, which may decrease recidivism in this population.

Define best practices for treating AI substance use treatment clients

Increasing knowledge of what treatment techniques and approaches are most effective with urban AI substance users in the Northern Plains will enable treatment providers to maximize existing funds. Although the availability of culturally congruent treatment elements was viewed positively by both providers and clients in this study, opinions varied as to which elements were most beneficial and whether elements of Native culture were necessary for successful treatment outcomes. Existing literature generally supports the use of cultural adaptations in treatment, but little is known as to what specific interventions result in improved outcomes for AIs in substance use treatment (Greenfield & Venner, 2012). To date, only two randomized controlled trials of interventions for Native substance users appear in the literature. In the first of these studies, O'Malley et al. (2008) found significantly improved treatment outcomes using culturally adapted assessment and counseling with oral naltrexone compared to placebo for alcohol dependence in an Alaska Native sample. In the second, Foley et al. (2010) examined an AI adaptation of a 12-hour job search-training program which was specifically designed for drug-dependent individuals and empirically-supported as efficacious in non-Native populations. The research team implemented this intervention, the Job Seekers Workshop, and the Job Interview Videos (JIV), a 40-minute two-part video, in an AI residential treatment program in order to compare outcomes on employment and substance use. The researchers found no difference between groups for employment outcomes. Further, although previous research had suggested that employment predicted successful functioning after substance use treatment in AI populations (Reynolds et al., 2000), Foley and his colleagues found no difference between groups for substance use outcomes. Additional comparative research is needed to further inform on which cultural adaptations increase efficacy and acceptability, as well as the extent to which interventions demonstrated effective in other populations might provide improved outcomes for AI clients.

Build collaborations between state, tribal, and IHS treatment providers

One way to both maximize resources and bridge cultural gaps is to develop strong collaborations between Native and non-Native treatment providers. Focus group members reported that, although previous attempts at collaboration had occurred, these large meetings and joint training efforts had been mostly unsuccessful. Given the lack of familiarity between the two treatment systems, a more effective first step might involve simply assisting providers to learn more about each others' resources and processes. Regional AI organizations dedicated to integrated health initiatives (such as the Great Plains Tribal Chairmen's Health Board, a partner in the current project) may be uniquely positioned to facilitate such collaborations and serve as cultural consultants to urban, non-Native treatment providers.

Limitations

A number of limitations to the current study are noteworthy. First, data were collected at an urban, non-Native treatment program in a specific geographic area. Findings from the current study should not, therefore, be considered representative of urban AI substance users associated with culturally specific treatment programs, or of those in other areas of the U.S. Second, the clients in this study represent only those AI substance users who are engaged in the treatment process at some level. Presumably, they had already overcome many barriers to treatment; thus, their perspectives may be different from those of AI substance users who have yet to overcome such barriers. Next, significant differences exist between the intake questionnaire sample and the client focus groups. The intake questionnaire sample included all AIs seeking treatment services during the study timeframe, while the client focus groups were self-selected; small in number; and included only clients who had sought, entered, and remained in treatment for at least 90 days. Further, the client focus groups included an overrepresentation of females and persons legally mandated to treatment. Therefore, findings from the intake sample may not generalize to an AI treatment sample, nor will the focus group findings necessarily generalize to AIs prior to treatment or at treatment entry, or to treatment samples that differ in terms of gender proportions or legal status. Future research efforts on access to care for substance-using AIs should attempt to incorporate perspectives from a more diverse sample; it will be especially important to obtain such information from substance-using AIs who have not enrolled in treatment. Finally, the psychometric properties of the clinic's intake questionnaire are untested. Despite these limitations, the current study adds to the growing body of information available to non-Native treatment providers regarding barriers and provides recommendations for potential interventions to increase access to treatment for AI clients.

CONCLUSION

Studies report that AIs seeking services for substance use problems face numerous barriers to accessing treatment; however, factors associated with access to treatment may differ according to tribe, geographic region, and urban versus reservation location. As part of a larger project within the NIDA CTN, the study team utilized data from a clinic intake questionnaire, client focus groups, and provider focus groups to identify and seek potential solutions for perceived access barriers for substance use treatment-seeking AIs in the Northern Plains. Resource barriers were prominently mentioned, particularly logistical issues associated with accessing care in this geographically dispersed region. Recommendations from the focus groups involved increasing resources for urban AIs and addressing cultural gaps. Specifically, focus group participants recommended expanding case management and assistance with transportation, along with outreach and education for patients' families, as methods of increasing resources for treatment access. To address cultural gaps, participants recommended incorporating elements of Native culture and spirituality into treatment through linkages to external resources and increasing the exchange of information among state-funded, tribal, and IHS programs at individual, institutional, and systemic levels. Implementing these recommendations in ways that maximize existing resources may help to improve access to substance use treatment for urban AIs in the Northern Plains.

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This manuscript is dedicated to the memory of Dr. Duane Mackey and Terryl Blue-White Eyes.