

Prevalence and Correlates of Mental Disorders Among Native American Women in Primary Care

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Limited information exists about the prevalence of mental illness among American Indian and Alaska Native (AIAN) women. The 2 major US prevalence studies—the Epidemiologic Catchment Area Study¹ and the National Comorbidity Survey²—did not report data on AIANs. Extrapolation of prevalence rates from other populations is problematic, because AIAN women are subject to unique factors that may affect their susceptibility to mental illness. Although the support of their traditional culture may protect AIAN women from common mental disorders,^{3–5} it is plausible that AIAN women may be at higher risk for mental illness because of adverse factors faced by their ethnic group.^{6–12}

The Mental Health of American Indians and Others in Primary Care

Available evidence suggests that mental illness, mental dysfunction, or self-destructive behavior affects approximately 21% of the total AIAN population, costing an estimated \$1.07 billion and causing incalculable human suffering.¹³ The overall mental health picture for AIANs is not fully documented,^{5,14–16} because many previous studies have been restricted by small sample sizes, limited funding, racial misclassification, focus on single mental disorders, and incompatible instrumentation. No prior studies have examined the prevalence of common mental disorders among predominately urban-dwelling AIAN women who use Indian Health Service (IHS) primary care facilities.

Information on mental disorder prevalence and health service utilization among AIAN primary care populations is scarce. Wilson et al. investigated depressive syndromes in an AIAN primary care clinic population (n = 106), finding that 20% of the patients scored positive for a depressive syndrome and 8.9% met *International Classifi-*

Objectives. We examined the lifetime and the past-year prevalence and correlates of common mental disorders among American Indian and Alaska Native women who presented for primary care.

Methods. We screened 489 consecutively presenting female primary care patients aged 18 through 45 years with the General Health Questionnaire, 12-item version. A subsample (n = 234) completed the Composite International Diagnostic Interview. We examined associations between psychiatric disorders and sociodemographic variables, boarding school attendance, and psychopathology in the family of origin.

Results. The study participants had high rates of alcohol use disorders, anxiety disorders, and anxiety/depression comorbidity compared with other samples of non-American Indian/Alaska Native women in primary care settings.

Conclusions. There is a need for culturally appropriate mental health treatments and preventive services. (*Am J Public Health.* 2004;94:71–77)

cation of Diseases, 9th Revision (ICD-9) criteria for a major depressive syndrome.¹⁷ In another study, May reported that 21.4% of primary care patients had seen a provider for a psychological problem.¹⁸ On average, these patients presented with 2.7 episodes of mental health problems over a 10-year period, and these episodes were associated with large numbers of primary care visits (3 to 8 visits per episode). Parker et al. used the Primary Care Evaluation of Mental Disorders (PRIME-MD) in a sample of IHS primary care patients; they found that 18% of the patients had a psychological disorder diagnosis and another 17% had a subthreshold diagnosis.¹⁹ In the only published study that specifically investigated the correlates of AIAN women's mental health status, Napholz found that AIAN women who adhered to rigid gender roles had significantly higher depression scores, higher role-conflict scores, lower self-esteem scores, and lower life satisfaction scores than did women who adhered to less rigid gender roles.²⁰

The present study aimed to extend research on American Indian women's mental health by (1) using the well-validated Composite International Diagnostic Interview (CIDI) to determine mental disorder prevalence estimates, (2) investigating a wide range

of mental disorders among AIAN women who presented for primary care, and (3) identifying associations among specific sociodemographic variables, cultural variables, and mental disorders.

METHODS

Study Location

We conducted our study at the outpatient and urgent care clinics of the IHS hospital in Albuquerque, New Mexico, where data were collected between June and October 1999. The hospital is part of the regional IHS unit, which provides health care to 5 local tribes and the urban Albuquerque AIAN population. The Albuquerque unit records approximately 97 000 visits per year, 60% of which are at the hospital site. Women were approached in the waiting area to determine their eligibility, and they were considered eligible if they were aged 18 to 45 years and received their medical care from IHS facilities. Those who were too physically ill to tolerate a long interview were excluded. The eligible women were then taken to another room to begin the study. The 234 women who completed all aspects of the study were fluent in English and were offered an incentive of \$20 per hour for participating.

Sampling Design and Measures

The study was designed as a 2-stage procedure to maximize the yield of cases while permitting estimates of common mental disorders among the population of consecutive primary care patients who met study criteria.²¹ Stage I used the 12-item version of the General Health Questionnaire (GHQ) as a screener for mental distress; a score of greater than 3 was considered positive for distress. Stage II interviews were completed within 4 months of the initial contact. The interviewers used the CIDI and asked additional questions to assess demographic and cultural variables. The CIDI, which was developed by the World Health Organization (WHO) and the US Alcohol, Drug Abuse, and Mental Health Administration, is a clinical instrument that determines psychiatric diagnoses through interviews by lay interviewers. The validity of the instrument has been established in cross-cultural settings.^{22,23} The CIDI allows for case ascertainment according to the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV)*.²⁴

Participants were stratified into high (≥ 3) and low (≤ 2) GHQ scores. We anticipated that a majority of the stage I participants would have low scores on the GHQ; thus, all women with high GHQ scores, as well as a random sample of 65% of those with low GHQ scores, were originally selected for participation in stage II interviews. The subjects' ages were recorded at the time the GHQ was administered; all other demographic variables were obtained during the stage II interviews. The demographic and social variables included marital and lifestyle status, level of education, boarding school attendance (yes/no), family history of alcohol problems, annual household income (calculated as percentage of the 1999 federal poverty level), debt (identified as none, some, or very much), employment status, residence (urban or reservation/rural), and self-rated health (identified as poor, fair, okay, good, or excellent). Self-rated health is a global measure that encompasses the physical, mental, and social dimensions of health and that reflects an awareness of symptoms, diagnoses, and disability.²⁵

Statistical Analysis

We carried out descriptive analyses of all the demographic variables we collected and

all the psychiatric diagnoses that resulted from the CIDI. The prevalence estimates were calculated with diagnostic exclusions based on *DSM-IV* hierarchy rules. Prevalence rates and standard errors, which were weighted for the distribution of high and low GHQ scores, were obtained with the SAS-callable version of SUDAAN 7.5 (Research Triangle Institute, Research Triangle Park, NC).

Associations between the demographic variables and the psychiatric diagnoses were assessed with Pearson χ^2 or Mantel-Haenszel χ^2 tests that used a significance level of .05. Prevalence ratios (PR) with 95% confidence intervals (CI) were calculated for 7 selected demographic variables. Both univariate and multivariate analyses for prevalence ratios were calculated with the generalized estimating equation approach in PROC GENMOD from SAS version 8.01 (SAS Institute Inc, Cary, NC).²⁶

RESULTS

Response Rates

Among the eligible study participants, 489 completed the GHQ; 243 (49.7%) obtained low scores, and 246 (50.3%) obtained high scores. Sixty-five percent of the 243 women with low GHQ scores ($n=158$) were selected for stage II interviews, and 97% of the 246 women with high GHQ scores ($n=238$) were selected for stage II interviews (8 women with high GHQ scores were not selected for stage II because the sample size was larger than we anticipated). Of the 396 women selected, 61 (15%) could not be located, 56 (14%) refused to participate in stage II, and 45 (11%) did not show up for their scheduled interviews. Full data were obtained from 234 women (59%).

The selected but not interviewed group of women ($n=162$) was younger (mean age = 27.8 years) than the interviewed group ($n=234$; mean age = 29.8 years; $P=\leq .001$). The interviewed group had a higher proportion of women with high GHQ scores (66%) than did the group that was selected but not interviewed (52%; $P=\leq .05$). The lifetime and the past-year prevalence estimates were adjusted for these differences in GHQ scores.

Demographic Variables

The mean age of stage II participants was 29.8 years; 81% were unmarried, al-

though 52% of the unmarried women were living with a partner. Although 89% of the sample had completed high school, 65% reported incomes below 185% of the poverty level. Fifty-five percent worked full-time, 88% lived in urban areas, 41% attended boarding school for early and/or secondary education, and 70% reported that they had a family or household member with an alcohol problem serious enough to interfere with normal functioning.

Prevalence of DSM-IV Psychiatric Disorders

Table 1 shows observed and estimated CIDI prevalences for substance use, mood, anxiety, and somatoform disorder diagnoses during the subject's lifetime and during the 12-month period prior to the interview. Of the women who reported any lifetime drug use disorders (32%), 89% had abused or were dependent on marijuana; cocaine was the second most widely reported drug of choice. Among those with any lifetime alcohol or drug problem (65%), only 7% reported any lifetime drug abuse or dependence without a concurrent problem with alcohol abuse or dependence; by contrast, 51% reported any lifetime alcohol abuse or dependence without a co-occurring drug diagnosis.

The past-year alcohol abuse or dependence rate was 14% (SE=2.4), and the past-year drug abuse or dependence rate was 4.2% (SE=1.4). Marijuana accounted for 80% of past-year drug abuse or dependence; we found no past-year dependence on cocaine, amphetamines, hallucinogens, inhalants, or PCP.

The lifetime prevalence of any mood disorder was 44% (SE=3.4), and 86% of women who reported mood disorders suffered from major depression. The rate of past-year mood disorder was 20.9% (SE=2.7), and 81% of these women who had mood disorders in the past year suffered from major depression. Nearly one third of all lifetime cases (29%) and past-year cases (30%) of major depression among the interviewed women were recurrent (data not shown) and were moderate or severe. All but 1 of the interviewed women who met criteria for lifetime bipolar I

TABLE 1—Prevalence of Selected Lifetime and Past-Year Mental Disorder Diagnoses in AIAN Women (n = 234) in Primary Care: Albuquerque, NM, June–October 1999

Diagnosis	Lifetime		Past Year	
	Interviewed Sample Prevalence (%)	Estimated Prevalence (% SE)	Interviewed Sample Prevalence (%)	Estimated Prevalence (% SE)
Substance disorder				
Alcohol abuse	28.2	28.0 (3.1)	9.0	10.1 (2.2)
Alcohol dependence	32.5	29.8 (3.1)	4.7	3.9 (1.2)
Any alcohol abuse or dependence	60.7	57.9 (3.4)	13.7	14.0 (2.4)
Any drug abuse	12.8	12.2 (2.2)	0.9	0.9 (0.7)
Any drug dependence	19.2	17.6 (2.5)	3.4	3.2 (1.2)
Any drug abuse or dependence	32.1	29.8 (3.1)	4.3	4.2 (1.4)
Any substance abuse	27.8	27.7 (3.1)	9.0	9.8 (2.1)
Any substance dependence	37.6	34.6 (3.2)	6.4	5.8 (1.5)
Any substance use disorder	65.4	62.3 (3.4)	15.4	15.6 (2.5)
Mood disorder				
Any major depression	41.5	38.2 (3.3)	18.8	17.6 (2.6)
Dysthymic disorder	2.6	2.3 (1.0)	0.9	0.7 (0.5)
Bipolar I	6.0	5.2 (1.4)	3.8	2.9 (1.0)
Any mood disorder	48.3	44.0 (3.4)	23.1	20.9 (2.7)
Anxiety disorder				
Obsessive-compulsive disorder	7.7	6.5 (1.5)	6.8	5.8 (1.5)
Posttraumatic stress disorder	33.3	29.0 (3.0)	14.5	12.6 (2.1)
Any specific phobia ^a	32.9	30.7 (3.1)	29.1	26.9 (3.0)
Social phobia	15.0	14.1 (2.3)	10.7	9.6 (1.9)
Generalized anxiety disorder	15.0	13.8 (2.3)	10.7	9.3 (1.9)
Any anxiety disorder	62.8	58.0 (3.5)	51.3	46.9 (3.4)
Somatoform disorder				
Any somatoform disorder	5.6	5.1 (1.5)	4.7	4.2 (1.3)
Any disorder	84.2	80.6 (2.9)	61.5	56.8 (3.5)
No. of major diagnostic criteria sets with positive diagnoses				
0	15.8	19.4 (2.9)	38.5	43.2 (3.5)
1	23.5	25.0 (3.0)	36.3	33.1 (3.2)
2	26.1	24.3 (2.9)	17.9	17.0 (2.5)
3 or 4	34.6	31.2 (3.1)	7.3	6.7 (1.7)
2 or more	60.7	55.5 (3.5)	25.2	23.7 (2.9)

^aSpecific phobia types are animal, natural environment, blood-injection-injury, and situational.

disorder had recurrent manic episodes. No one met criteria for bipolar II disorder.

Anxiety disorders were the most common mental disorders, a finding consistent with results of other epidemiological studies of mental disorders in primary care 27–30, and 62.8% of the women met criteria for any lifetime anxiety disorder diagnosis. Specific phobia (30.7%; SE=3.1) and posttraumatic stress disorder (29%; SE=3.0) were the most common anxiety disorders, and 15% of the

women met criteria for both disorders. Of the specific phobias, animal type was the most common, followed by natural environment, blood-injection-injury, and situational types. To minimize the effects of cultural- and tribal-specific taboos regarding blood or animals on the endorsement of specific phobia symptomatology, research interviewers inquired about fears or symptoms beyond “those ordinarily experienced by people in your community.” More than 30% of the sample met cri-

teria for more than 1 type of lifetime anxiety disorder.

Conversion disorder was the most common somatoform disorder, with both lifetime and past-year prevalence of 2.5% (SE=1.1). Lifetime hypochondriasis prevalence was 1.6% (SE=0.8), followed by pain disorder (1.3%; SE=0.7) and somatization disorder (0.3%; SE=0.3). The aggregate results and comorbidity patterns are presented in Table 1. Of the women who suffered from 2 or more mental disorders that crossed major categories (mood, anxiety, and substance abuse categories), 55.5% (SE=3.5) reported this comorbidity during their lifetimes, and 23.7% (SE=2.9) reported this comorbidity for the 12-month period prior to the interview.

The interviewed sample experienced substantial anxiety/depression comorbidity, a finding that also is consistent with findings of other studies of mental disorders in primary care.^{27–30} Among the women who reported any lifetime diagnosis of depression, 82% also had a lifetime anxiety disorder, and 54% of the women who reported any lifetime diagnosis of anxiety disorder also experienced depression. Of the women with any past-year depression, 75% had a concurrent anxiety disorder, and 28% of the women with a past-year anxiety disorder also experienced depression.

There was high comorbidity between substance-related disorders and mood and anxiety disorders. Among the women with any lifetime substance-related disorder, 74% had a lifetime anxiety disorder and 57% had a lifetime mood disorder. Of those women with any past-year substance disorder, 72% reported a past-year anxiety disorder and 39% reported a past-year mood disorder.

Associations Between Mental Disorders and Demographic Variables

We examined univariate associations between lifetime and past-year mental disorders and certain demographic variables. Lifetime diagnosis of mood disorders was associated with a large amount of debt (PR=1.5 [95% CI=1.1, 2.1]), urban residence (PR=0.5 [CI=0.3, 0.99]), and low (less than good) self-rated health (PR=1.5 [95% CI=1.2, 2.0]). Lifetime diagnosis of anxiety disorders was associated with being older than 35 years (PR=1.4 [95% CI=1.02, 1.8]), high debt

TABLE 2—Comparison of Women's Health Study Past-Year Estimates With Prevalence in Other Primary Care Patients and General-Population Samples: National Comorbidity Survey

Source	Alcohol Abuse/ Dependence Disorder Prevalence	Mood Disorders	Anxiety Disorders	Somatoform Disorders	Any Disorders
AIAN women in primary care study ^{a*}	14.0	20.9	46.9	4.2	56.8
Other primary care studies					
WHO total (48)	6.0	6.6	4.7	4.2	21.1
WHO-Seattle ^a (49)	9.7	6.6	2.8	4.2	20.7
WHO-Chile ^a (50)	1.6	40.8	24.4	23.3	53.0
Parker AIAN (19)	16.0	25.0	21.0	4.2	35.0
PRIME-MD 1000 ^a (33)	N/A	31.0	22.0	18.0	43.0
General population study					
NCS ^a (34)	5.3	14.1	24.7	N/A	32.3

Note. AIAN = American Indian and Alaska Native; WHO = World Health Organization; N/A = not available; NCS = National Comorbidity Study; PRIME-MD = Primary Care Evaluation of Mental Disorders.

^aPrevalences reported for women only.

primary care setting strongly suggest that AIAN women suffer from higher rates of certain mental disorders compared with non-AIAN women in similar settings.

Comparison With Other Studies

Because of the inconsistency in data collection methods, our results are not fully comparable to those of other published studies. Nonetheless, the WHO Study of Mental Illness in General Health Care,³² the Parker et al. study of AIAN patients in primary care,¹⁹ and the Spitzer et al. PRIME-MD 1000 primary care prevalence study³³ provide reasonable comparisons with this study because of the disorders they reported and the similarity in sampling designs. We have chosen to report the WHO-Chile and WHO-Seattle site rates, because Chile had the highest rates for the most common disorders, and Seattle was the only US site. Comparisons with the National Comorbidity Survey (NCS) also are presented as a crude indicator of racial disparity in mental disorders.

The mood, alcohol-related, and somatoform disorder rates in our study are most similar to those reported in the Parker et al. AIAN primary care study (Table 2).¹⁹ The rate of any past-year alcohol use disorder found among the women in our study (14%) is substantially higher than the rates of such disorders found among non-AIAN women or men in the other cited primary care prevalence studies (from 1.6% to 9.7%). Past-year mood disorder rates for our sample (20.9%; SE=2.7) fell between the estimates for non-AIAN women in primary care samples evaluated with the PRIME-MD (31%) and the CIDI (WHO-Seattle 6.6%, WHO-Chile 40.8%), but our rates are approximately 50% higher than the past-year mood disorder rates found among women in the NCS (14.1%).³⁴ In addition to their similarity to the results of the Parker et al. study,¹⁹ the rates in our sample are similar to those from 1 other study of depressive symptoms among AIAN patients in primary care,¹⁷ which reported clinical and subclinical symptom rates in 20% of the sample. Our mood disorder rates are substantially higher than the past-year rates for female depression (12%) in the combined data from the international WHO Study of Mental Illness in General Health Care.³⁵

(PR=1.4 [95% CI=1.1, 1.9]), low (less than high school) educational level (PR=1.4; 95% CI=1.1, 1.7), and low self-rated health (PR=1.4; 95% CI=1.1, 1.6). Lifetime diagnosis of a substance use disorder was associated with low educational level (PR=1.4; 95% CI=1.2, 1.8), family history of alcohol-related problems (PR=1.4; 95% CI=1.1, 1.7), and low self-rated health (PR=1.2; 95% CI=1.02, 1.5). Lifetime diagnosis of multiple disorders were associated with high debt (PR=1.4; 95% CI=1.1, 1.8), low educational level (PR=1.6; 95% CI=1.3, 1.9), family history of alcohol-related problems (PR=1.3; 95% CI=1.03, 1.7), and low self-rated health (PR=1.5; 95% CI=1.2, 1.8).

Any past-year mental disorder diagnosis was associated with low educational level (PR=1.3; 95% CI=1.004, 1.6) and poor self-rated health (PR=1.4; 95% CI=1.1, 1.7). Past-year anxiety disorders were associated with high debt (PR=1.7; 95% CI=1.2, 2.5).

Boarding school attendance was not independently associated with any lifetime or past-year diagnosis of a disorder. Other variables of interest—employment status, household size, number of children, and level of AIAN cultural identification—also were not associated with any lifetime or past-year mental disorders.

Demographic and other variables that were found to be associated with mental disorder outcomes were analyzed in a series of multi-

variate models. The prevalence ratios did not change substantially in the multivariate analyses, although the precision of the estimates for some outcomes was reduced because of small cell sizes.

DISCUSSION

Limitations

The first limitation of this study is that the CIDI, which is widely used for psychiatric studies, may be less accurate than the structured diagnostic interviews that were conducted by culturally competent, licensed mental health professionals. This observation may be particularly true with regard to the applicability of the *DSM-IV* alcohol abuse and dependence criteria to the unique (high quantity, sporadic, binge frequency) drinking style of many AIAN groups.³¹ Second, data were collected at a single site, which limits the general applicability of these findings to other AIAN populations. Third, the study was limited to women aged 18 to 45 years; therefore, our findings cannot be safely generalized to younger or older AIAN women. Fourth, the 2-year lower mean age of nonparticipants may have inflated the prevalence of anxiety disorders, given that older age (>35 years) was associated with these diagnoses.

With these caveats, our findings on the prevalence and the correlates of common mental disorders among AIAN women in a

Our past-year anxiety disorder rate (46.9%; SE=3.4) is 10 times higher than the combined WHO anxiety disorder finding (4.7%) and is double the rates found in the Parker et al. study¹⁹ and the highest individual-center rate for any WHO site (Chile, 24.4%). The lifetime rate (29%; SE=3) of posttraumatic stress disorder in our sample was nearly 3 times the lifetime rate (10.1%) reported for women in the NCS, and our past-year rate (12.6%; SE=2.1) of the disorder was more than 2 times the past-year rate (5.4%) found in the NCS.

Our past-year somatoform disorder rates (4.2%; SE=1.3) are considerably lower than the rates found in the WHO–Chile sample (23.3%) and the PRIME-MD study (18%), but they are similar to the overall WHO rates and the rates found in the WHO–Seattle site (4.2%).

Context of High Prevalence Rates

The rate of lifetime substance use disorder found among the women in our study (62.3%; SE=3.4) is considerably higher than any other reported rate in women. This finding should be put into context. Research on AIAN drinking indicates that (1) alcohol consumption and abuse levels vary widely by tribe and over time, (2) women have very high rates of alcohol abstinence, (3) alcohol consumption is higher in urban areas than on reservations, and (4) alcohol consumption patterns are bimodal—there are large numbers of both abstainers and heavy binge drinkers in the population.^{10–12} Rates of periodic binge drinking may overestimate the proportion of women with an “alcohol abuser” diagnosis in the *DSM-IV* algorithm. Although the *DSM-IV* criterion for diagnosis of alcohol abuse may be problematic in this population,¹² it is plausible that the unreliability of recall as a measure of lifetime use may equally lead to underestimates of the prevalence of alcohol abuse. In spite of the unreliability of the lifetime use rates reported here, the dramatic difference between lifetime and past-year rates does suggest that AIAN women routinely “recover” from at-risk alcohol consumption with or without the help of treatment, which also has been suggested of AIAN men.³⁶

More than two thirds of the participants with lifetime and past-year substance abuse disorders also experienced at least 1 co-occurring anxiety disorder. Multiple plausible and conflicting theories exist regarding alcohol, other drugs, and anxiety: (1) anxiety is posited as both a cause and a consequence of heavy drinking,^{37,38} (2) child abuse and other traumas put women at risk for both disorders,³⁷ and (3) anxiety disorders contribute to both the maintenance of and the relapse into pathological alcohol and drug use.³⁸ Regardless of the temporal relationship of these diagnoses, timely treatment of either disorder may be a secondary prevention for the other.

In addition to higher rates of substance use disorders, AIAN women appear to suffer from much higher rates of anxiety disorders and also from high rates of combined anxiety disorder and depression. Depression and anxiety disorders may be both an outcome of and risk factor for the low socioeconomic condition of AIAN women.^{39,40} The amount of disability caused by depression has been found to be as great as or greater than the disability caused by common medical conditions such as hypertension, diabetes, arthritis, and gastrointestinal problems.⁴¹ In addition, the amount of disability caused by a combination of depression and anxiety disorder is greater than the disability caused by either condition alone.^{42,43}

Our investigation suggests that measures of socioeconomic deprivation, such as low education level and high debt, are associated with current mental disorders in AIAN women. Measures of self-rated health at the less than good health levels also are associated with mental disorders and may reflect the impact of poor physical health and/or other social problems.

We found that boarding school attendance was not related to either lifetime or past-year mental illness. Although this lack of association may be the result of improvements in boarding school management during the past 3 decades, it also is possible that the attendance measure we used had limitations. In particular, the measure of attendance alone may not capture the trauma associated with aspects of boarding school exposure. More research is needed to determine the health effects of boarding school exposure on AIAN populations.

Treatment/Prevention Implications and Future Research

Our research, which to our knowledge is the first prevalence study of AIAN women to have used a structured psychiatric diagnostic instrument at a primary care site, documents the magnitude of mental illness among AIAN women. Although the IHS does provide mental health services, the current-year behavioral health budget accounts for less than 5% of the overall IHS program costs,⁴⁴ and funding for urban AIAN behavioral health is even less. The needs of this population impose a great strain on the drastically underfunded IHS primary care delivery systems, and may inappropriately place urban and reservation leaders in competition for very limited resources.^{44,45} AIAN leaders and community members may find it useful to work with IHS leadership to advocate for more mental health funding and to establish pathways to specialized, culturally competent mental health services from primary and urgent care settings.

Mental disorder prevention and treatment for AIAN women must take into account comorbid conditions, specifically anxiety disorders with both substance abuse and major depression. Successful alcohol abuse prevention may depend upon and increase the need for other mental disorder treatments.⁴⁶ In addition, longitudinal research is needed to understand the nature of co-occurring conditions.

A recent Native American women’s “stress and coping model”⁴⁷ hypothesizes important individual- and community-level variables that may both heighten vulnerability to and protect against mental illness. This model, which is an important guide for future research, draws attention to both external and internalized attitudes and behaviors—racism, sexism, religious intolerance, and homophobia—and the other forms of colonial stratification that continue to affect AIAN families from within and without. ■

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Contributors

B. Duran designed and coordinated both the research and the writing of the article. H. Waitzkin and J. Yager contributed to the study design and to the writing of the article. M. Sanders, B. Skipper, S. Paine, and L. H. Malcoe scored the Composite International Diagnostic Interview, conducted the statistical analysis, and contributed to the writing of the article.

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Human Participant Protection

The human subjects review boards of the University of New Mexico Health Sciences Center and the National Research Office of the IHS approved the protocol for this study. The IHS ASU Tribal Health Board approved both this study and this article.

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