

Co-Occurring Alcohol, Drug, and Other Psychiatric Disorders Among Mexican-Origin People in the United States

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We examined co-occurrence of (comorbid) alcohol, drug, and non-substance use psychiatric disorders in a population sample of Mexican-origin adults from rural and urban areas of central California.

Co-occurring lifetime rates of alcohol or other drug disorders with non-substance use psychiatric disorders, or both, were 8.3% for men and 5.5% for women and were 12.3% for the US born and 3.5% for immigrants.

Alcohol abuse or dependence with co-occurring psychiatric disorders is a primary disorder among Mexican-origin adult males (7.5% lifetime prevalence). US-born men and women are almost equally likely to have co-occurring disorders involving substances. Comorbidity is expected to increase in the Mexican-origin population owing to acculturation effects of both sexes. (*Am J Public Health*. 2003;93:1057–1064)

In recent years, there has been a growing interest in the co-occurrence of alcohol and drug use disorders and other psychiatric disorders. Comorbidity refers to the co-occurrence of any 2 disorders, whereas the term “dual diagnoses” is specific to co-occurring substance (alcohol or other drugs) and non-substance abuse disorders. Comorbidity involving dual diagnoses poses special problems. It is often marked by greater functional impairment and self-destructive behavior, and clinical treatment is more problematic because there are multiple, distinctive, and often refractory disorders.^{1–5} Mood, anxiety, and antisocial personality disorders commonly co-occur with alcohol and other drug disorders.⁶

National population survey data have been used to identify the high prevalence of psychiatric comorbidity among substance abuse disorders and other forms of psychopathology in the US population.² Information is still lacking about comorbidity patterns in specific ethnic groups. We present information for Mexican-origin people (Mexican immigrants and US-born Mexican Americans) from population survey data. Within the US Latino community, alcohol and drug use disorders have been identified as major health problems, particularly for males.^{7,8}

Most epidemiologic surveys treat Latinos as one homogenous group; consequently, in-

tragroup and even intergroup differences are typically obscured. For example, in the National Longitudinal Alcohol Epidemiologic Survey (NLAES), race and ethnicity are frequently presented in terms of Blacks and non-Blacks and exclude data specific to Latinos altogether.⁹ An accurate depiction of the Latino population is difficult because it comprises multiple racial groups from different nations of origin, and the relatively small number of some nationalities in these surveys (e.g., Dominicans, Guatemalans, Colombians) makes it difficult to conduct detailed analyses.

Nevertheless, the most recent prevalence estimates suggest that Latinos are just as likely as White Americans to become dependent on drugs and are more likely than White Americans to persist in dependence on them.¹⁰ Additionally, Latinos who are regular drinkers are just as likely as other ethnic and racial groups to engage in heavy drinking or to become intoxicated on a weekly or more frequent basis.¹¹ Wide variations in alcohol consumption (frequency and quantity) have been reported among Latino subgroups, with higher levels among Mexican-origin people and the lowest levels reported among people of Caribbean origin.¹² Increasingly, the evidence suggests that the propensity for more frequent drinking will increase with intergenerational changes in acculturation.¹³

NATIVITY AND SEX PATTERNS

Of the work that has examined intragroup prevalence patterns, most has focused on Latinos of Mexican origin. The attention on this population is a product of its standing as the largest Latino subgroup, composing 66% of the Latino population in the United States.¹⁴ Three field studies have detailed the profiles of substance abuse of the Mexican-origin population: the Los Angeles Epidemiologic Catchment Area Project (LAECA), the Mexican American Prevalence and Services Survey, and the Hispanic Health and Nutrition Examination Survey.^{15–17}

Substance use and abuse or dependence disorder rates were much higher among Mexican-origin men compared with women. The higher prevalence of these disorders suggests higher risk for a range of personal, family, and social problems. In the general US population, heavy drinking, alcohol dependency, and alcohol-related social problems peak between ages 18 to 29 and decline with progressive age; however, a similar pattern of decline is not found among Mexican-origin men.¹⁸ Particularly disturbing is that heavy drinking continues when men of Mexican origin are older and typically experience increased health problems and financial responsibilities.¹⁹

Men of Mexican origin have been found to be disproportionately affected by alcohol-related diseases and alcohol-related deaths.²⁰ In 1987, Mexican-origin men were found to have a 40% higher risk of death from cirrhosis than White American men.²¹ More recently, in 1996, a study found that Latino men continue to have higher mortality rates than men from other groups. Specifically, among Latino males the mortality rate for alcohol-related liver cirrhosis was 13.3 deaths per 100 000, while it was 8.3 per 100 000 for African American males and 5.2 per 100 000 for White American males.²²

One of the most extensively studied issues in this field is the change in health status and behaviors that accompanies immigration and resettlement in the United States among Latinos. Researchers have postulated that the increasing prevalence of substance abuse and concomitant problems, such as domestic abuse and drunk driving, is a product of the “Americanization” process among immigrants and Mexican Americans (US born).²³ With increasing acculturation, drinking levels among Latinos more closely approximate those of the mainstream culture, with US-born individuals being more likely to drink alcohol on a daily basis than their immigrant counterparts.^{12,19}

Mexican men were found to drink less often but more per occasion than their US counterparts.²⁴ Markides and colleagues termed this “fiesta drinking,” the consumption of large amounts of alcohol on special occasions.²⁵ The episodic heavy drinking reported in Mexican culture is combined with more frequent drinking found in American culture to create a new pattern of regular drinking at higher consumption levels. In a study examining Mexicans who migrate to the United States, Mexican immigrant men experienced rapid changes in drinking patterns shortly after their arrival in the United States. Mexican-born men living in the United States for 5 years or less showed alcohol use patterns similar to those of Mexican American men born in the United States, rather than patterns similar to the Mexican sample.²⁴ This suggests an increased risk for progression to alcohol dependence after immigration to the United States.

Studies have found an even more pronounced effect of acculturation among women.²⁶ Women in Mexico have rates of alcohol abuse or dependence that are minimal,¹⁷ and the prevalence rates for Mexican immigrant women are very low. There is therefore a wider difference between their rates and those of Mexican American (US-born) women compared with the corresponding rates among males. The prevalence of any alcohol abuse/dependence among Mexican American females born in the United States is approximately 5 times greater than for immigrant women born in Mexico, whereas the prevalence rate for males born in the United States is approximately 2 times

greater than that of immigrant males. Despite the greater proportionate increase that acculturation produces on alcohol and drug abuse/dependence of US-born Mexican American females, overall, Mexican-origin males have higher rates of drug and alcohol abuse/dependence than females after adjustments for nativity.¹⁷

ACCULTURATION AND ILLICIT DRUG USE

Acculturation and the concomitant psychosocial changes that take place among Mexican immigrants in the United States have been found also to increase drug use. A study by Burnam et al. using LAECA data examined the effect of acculturation on drug abuse or dependence among people of Mexican origin and found that prevalence rates were higher among those born in the United States.²⁷ In another study, lifetime use of illicit drugs or inhalants was assessed among immigrants and Mexican American respondents according to sex, acculturation, and place of residence. Among immigrant men, high acculturation and living in an urban area increased the likelihood of lifetime illicit drug use, yet Mexican Americans had far higher rates than Mexican immigrants overall.¹⁸

COMORBIDITY PATTERNS

It has been well established that there are sex-specific patterns of psychiatric disorders. The National Comorbidity Survey found that women have a higher prevalence than men for most affective disorders, anxiety disorders, and nonaffective psychosis, and men have higher rates than women for substance abuse disorders and antisocial personality disorder.²⁸ Sex differences have also been found in the comorbidity patterns between drug and alcohol use disorders and other forms of psychopathology. In the NLAES, men with major depressive disorder used cannabis and hallucinogens more than females and had more cannabis use disorders than their female counterparts. Among men with alcohol use disorders, there was a higher incidence of hallucinogen use and related disorders.²⁹

The distribution by sex of comorbidity rates in the general US population, coupled

with the increased risk for both substance use/dependence and psychiatric illness among more acculturated Latino males, suggests that both nativity and sex influence comorbidity patterns among Mexican-origin people. To date, comorbidity studies in the United States have not systematically reported differences between immigrant and native-born Latinos or differences by sex. This information is useful because these factors influence symptom severity, clinical course, and selection of prevention or treatment modalities.²⁹ They also represent a presumptive area of unmet need.

This study uses a sex-specific approach to compare the comorbidity rates among substance use disorders and mental illness of immigrant and US-born Mexican Americans in California. The aim is to assess similarities and differences in rates of dual diagnoses (i.e., co-occurring substance use disorders and non-substance use psychiatric disorders) and in comorbidity among alcohol and drug abuse or dependence disorders using diagnostic criteria from the *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R)*.

METHODS

Sampling

The 3012 subjects in this study were selected from Fresno County, California, under a multistage cluster sampling design, stratified by sex and place of residence (urban: the Fresno-Clovis urbanized area; town: surrounding residential areas; rural: unincorporated areas and isolated residences in the county). The population of Fresno County is approximately 765 000, 38% of whom are Latino, almost all of Mexican origin. Primary sampling units were census blocks or block aggregates, with 200 primary sampling units selected from each of the 6 strata with a probability proportional to the size of their Latino population, and in the second stage, 5 Mexican-origin households were randomly selected from each primary sampling unit. In the final stage, 1 person per household was randomly selected from among all Mexican-origin persons aged between 18 and 59 years residing in the household. Mexican origin was defined by the criterion that potential respon-

dents or at least 1 of their parents or grandparents was born in Mexico. The response rate was 90% among screened eligible households. Subjects were weighted by the inverse of their selection probability, and weights were adjusted to conform the sample to the Fresno County census age–sex distribution of Mexican-origin people.

Instrumentation

The diagnostic protocol used in this study was the Composite International Diagnostic Interview, a fully structured clinical interview that was developed jointly by the World Health Organization (WHO) and the former US Alcohol, Drug Abuse, and Mental Health Administration as the instrument of choice for

large-scale epidemiologic research.^{30,31} The diagnostic module of the Composite International Diagnostic Interview was virtually identical to the structure and items used in the National Comorbidity Survey, with both protocols using *DSM-III-R* diagnostic criteria.²⁸ A detailed methodological description of the methods and design of this study can be found elsewhere.¹⁶ Many other items were also included in the field instrument, such as questions about use of services and the demographic information used in this study. Face-to-face field interviewing was conducted in 1996. *DSM-III-R* diagnoses were determined for the following disorders: major depressive episode, manic episode, dysthymia, panic disorder, agoraphobia, social phobia,

simple phobia, antisocial personality disorder, alcohol abuse or dependence, and drug abuse or dependence. The first three diagnoses were classified as mood disorders, the next four as anxiety disorders, and the last two as substance use disorders.

Analysis

Analysis of the data was conducted with the Stata statistical package.³² Tables 1 and 2 give prevalence estimates calculated as the weighted sample (or sex–nativity subsample) sum for those with the listed characteristic or diagnosis divided by the total weighted sample (or sex–nativity subsample) sum. Table 3 uses ratio estimators calculated as weighted (sub)sample sum for those with the listed spe-

TABLE 1—Sample Characteristics and Lifetime Prevalence of *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition (DSM-III-R)* Psychiatric Disorders Among Mexican Americans of Fresno County, California, by Nativity and Sex

	Immigrants			US Born			Total		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Observed sample, n	912	922	1834	604	574	1178	1516	1496	3012
Weighted sample %	44.8	55.2	60.1	49.4	50.6	39.9	46.6	53.4	100
Years of education									
0–6	55.3	47.1	50.8	2.1	5.1	3.6	32.8	31.2	32.0
7–11	28.1	32.6	30.6	43.9	35.2	39.5	34.8	33.6	34.2
12	10.2	9.8	10.0	29.7	31.3	30.5	18.5	17.9	18.2
≥13	6.4	10.4	8.6	24.2	28.4	26.3	13.9	17.2	15.7
Family income, \$									
<6 000	15.8	13.3	14.4	7.0	7.3	7.2	12.2	11.1	11.6
6 000–11 999	42.3	32.1	36.7	25.8	19.6	22.6	35.4	27.4	31.1
12 000–17 999	27.1	28.3	27.8	24.6	22.8	23.7	26.1	26.2	26.2
18 000–35 999	10.4	17.2	14.2	25.1	24.2	24.7	16.5	19.8	18.3
≥36 000	4.3	9.1	7.0	17.6	26.0	21.9	9.8	15.5	12.9
Language of interview									
Spanish	80.2	83.0	81.8	7.2	7.3	7.3	49.3	54.4	52.0
English	19.8	17.0	18.2	92.8	92.7	92.7	50.7	45.6	48.0
<i>DSM-III-R</i> disorders									
Mood disorder	9.3	6.8	7.9	22.0	15.1	18.5	14.7	9.9	12.1
Anxiety disorder	17.0	8.9	12.5	27.5	19.1	23.2	21.4	12.8	16.8
Antisocial personality disorder	0.3	1.1	0.8	0.1	2.0	1.1	0.3	1.4	0.9
Any non-substance use disorder ^a	21.7	14.1	17.5	39.8	26.4	33.0	29.4	18.7	23.7
Alcohol abuse/dependence	1.5	15.8	9.4	13.7	30.4	22.1	6.6	21.3	14.5
Drug abuse/dependence	1.4	4.7	3.2	8.8	18.4	13.7	4.5	9.9	7.4
Any substance abuse/dependence	2.1	17.3	10.5	17.7	36.1	27.0	8.7	24.4	17.1
Any disorder	22.2	26.4	24.5	46.8	48.7	47.7	32.6	34.8	33.8

Note. All data except sample counts are reported as percentages.

^aNon-substance use disorder includes mood disorder, anxiety disorder, or antisocial personality disorder, or a combination of these.

TABLE 2—Lifetime Prevalence^a of Comorbid and Noncomorbid Alcohol Abuse/Dependence, Drug Abuse/Dependence, and Non-Substance Use Disorders^b Among Mexican Americans of Fresno County, California, by Nativity and Sex

	Immigrants			US Born			Total		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Single diagnoses without comorbidity									
Alcohol abuse/dependence	0.0 (0.0)	9.1 (1.2)	5.0 (0.7)	4.0 (1.3)	12.3 (1.9)	8.2 (1.2)	1.7 (0.6)	10.3 (1.0)	6.3 (0.6)
Drug abuse/dependence	0.2 (0.2)	1.2 (0.6)	0.8 (0.3)	1.8 (0.7)	4.1 (1.2)	2.9 (0.7)	0.9 (0.3)	2.3 (0.6)	1.6 (0.3)
Mood disorder	4.3 (1.0)	2.8 (1.0)	3.5 (0.7)	9.5 (2.5)	3.5 (1.4)	6.5 (1.4)	6.5 (1.2)	3.1 (0.8)	4.7 (0.7)
Anxiety disorder	11.6 (1.7)	4.9 (1.0)	7.9 (1.0)	14.2 (2.7)	5.9 (1.1)	10.0 (1.5)	12.7 (1.5)	5.3 (0.8)	8.7 (0.8)
Any single disorder without comorbidity	16.2 (1.9)	18.0 (1.8)	17.2 (1.3)	29.5 (3.4)	25.9 (2.6)	27.7 (2.1)	21.9 (1.9)	21.0 (1.5)	21.4 (1.2)
Dual diagnoses ^c									
Alcohol abuse/dependence with non-substance use disorder	0.7 (0.4)	3.5 (0.9)	2.2 (0.5)	4.8 (1.3)	5.5 (1.3)	5.1 (0.9)	2.4 (0.6)	4.2 (0.7)	3.4 (0.5)
Alcohol and drug abuse/dependence with non-substance use disorder	0.5 (0.5)	1.2 (0.5)	0.9 (0.4)	3.7 (1.0)	6.7 (1.6)	5.2 (0.9)	1.9 (0.5)	3.3 (0.7)	2.6 (0.4)
Drug abuse/dependence with non-substance use disorder	0.4 (0.2)	0.3 (0.1)	0.3 (1.0)	2.2 (0.6)	1.7 (0.7)	1.9 (0.5)	1.1 (0.3)	0.8 (0.3)	1.0 (0.2)
Total dual diagnoses	1.6 (0.7)	5.0 (1.0)	3.5 (0.6)	10.7 (1.7)	13.8 (2.0)	12.3 (1.3)	5.5 (0.8)	8.3 (1.0)	7.0 (0.7)
Other comorbid diagnoses									
Alcohol and drug abuse/dependence without non-substance use disorder	0.2 (0.2)	2.0 (0.8)	1.2 (0.4)	1.1 (0.6)	6.0 (1.3)	3.6 (0.7)	0.6 (0.3)	3.5 (0.7)	2.2 (0.4)
Mood and anxiety disorder without substance disorder	4.1 (0.8)	1.4 (0.5)	2.6 (0.4)	5.4 (1.1)	3.0 (1.2)	4.2 (0.8)	4.7 (0.7)	2.0 (0.5)	3.2 (0.4)
Total comorbidity	6.0 (1.1)	8.4 (1.3)	7.3 (0.9)	17.2 (2.1)	22.8 (2.4)	20.1 (1.6)	10.7 (1.1)	13.8 (1.2)	12.4 (0.8)

^aPrevalence rates (standard error) are reported as percentages.

^bNon-substance use disorder includes mood disorder, anxiety disorder, or antisocial personality disorder, or a combination of these.

^cDual diagnoses refer to alcohol or drug abuse/dependence (or both) with non-substance use disorder.

cific diagnosis or diagnoses divided by the weighted (sub)sample sum for the encompassing diagnosis. All standard error estimates were adjusted for the sampling design through a first-order Taylor series approximation, and significance probabilities in Table 3 for the pairwise differences of the ratio estimates were calculated by Wald tests.³³

RESULTS

Table 1 presents sample characteristics and lifetime prevalence of *DSM-III-R* psychiatric disorders by nativity and sex. The social demographic profiles of immigrants and Mexican-origin people who are US born clearly suggest wide differences in socioeconomic status and cultural orientation. The weighted sample was composed of 60% immigrants and 40% US born, all of Mexican origin. Immigrants had far lower educational

levels than the US born; only 49% of the former received more than 6 years of education compared with 96% of the latter. Family income was much lower for immigrants. Most immigrants (82%) were interviewed in Spanish and most of the US born (93%) in English.

Prevalence for *DSM-III-R* mood disorders ranged from a low of 7% among immigrant men to a high of 22% among US-born women, with immigrant women (9%) and US-born men (15%) having intermediate values. A similar ordering of sex–nativity groups was observed for anxiety disorders. Any non-substance use disorder (Tables 1–3) refers to a diagnosis of mood disorder, anxiety disorder, or antisocial personality disorder, or a combination of these. Substance use disorders, consisting of alcohol abuse or dependence and drug abuse or dependence, were 8 times more frequent (17.3% vs 2.1%)

among immigrant males than immigrant females and twice as frequent (36.1% vs 17.7%) among US-born males than US-born females. The prevalence of substance disorders among females showed a greater proportionate increase by nativity, yet prevalence rates for males remained far higher than for females within the same nativity subgroup, and males had far higher alcohol abuse or dependence disorders and drug–alcohol disorders. The ratio of substance use disorder(s) to any disorder(s) for all females was about 1 in 4, whereas the ratio for all males was almost 3 in 4.

Table 2 presents *DSM-III-R* lifetime single disorder and comorbidity rates for 4 disorder categories: alcohol abuse or dependence, drug abuse or dependence, mood disorder, and anxiety disorder (antisocial personality disorder was omitted because of its low prevalence; see Table 1). For males, the most com-

TABLE 3—Percentage (Standard Error) of Lifetime Comorbidity Among Mexican Americans of Fresno County, California, by Diagnosis, Nativity, and Sex

	Immigrants			US Born			Total		
	Female	Male	Total	Female	Male	Total	Female	Male	Total
Mood disorder: % comorbid—									
With other non-substance use disorder ^a	53 (8)	40 (10)	47 (6)	44 (7)	58 (9)	50 (6)	47 (5)	50 (7)	48 (4)
With substance abuse/dependence	9 (4) ^{b,c}	38 (10) ^b	23 (5) ^d	32 (6) ^{c,e}	57 (9) ^e	42 (5) ^d	24 (4) ^f	49 (7) ^f	35 (4)
With any other disorder ^a	53 (8)	59 (11)	56 (6)	57 (8)	77 (8)	65 (6)	55 (6)	69 (7)	61 (4)
Anxiety disorder: % comorbid—									
With other non-substance use disorder	27 (5)	19 (5) ^g	24 (4) ^d	35 (5)	45 (6) ^g	39 (4) ^d	31 (4)	33 (5)	32 (3)
With substance abuse/dependence	7 (3) ^{b,c}	30 (6) ^{b,g}	16 (3) ^d	29 (5) ^{c,e}	53 (7) ^{e,g}	39 (4) ^d	19 (3) ^f	43 (5) ^f	29 (3)
With any other disorder	32 (5) ^c	45 (7) ^g	37 (4) ^d	48 (6) ^{c,e}	69 (5) ^{e,g}	57 (5) ^d	41 (4) ^f	59 (5) ^f	48 (3)
Non-substance use disorder: % comorbid with substance abuse/dependence	7 (3) ^{b,c}	35 (6) ^{b,g}	20 (3) ^d	27 (4) ^{c,e}	52 (6) ^{e,g}	37 (4) ^d	19 (3) ^f	44 (4) ^f	30 (3)
Alcohol abuse/dependence: % comorbid—									
With non-substance use disorder	82 (12) ^b	30 (5) ^b	33 (5)	62 (8) ^e	40 (5) ^e	47 (4)	65 (7) ^f	35 (4) ^f	42 (3)
With drug abuse/dependence	50 (22)	21 (5) ^g	23 (5) ^d	35 (8)	42 (5) ^g	40 (4) ^d	37 (7)	32 (4)	33 (3)
With any other disorder	97 (3) ^{b,c}	43 (6) ^{b,g}	46 (6) ^d	71 (8) ^c	60 (5) ^g	63 (4) ^d	74 (7) ^f	52 (4) ^f	57 (3)
Drug abuse/dependence: % comorbid—									
With non-substance use disorder	67 (17)	32 (11)	39 (10)	67 (8) ^e	46 (7) ^e	52 (5)	67 (7) ^f	42 (6) ^f	49 (5)
With alcohol abuse/dependence ^a	54 (21)	69 (11)	66 (10)	55 (8)	69 (6)	64 (5)	55 (8)	69 (6)	65 (5)
With any other disorder ^a	84 (12)	75 (11)	76 (9)	80 (7)	78 (6)	78 (4)	80 (6)	77 (5)	78 (4)
Substance abuse/dependence: % comorbid with non-substance use disorder	77 (11) ^b	29 (5) ^b	33 (5)	61 (7) ^e	38 (5) ^e	46 (4)	63 (6) ^f	34 (3) ^f	41 (3)

Note. Non-substance use disorder includes mood disorder, anxiety disorder, or antisocial personality disorder, or a combination of these.

^aAll nativity and sex differences for these rows are nonsignificant.

^bDifference between immigrant females and immigrant males is significant ($P < .05$).

^cDifference between immigrant females and US-born females is significant ($P < .05$).

^dDifference between total immigrants and US-born is significant ($P < .05$).

^eDifference between US-born females and US-born males is significant ($P < .05$).

^fDifference between total females and males is significant ($P < .05$).

^gDifference between immigrant males and US-born males is significant ($P < .05$).

mon single diagnosis without comorbidity was alcohol abuse/dependence (10.3%), comprising roughly half of the total proportion of any single diagnosis without comorbidity (21.0%). The prevalence of noncomorbid alcohol abuse/dependence among male immigrants (9.1%) was not very different from that among US-born males (12.3%). For females, the prevalence of noncomorbid alcohol abuse/dependence was much lower, only 1.7%, whereas their total proportion of any single diagnosis without comorbidity (21.9%) was similar to that of males. Most single diagnoses without comorbidity in females were non-substance use disorders: mood (6.5%) and anxiety (12.7%) disorders.

Prevalence of dual diagnoses (i.e., alcohol abuse/dependence or drug abuse/dependence, or both, with a non-substance use dis-

order) was higher among males (8.3%) than females (5.5%), but the difference was much less than was seen for substance use disorders without comorbidity. The prevalence of dual diagnoses among US-born males was 13.8%, with the largest category being those diagnosed with alcohol abuse/dependence, drug abuse/dependence, and a non-substance use disorder (6.7%). For US-born males, dual diagnoses comprised 38% of the total of all substance use disorders (Tables 1 and 2). Among immigrant males, the prevalence of dual diagnoses was much lower, only 5.0%, and consisted chiefly of the diagnoses of alcohol abuse/dependence and a non-substance use disorder without drug abuse/dependence (3.5%), which is reflective of the overall lower prevalence of drug abuse/dependence among immigrant males. For immigrant males, dual

diagnoses comprised 29% of all substance use disorders.

Nativity differences for dual diagnoses were far greater among females than males. Immigrant females had a prevalence of 1.6% for dual diagnoses, whereas US-born females had a prevalence of 10.7%, which was not very different from the prevalence of dual diagnoses in US-born males (13.8%). In contrast to males, however, dual diagnoses for females comprised a much greater proportion of those with substance use disorders. For immigrant females, dual diagnoses accounted for 77% of all substance use disorders, and for US-born females, dual diagnoses comprised 61% of all substance use disorders. For female immigrants, the most prevalent comorbid category was that of mood disorder and anxiety disorder (4.1%). US-born females

and males had roughly similar prevalences of comorbid mood and anxiety disorders (5.4% and 3.0%, respectively), whereas immigrant males had a lower prevalence (1.4%). Comorbidity for any 2 (or more) diagnoses (see bottom row in Table 2) was much more prevalent among the US-born (20.1%) than among immigrants (7.3%), with differences by sex being much smaller (13.8% in males and 10.7% in females).

Table 3 shows the percentage of comorbidity by diagnosis and type of comorbidity. Among all persons with a diagnosis of mood disorder, 48% had a diagnosis of another non-substance use disorder (i.e., either anxiety disorder or antisocial personality disorder), and the percentage with this type of comorbidity was fairly uniform across the sex-nativity groups. The percentage comorbid with substance abuse or dependence, however, varied by sex and nativity, ranging from 57% for US-born males to 9% for immigrant females, with US-born females (32%) and immigrant males (38%) having similar intermediate rates. Comorbidity with anxiety disorder followed a similar pattern.

In contrast, comorbidity for substance abuse or dependence disorders had a very different pattern among the sex-nativity groups. Immigrant females with substance disorders had very high rates of comorbidity: 97% of immigrant females with alcohol abuse or dependence were comorbid with another disorder (drug abuse/dependence, non-substance use disorder, or both); for those with a drug abuse or dependence diagnosis, 84% were comorbid with another disorder. In comparison, immigrant males with alcohol abuse or dependence disorder had the lowest rates of comorbidity, although the absolute levels were still quite high. Of immigrant males with alcohol abuse or dependence, 30% were comorbid with a non-substance use disorder and 21% were comorbid with drug abuse or dependence. Comorbidity for those with drug abuse or dependence was uniformly high across the sex-nativity groups (ranging from 75% to 84% for comorbidity with any other disorder); however, comorbidity for males was more typically with alcohol and comorbidity for females was more typically with non-substance use disorders.

DISCUSSION

We report 2 important patterns of psychiatric comorbidity among men of Mexican origin. The first consists of dual diagnoses of a non-substance use psychiatric disorder along with an alcohol abuse or dependence disorder. The second pattern, more common among US-born males, is a dual diagnosis of alcohol abuse or dependence, an illicit drug abuse or dependence disorder, and an additional non-substance use disorder. Among immigrant males, dual diagnoses consist primarily of an alcohol disorder and a non-substance use disorder. Mexican American (US-born) women have dual diagnoses rates similar to those of Mexican American (US-born) males, and these rates are much higher than those found among either immigrant males or immigrant females. Comorbidity among immigrant women is not primarily a dual diagnosis, but rather a mood disorder co-occurring with an anxiety disorder. This is attributable to negligible rates of alcohol or drug abuse or dependence disorders.

A study using our data set compared various international subsamples; it showed invariant age-of-onset patterns for alcohol and other drug use but significant variance in lifetime prevalence among ethnic and sex subsamples.³⁴ We find important differences in drug disorder rates by nativity and sex subgroups, but all subgroups compared in this study experienced uniformly high rates of comorbidity if a drug abuse or dependence disorder was present.

Specific to alcohol and dual diagnoses, Merikangas and colleagues reported that “persons meeting full criteria for alcohol dependence may be more likely to use alcohol for nonsporadic reasons (such as to assuage enduring anxiety symptoms), and therefore be more likely to continue its use over time.”³⁵⁽⁹⁰³⁾ They found the most likely pattern to be anxiety disorders preceding substance disorders, but mood disorders had no specific onset pattern vis-à-vis substance abuse disorders.

Accelerating risk for alcohol and drug abuse or dependence disorders associated with either immigrant acculturation or US birth suggests that the prevalence of comor-

bidity involving alcohol and other drug disorders in the Mexican population will increase markedly over time. This upward trend will be reinforced by rapid Latino population growth.¹⁴ One epidemiologic report showed that among Mexican-origin people who had diagnoses of alcohol dependence, parental drinking problems were reported by one third of Mexican immigrants and by two thirds of US-born Mexican Americans.³⁶ One half of arrests among Mexican immigrants are for drunk driving.³⁷ Among arrestees, Mexican-origin males are heavier drinkers than White Americans and less likely to know the number of drinks required to render them unsafe drivers.³⁸ This problem is compounded among US-born Mexican Americans because they experience higher comorbid alcohol and other drug dependence rates.

Several studies were cited in the introduction about changing consumption patterns being attributed to population acculturation. The social and cultural mechanisms involved in accelerating substance use behaviors among Latino youths are not as well understood as they need to be. There is strong evidence that family structure and functioning are important protective and risk factors for Latino adolescents.³⁹ Paradoxically, increasing acculturation markedly increases risk of substance abuse dependence among Mexican immigrants, but acculturation does not have parallel effects among US-born Mexican Americans. This difference results in part from the very small percentage of low acculturation adults among the US born. It is possible that the small percentage of urban US-born Mexican Americans who remain at lower acculturation may be at an elevated risk of psychopathology, drug use, and dual diagnoses owing to their nonnormative situation and “left behind” status among other Mexican Americans.²³ This issue has not been adequately addressed or explained in research studies.

Alcohol and drug comorbidity poses a particular challenge for Mexican-origin people in the United States because of barriers to health and mental health care, language problems, and low educational attainment.^{40,41} Comorbidities involving substance disorders among Mexican-origin people are

very unlikely to be treated by mental health professionals.⁴² Preventive interventions among youths, adults, and their families may offer the best hope of preventing first use or progression to drug dependence and secondary substance disorders among individuals with signs of mood, anxiety, and conduct disorders. More school, community-based, and primary care early intervention programs are needed, especially programs in both English and Spanish that can reach Latinos with effective intervention strategies, limit access to alcohol among adolescents, and reduce social marketing to this population. Treatment interventions that communicate knowledge and promote skills to assist immigrant parents with the social transitions of their children and that counteract acculturation and nativity trends toward behavior problems and alcohol consumption need wider dissemination.

Nearly a quarter of Mexican-origin people fall below the federal standard for poverty, and a similar percentage are foreign born and are not citizens.¹⁴ Intervention programs are needed during the primary and middle school years before worsening academic performance results in premature school termination for many youths.⁴³

CONCLUSION

This article investigates psychiatric comorbidity patterns among Mexican-origin adults in the United States. We report a dominant pattern of dual diagnoses where 1 disorder is alcohol abuse or dependence. Substance abuse comorbidities are more prevalent among US-born males and females, followed by male immigrants, and are minimal among immigrant women. Despite having lower substance abuse or dependence rates than men overall, US-born women actually have a higher proportionate increase in rates than men on the basis of nativity differences—in other words, their substance use is accelerating more quickly. Among all sex and nativity subgroups, individuals with drug abuse or dependence disorders have very high comorbidity rates.

A limitation of this study is that rate estimates are from one regional site, and differing results could potentially be obtained from

a sample with wider coverage. There is reason to believe that the sex and nativity patterns we describe are stable. A study using the National Comorbidity Survey data reported that disorder rates varied by acculturation—albeit with a sample limited to English-speaking Latinos—and another large statewide California survey used urine toxicology screens to report similar nativity patterns of prenatal drug and alcohol use.^{44,45} In the near future, it will be possible to confirm comorbidity patterns using data from the National Latino and Asian American Survey, sponsored by the National Institute of Mental Health, which will supply epidemiologic estimates for major psychiatric disorders, including substance abuse or dependence rates, for the US Latino population.

We anticipate that the total social and economic impact of these comorbidity patterns will trend upward with the increasing growth and acculturation of the Mexican-origin population in the United States, given its low median age, high poverty rates, and minority status. We believe there is a need for early preventive interventions and culturally competent treatment services for low-income youths and adults of both sexes and their families. ■

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Contributors

W.A. Vega designed the study and was the primary writer. W.M. Sribney assisted in designing the study, conducted the data analysis, and was primary writer of the Methods and Results sections. I. Achara-Abrahams assisted in background research and writing.

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