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Psychiatric disorders among foreign-born and US-born Asian-Americans in a US national survey

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Abstract

Background—Among Hispanics, Non-Hispanic Whites and Non-Hispanic Blacks studies have found lower risk for psychiatric disorders among the foreign-born than among the US-born. We examine the association of nativity and risk for psychiatric disorder in a national sample of the Asian-American (AA) population.

Methods—Data on 1,236 AAs from the National Epidemiological Survey of Alcohol and Related Conditions (NESARC) are analyzed using logistic regression and discrete time survival models to specify differences between the foreign-born and US-born in the lifetime occurrence of mood, anxiety and substance use disorders.

Results—Foreign-born AAs had significantly lower risk for all classes of disorder compared with US-born AAs (OR = 0.16–0.59). Risk for all classes of disorder was lowest for those foreign-born AAs who arrived in the US as adults. Among foreign-born AAs risk of first onset was lowest relative to the US-born in years prior to their arrival in the US and tended to rise to levels equal to that of the US-born with longer duration of residence in the US.

Conclusions—Among AAs, risk for psychiatric disorders is lower among the foreign-born than among the US-born. The pattern of change in risk over time suggests that both the developmental timing and the duration of experience in the US contribute to increases in risk.

Keywords

epidemiology; Asian-Americans; immigration; psychiatric disorders; substance use disorders

Introduction

With over 10% of the US population born outside of the US [1], changes that occur among immigrant groups as they adapt to American society have large effects on public health [2,3]. With respect to psychiatric disorders, research conducted since the early 1980s has consistently found that immigrants to the US from Latin America have lower lifetime prevalence of mood, anxiety and substance use disorders than US-born Hispanics. This pattern, found in several studies of Mexican-Americans [4–6] and among Hispanics in national sample [7], suggests that the intergenerational process of adjustment to American society leads to increasing risk for psychiatric disorders [8,9].

Moreover, among foreign born Mexican-Americans, longer duration of residence is associated with higher lifetime prevalence of psychiatric disorder, suggesting that increasing risk for disorder occurs within the immigrant generation as well as across generations [5]. Higher risk

among the US-born relative to the foreign born may result from exposure to acculturative stressors that are characteristic of the immigrant experience or from concurrent exposure to factors that account for similarly high risk in the US general population.

It is not clear, however, whether this pattern generalizes across immigrant groups, particularly across groups that experience distinct trajectories of adaptation to socioeconomic and racial stratification in the US [10,11]. Recently a pattern similar to that found among Hispanics, with higher risk among US-natives relative to the foreign-born, was found among Non-Hispanic Whites in a national survey [6] and among low-income Black women in a study conducted in the suburbs around Washington DC [12]. To date, however, this pattern has not been examined in a national sample of Asian-Americans (AAs) despite the fact that over 60% of this population was born outside of the US [1].

Some evidence suggests that differences between foreign-born and US-born AAs may not follow the same pattern as has been observed in other groups. In the Chinese American Psychiatric Epidemiologic Survey (CAPES), the only large-scale population survey of an AA group, duration of residence in the US was not associated with overall lifetime risk for depression [13]. A review of other smaller-scale studies of AAs suggests an inconsistent relationship between acculturation and mental health problems [14], with some studies finding a positive relationship [15], and others finding a negative relationship [16] or no relationship at all between the two [17,18]. Additionally, extremely high prevalence of psychiatric disorder has been found among immigrants from South East Asia who arrived in the US as refugees [19].

In this report, we examine differences in risk for mood, anxiety, and substance use disorders between foreign-born and US-born AAs using data on a nationally representative sample ($N = 1236$) from the National Epidemiological Survey of Alcoholism and Related Conditions (NESARC) [20]. In addition to comparing lifetime risk between these groups, we explore how these differences arise over time through two more detailed specifications that may help identify the processes through which changes in risk may occur [21]. First, we examine the possibility that the difference in risk between foreign-born and US-born AAs depends on the age of arrival in the US. Foreign-born individuals who arrive in the US as children, the 1.5 generation [22], differ from those who arrived later in life in that they experience early socialization in the US and are much more likely to become proficient English speakers [22]. On the one hand, these early socialization experiences may buffer risk for psychiatric disorder by protecting individuals from the disorientation, status loss and language-related discrimination experienced by adult immigrants [9,23]. On the other hand, early socialization to US culture may also expose this group to factors similar to those that account for higher risk among US natives. For instance, in a study of AA adolescents, peer socialization, to which US-born and the 1.5 generation are exposed, contributed significantly to risk for binge drinking [24]. Examining the relationship between age at arrival in the US and risk for disorder may help identify causal factors that operate in particular developmental periods.

Second, we examine whether differences between foreign-born and US-born in risk for *first onset* of psychiatric disorders vary by the length of time foreign-born AAs have lived in the US. In the CAPES, longer duration of residence in the US was not associated with higher lifetime prevalence of depression [13], but among those with depression, first onset occurred later in life among immigrants compared with natives, with the greatest risk of first onset occurring at or soon after migration [25]. Another study of Chinese-American obstetrical patients found more psychiatric symptoms among immigrants who had arrived in the US within the previous year compared to those with longer duration of residence in the US [26]. High risk in the immediate post-immigration period suggests that acute stresses of migration may activate an underlying diathesis and contribute to the development of a psychiatric condition.

By determining whether there are specific time periods following arrival in the US during which risk for specific disorders is elevated, prevention and intervention programs can be targeted to reach vulnerable immigrant populations [27]. In this report, we use survival models to examine differences between foreign-born and US-born AAs within specific time periods: years prior to immigration, 1–5 years post-migration, 6–15 years post-migration and 16 or more years post-migration.

Methods

Sample

Data come from the National Epidemiological Survey of Alcohol and Related Conditions (NESARC), a survey ($N = 43,093$) of DSM-IV psychiatric and substance use disorders in the adult (age 18+) US population conducted by the US Bureau of the Census for the National Institute of Alcohol Abuse and Alcoholism [20]. The target population, based on the Census 2000/2001 Supplementary Survey, consists of all non-institutionalized citizens and non-citizens residing in the 50 states and the District of Columbia, including those living in non-institutional group quarters, such as college dormitories, homeless shelters and boarding houses. The survey was conducted under the auspices of the US Bureau of the Census. The response rate was 81%. Informed consent procedures were approved by the US Census Bureau and the US Office of Management and Budget. The design and weighting methodology are described in detail elsewhere [20].

Of the 1,248 AAs in the NESARC sample, 1,236 provided information regarding nativity and were included in this study. Of these, 954 were foreign-born and 282 were US-born.

Survey instrument

Diagnoses were based on fully structured face-to-face computer assisted interviews administered by trained non-clinician interviewers using either the English or Spanish versions of the Alcohol Use Disorder and Associated Disabilities Interview Schedule—DSM-IV version (AUDADIS) [28]. In this report, we examine three mood disorders [major depression, dysthymia, and bipolar disorder (1 or 2)], four anxiety disorders [Social phobia, Specific Phobia, Agoraphobia/Panic Disorder, and Generalized Anxiety Disorder (GAD)], and four substance use disorders [alcohol abuse and dependence, drug abuse and dependence].

A test–retest reliability study conducted in a subsample of NESARC respondents found fair reliability for lifetime diagnoses of anxiety disorders ($\kappa = 0.42$ – 0.48) and slightly better reliability for dysthymia ($\kappa = 0.58$) and major depression ($\kappa = 0.65$). Due to low prevalence, reliability for bipolar disorder could not be examined [29]. In an earlier methodological study, test–retest reliability was higher for alcohol ($\kappa = 0.73$ – 0.76) and drug use disorders ($\kappa = 0.66$ – 0.79) [30].

Race/ethnicity—Respondents were asked to self-identify their race–ethnicity in two questions. The first asked whether the respondent was Hispanic. The second asked respondents to identify the racial category or categories to which they belong from the following list: American Indian or Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, Other. In this study we defined AAs as those who identified their race as Asian, were not Hispanic and did not also identify their race as American Indian or Alaska Native or Black or African-American.

Foreign vs. US birth—Respondents were asked whether they were born in the US ($n = 282$) or not ($n = 954$).

Age at onset of disorder—For each psychiatric disorder, respondents were asked how old they were when they first experienced each DSM-IV disorder.

Age at immigration—Respondents were asked the age at which they arrived in the US. We divided the foreign-born sample into two groups, those who arrived as children (i.e., the 1.5 generation, age ≤ 13 , $n = 162$) and those who arrived as adolescents or adults (age > 13 , $n = 792$).

Duration of residence in the US—Foreign-born respondents were asked how long they have lived in the US, allowing us to calculate their age at immigration. We defined four time periods within each individual's migration history: (1) years prior to immigration, (2) first 5 years post-immigration, (3) 6–15 years post-immigration, and (4) 16+ years post-immigration.

Country of origin—Respondents were asked to identify their origin or descent from a list of 59 ethnic or national groups. In this study, we classified AAs by country of origin into the following categories: Chinese, Filipinos, Japanese, Koreans, South Asians, Southeast Asians and Other Asians.

Statistical analysis

To account for the complex survey design, standard errors were calculated using Taylor series linearization as implemented in the Sudaan software package [31]. Lifetime prevalence was estimated as the proportion of respondents in the sample who met criteria for a disorder at any time in their life. Comparisons of lifetime risk between the foreign-born and the US-born, adjusted for age, sex and country of origin, were conducted using logistic regression models.

Data on age at first onset were used to examine changes in risk for disorder associated with duration of residence in the US. Hazard ratios comparing the foreign-born and the US-born within specified time periods in the lives of the foreign-born were estimated using discrete time survival models [32,33]. Survival models were estimated for each time period, excluding respondents with prior onset and using left truncation of survival times to define the beginning of each time period for foreign-born respondents. Statistical controls for age, sex and country of origin were included in all models.

Results

Sample description

Characteristics of the foreign-born and US-born AAs in the sample are presented in Table 1. The foreign-born did not differ from the US-born in gender, but were less likely to be in the youngest age group than natives. The foreign-born also differed from the US-born in country of origin; foreign-born were more likely to be South Asian and less likely to be Japanese than US-born. Reflecting the general population, the foreign-born were more concentrated at both the high and low ends of the distribution of educational attainment.

Lifetime prevalence

Foreign-born AAs had lower lifetime prevalence of all psychiatric and substance use disorders than US-born AAs (Table 2). These differences reached statistical significance for social phobia, agoraphobia/panic disorder, and all categories of substance use disorder.

Lifetime risk and age at immigration

In order to maintain statistical power, we examined only broad classes of mood, anxiety, and substance use disorders in multi-variable models. When age, sex and country of origin were

statistically controlled, foreign-born AAs had significantly lower lifetime risk than US-born AAs for all classes of disorder (Table 3). When stratified by age at immigration, risk relative to the US-born was lower for those who immigrated during adolescence or adulthood (age 14 or older) compared to those who arrived as children (age 13 or younger). For anxiety and mood disorders, significantly lower risk was found exclusively among those with late age at immigration. For substance use disorders, both groups had significantly lower risk compared with the US-born, but those with early age at immigration had significantly higher risk than those with late age at immigration, as indicated by the non-overlapping confidence intervals for the odds ratios for these two groups.

Duration of residence in the US and risk for first onset of disorder

There was a consistent pattern across all classes of disorder whereby risk for first onset of disorder was significantly lower among the foreign-born relative to the US-born AAs in the years prior to their arrival in the US. However, after arrival in the US, risk for first onset of disorder among the foreign-born rises over time to a level equal to that of the US-born AAs (Table 4). In no time period was risk among the foreign born significantly higher than among the US-born. The trend toward equalization of risk occurred at different rates for each class of disorders. For mood disorders, the foreign-born rise to equal risk as the US-born in the first 5 years post-immigration, and this relationship remains constant over subsequent time periods. For anxiety disorders, there is a trend towards lower risk among the foreign born in the first 5 years post-immigration, but in subsequent periods risk is equal between the groups. For substance use disorders, risk among the foreign-born remains significantly lower than among the US-born for the first two post-immigration periods, but this advantage decreases in magnitude and becomes statistically non-significant in the third post-immigration period.

Discussion

Several limitations of the data should be considered in interpreting these results. First, the AA population in the US is heterogeneous with respect to country of origin, motivation for immigrating to the US, pre-migration culture and socioeconomic status, and achieved social status within the US [14]. There may be AA groups among whom differences in psychiatric morbidity between immigrants and natives do not follow the pattern identified here. In particular there is evidence that immigrants from Southeast Asia, who arrived in the US as refugees, experience high levels of poverty as well as extremely high prevalence of depression and post-traumatic stress disorder [19]. Our findings in this national sample that consists mostly of 'voluntary' migrants may not generalize to involuntary migrants, such as refugees, who migrate under very different circumstances and though numerically small, experience substantially different patterns of morbidity and have large needs for targeted services.

Due to the small samples of AAs from specific countries, our ability to examine within group differences was limited to individuals of Chinese, Filipino, Japanese and Korean origin. In separate analyses within these four groups (results not shown) there was no class of disorder for which risk among the foreign-born was significantly higher than risk among the US-born. Risk was lower among the foreign-born relative to the US-born in every case, with one exception: in the Chinese subsample risk for mood disorders was non-significantly elevated among the foreign-born relative to the US-born (OR = 1.32, 95 CI (0.48, 3.65)). Studies with larger samples of specific subgroups of Asian-Americans are needed to thoroughly examine the extent to which the patterns identified in this survey are consistent across groups.

Second, the results may also be affected by the restriction of the sample to respondents who could be interviewed in English or Spanish, a criterion that effectively skewed the sample towards more acculturated AAs. Studies of Hispanic immigrants have found that the lifetime prevalence of psychiatric disorders is likely to be higher among more acculturated immigrants

[7]. While this general trend was not replicated in the CAPES [13], we recognize that our prevalence estimates may actually overestimate the level of risk due to the exclusion of AAs with limited English-language skills. Despite this possibility, it is notable that we still find significantly lower risk among immigrants in comparison with native-born AAs.

Third, foreign-born AAs may be less familiar than the US-Born with American idioms of mental health and therefore respond differently to survey questions used to assess psychiatric disorders [21,34]. Although some methodological investigations of the cultural validity of standardized diagnostic assessments have been conducted among American Indians for example [13], similar studies that compare immigrants and natives with respect to epidemiological assessments of psychiatric disorders have not yet been undertaken with AA populations.

Similar to patterns found among Hispanics and Non-Hispanic Whites in the United States [6, 8], foreign-born AAs had significantly lower risk for all classes of psychiatric disorders than US-born AAs. This finding suggests that, with the exception of refugee groups noted above, social or cultural conditions of life in the United States may contribute to psychiatric morbidity regardless of the national or ethnic origin of immigrant groups or their experience of socioeconomic disadvantage as they become incorporated into American society. This pattern, moreover, is not specific to the US, but has also been found for depression among immigrants to the UK [35] and for psychotic disorders among immigrants to Europe [36] and Australia [37].

More detailed specification of differences between immigrants and natives revealed patterns that are informative with respect to potential causal pathways. First, differences between immigrants and natives depend on the age at which immigrants arrive in the US, suggesting that the timing of exposure to American society with respect to developmental stage plays an important role in determining lifetime risk for psychiatric disorder. Immigrants who arrived as children (age 13 or earlier) were at higher risk for all classes of disorder than immigrants who arrived later in life. In fact, for mood and anxiety disorders, immigrants who arrived as children did not differ from US-born AAs. This suggests that factors that protect adult immigrants from mood and anxiety disorders are not transmitted to their children who arrive in the US prior to adolescence.

The pattern of risk across ages at immigration was different for substance use disorders. Foreign-born AAs who arrived in the US as children had lower risk for substance use disorders than US-born AAs, but higher risk than foreign-born AAs who arrived later in life. This finding is consistent with the finding from other surveys that immigrant adolescents are at lower risk for substance use and misuse than native born adolescents [38,39]. The explanation for this pattern, and the difference between substance use disorders and other psychiatric disorders, is unclear. Children in immigrant families may be protected from substance use because of the orientation of their families towards educational attainment and social mobility [40] or because of the lack of social networks that provide opportunities to use substances. These factors would not have the same effect on mood and anxiety disorders, the antecedents of which are not under conscious control.

Second, risk for first onset of disorder changed over time among the foreign-born in a similar pattern for all classes of disorder. In the years prior to arrival in the US, the foreign-born had lower risk for all disorder classes. It is important to note that this finding does not imply selective migration, i.e., that immigrants are more or less likely to have psychiatric disorders than their compatriots who do not immigration. Cross-national studies have found lower risk for psychiatric disorders in Asian countries [41]. Thus if the foreign-born AAs in the US experienced the same level of risk as their compatriots they would be at lower risk than the

US-born. In order to directly examine the selective migration hypothesis, studies which apply consistent methods in assessing risk among immigrant populations and their countries of origin are needed.

After arrival in the US, risk of first onset increased among the foreign-born relative to the US-born to the extent that there were no significant differences between these groups for any class of disorder after 15 years of residence in the US. No difference in this pattern was found between early and late immigrants (results not shown). By examining first onsets, this analysis extends previous studies which have found an association between duration of residence and lifetime or current prevalence of substance use or psychiatric disorders [5,38,39,42]. The pace of change in risk for first onset differed for each class of disorders. The change was fastest for mood disorders, which is consistent with the finding in the CAPES that risk for onset of disorder was high in years immediately following immigration [25]. For anxiety and substance use disorders, however, the change was drawn out over a longer period of time. The finding that this change was slowest for substance use disorders may reflect the same underlying process noted above; the etiological mechanisms for substance use disorders involve overt and identifiable behaviors, are thus more affected by conscious and explicit social sanctions, and are therefore more resistant to change.

Taken together, these findings suggest that both the developmental timing and the duration of experience in the United States contribute to increases in risk for psychiatric disorders among AAs as they adapt to American society. Furthermore, this pattern of results is consistent with roles for both acculturative stress and socialization to the US [25,42] as etiological processes underlying this change. The role of acculturative stress is most likely to be related to increases in risk for first onset of disorder that we observed occurring shortly after arrival in the US. However, it is important to note in this regard that risk among the foreign-born did not exceed that of the US-born AAs in any time period. On the other hand, the role of early socialization, i.e., factors shared by foreign-born and US-born AAs, is suggested by the finding of higher risk among those immigrants who arrived in the US prior to adolescence.

These findings also have important clinical implications. First, our finding that risk for first onset of mood and anxiety disorders rises among the foreign-born shortly after their arrival in the US, indicates that though foreign-birth is a protective factor, those of foreign birth are not less likely to develop disorders while in the US. This finding underlines the needs for research and clinical training that aims to address the distinct language and cultural needs of foreign-born AAs. Second, the finding that risk for psychiatric disorders increases across generations as AA groups settle in the United States implies that current estimates of need for mental health services in these groups are likely to underestimate future needs as the US-born AA population grows.

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Table 1
Characteristics of foreign-born and US-born Asian-Americans in the NESARC

	<i>n</i>	All AAs, <i>n</i> = 1236		Foreign-born, <i>n</i> = 954		US-born, <i>n</i> = 282	
		%	SE	%	SE	%	SE
Sex							
Male	547	48.4	1.9	49.1	2.0	45.7	4.3
Female	689	51.6	1.9	50.9	2.0	54.3	4.3
Age				$\chi^2(1) = 0.632, p = 0.429$			
18–24	202	15.7	1.3	12.6	1.3	27.6	4.7
25–34	306	24.9	2.1	25.2	2.3	23.4	3.7
35–44	286	21.5	1.4	23.7	1.5	13.3	3.2
45–54	211	17.7	1.3	18.4	1.5	14.6	2.2
55–64	114	10.7	1.3	11.9	1.4	6.2	2.6
65+	117	9.4	1.8	8.0	1.1	15.0	5.8
Sub-group				$\chi^2(5) = 17.286, p = 0.008$			
Chinese	318	25.4	2.5	25.9	2.4	23.3	5.1
Filipino	171	14.6	2.0	13.6	2.2	18.3	2.9
South Asian	185	16.4	2.0	19.3	2.0	5.7	2.1
Japanese	140	10.6	2.2	5.6	0.9	29.4	6.2
Korean	126	9.0	1.0	10.0	1.1	5.4	1.3
SE Asian	113	8.9	1.2	10.7	1.5	2.3	1.3
Other	183	15.0	1.4	14.8	1.6	15.5	3.2
Education				$\chi^2(6) = 25.238, p = 0.001$			
<H.S.	146	12.4	2.2	14.2	2.6	5.9	1.9
High School	213	17.0	1.4	16.4	1.9	19.3	2.5
Some Col.	203	16.7	1.8	15.1	1.9	22.9	3.7
Col. Grad	674	53.8	2.4	54.3	3.3	51.9	3.4
				$\chi^2(3) = 12.609, p = 0.009$			

Table 2
Differences between foreign-born and US-born asian-americans in lifetime prevalence of DSM-IV psychiatric disorders

Lifetime prevalence								
	Total		US-born		Foreign-born		$\chi^2 (1)^a$	p-Value
	%	SE	%	SE	%	SE		
<i>Mood disorders</i>								
Major depression	8.9	1.0	11.7	1.8	8.2	1.2	1.78	0.187
Dysthymia	2.9	0.8	4.3	1.9	2.6	0.7	0.69	0.408
Bipolar disorder (1 or 2)	2.8	0.5	3.5	1.0	2.7	0.6	0.53	0.469
Any mood	12.8	1.2	16.6	2.3	11.8	1.3	2.31	0.134
<i>Anxiety disorders</i>								
Social phobia	3.4	0.6	5.8	1.1	2.7	0.6	5.51	0.022
GAD	2.3	0.5	3.4	1.3	2.0	0.5	0.75	0.391
Agoraphobia/panic	2.3	0.5	5.2	1.1	1.6	0.5	4.45	0.039
Specific phobia	5.7	0.8	8.6	1.7	5.0	0.9	2.82	0.098
Any anxiety	10.9	1.5	17.8	3.5	9.1	1.3	3.89	0.053
<i>Substance use disorders</i>								
Alcohol disorder ^b	10.8	1.2	24.5	2.9	7.3	1.0	21.27	<0.001
Drug disorder ^b	3.6	0.5	8.3	1.3	2.3	0.6	10.09	0.002
Any substance disorder	11.9	1.1	26.9	3.1	8.0	1.0	25.17	<0.001

^a Test of difference in lifetime prevalence between foreign-born and US-born AAs

^b Substance disorder categories include both dependence and abuse

Table 3
Risk for psychiatric disorders among foreign-born and US-born Asian-Americans^a

Disorder Category	US-Born ^b	All foreign-born	US-born ^b	Foreign-born			
				Early age at immigration		Late age at immigration	
				OR	95% CI	OR	95% CI
Mood	1	0.61 (0.39–0.98)	1	1.01	(0.52–1.96)	0.62	(0.39–0.99)
Anxiety	1	0.47 (0.28–0.79)	1	0.75	(0.41–1.35)	0.47	(0.27–0.80)
Substance	1	0.17 (0.10–0.28)	1	0.5	(0.28–0.92)	0.14	(0.08–0.23)

^a Odds ratios estimated in logistic regression equations with statistical controls for age, sex and country of origin. Early age at immigration includes all foreign-born AAs who arrived in the use at age 13 or earlier. Late age at immigration includes all other foreign-born AAs

^b Reference group is US-born in all models

Table 4
Risk of first onset of psychiatric disorders among foreign-born and US-born Asian-Americans, by duration of residence in the US^a

	US-Born ^b	Foreign-Born							
		Pre-immigration			Post-immigration years				
		Years			First 5 years				
		6–15 years			16+ years				
		OR	95% CI	OR	95% CI	OR	95% CI		
Mood	1	0.43	(0.27–0.71)	1.33	(0.77–2.29)	0.94	(0.46–1.90)	1.3	(0.65–2.61)
Anxiety	1	0.44	(0.26–0.75)	0.64	(0.35–1.16)	1.06	(0.65–1.73)	1.03	(0.65–1.65)
Substance	1	0.18	(0.10–0.33)	0.08	(0.04–0.19)	0.4	(0.27–0.62)	0.66	(0.42–1.04)

^aOdds ratios estimated in discrete time survival models with statistical controls for age, sex and country of origin. US-born is the reference category in all models. Odds ratios in boldface indicate statistically significant differences in risk at $p = 0.05$

^bReference group is US-born in all models