Published in final edited form as:
*Asian Am J Psychol*. 2014 December 1; 5(4): 353–363. doi:10.1037/a0035680.

# Lifetime Prevalence of Mental Disorders among Asian Americans: Nativity, Gender, and Sociodemographic Correlates

**Seunghye Hong**,
Myron B. Thompson School of Social Work, University of Hawai'i at Mānoa

**Emily Walton**,
Dartmouth College, Department of Sociology

**Emi Tamaki**, and
Ritsumeikan University, College of Social Sciences

**Janice A. Sabin**
University of Washington, Department of Biomedical Informatics and Medical Education

## Abstract

This study examines lifetime prevalence estimates of mental disorders among Asian Americans with a focus on differences by nativity, gender, and other relevant sociodemographic correlates. We analyze cross-sectional data from the National Latino and Asian American Study (NLAAS), the first national epidemiological survey of Asian Americans which used a probability sample of household resident adults in the United States (N=2,095). US-born Asian Americans are more likely to experience lifetime mood disorders, substance use disorders, and any mental disorders compared to immigrants. Lifetime substance use disorders are more likely to occur among men rather than women. Nativity and gender show joint associations with different mental disorders: US-born women are at the greatest risk for any mood disorders; US-born men are at the greatest risk for any substance use disorders; and immigrant women are at the lowest risk for substance use disorders compared to all other groups. Analysis of the sociodemographic correlates reveals that the youngest immigrant women showed significantly higher rates of any mood disorder compared to other immigrant women. Additionally, among immigrant men, those with low household income are at a higher risk for mood disorders, and those who report fair/poor English proficiency have a higher prevalence of anxiety and mood disorders. This study provides documentation of prevalence differences in detailed mental health categories along salient axes of stratification among Asian Americans and provides a foundation for future research aimed at understanding the causes and correlates of mental health disparities.

### Keywords

mental disorders; Asian Americans; nativity; gender

Correspondence concerning this article should be addressed to Seunghye Hong, Myron B. Thompson School of Social Work, University of Hawai'i at Mānoa, 1800 East-West Road, Henke Hall, Honolulu, HI 96822. shong9@hawaii.edu.

Individuals belonging to the broadly-defined Asian racial group comprise 5.6% of the total U.S. population and are the fastest-growing racial group, with a 45.3% increase in population between the years 2000 and 2010 (U.S. Census Bureau, 2012). By the year 2050 Asian Americans may grow to 40 million and constitute roughly 10% of the projected U.S. population (U.S. Census Bureau, 2011). Despite the rapid growth of Asian Americans in the United States over the past 40 years, the relatively small population size, heterogeneity, and rapidly-changing demographic composition of the Asian American population pose challenges to our ability to understand the experiences of this broad racial group (Sue, 1994; Chu & Sue, 2011).

Due to the recent growth of the Asian American population and a number of logistical difficulties with mental health data collection, before the fielding of the NLAAS in 2002–03, there was a relative dearth of empirical research on the prevalence of mental disorders nationally among Asian Americans. In studies that utilize probability sampling techniques and DSM criteria for diagnosis of mental disorders, Asian Americans generally appear to show rates of mental disorders that are similar to, or lower than, the larger U.S. population (Asnaani, Richey, Dimaite, Hinton, & Hofmann, 2010; Grant et al., 2004a; Okazaki, Kassem, & Tan, 2011). Jackson et al. (2010), for instance, report lifetime prevalence of major depressive episodes for US-born Chinese American (21.5%), for immigrant Chinese Americans (7.7%), and for Filipinos (7.2%) (as cited in Kalibatseva & Leong, 2011, p. 2). One large sample epidemiological study recently reported 12-month prevalence of mental disorders among Asian Americans and Pacific Islanders in the U.S. (Xu et al., 2011). Additionally, the NLAAS data has reported prevalence estimates for depressive, anxiety and substance abuse disorders (Takeuchi et al. 2007b), but has not broken these broad categories down into their constituent parts to examine prevalence.

A great deal of research has established that nativity and gender are important factors that influence the lifetime prevalence of mental health disorders among Asian Americans. Nativity status plays a significant role in mental health among racial and ethnic minority groups in general (Alegría et al., 2007, 2008; Grant et al., 2004a, 2004b; Sue, Sue, Sue, & Takeuchi, 1995; Takeuchi et al., 1998, 2007b; Takeuchi, Hong, Gile, & Alegría, 2007a; Uba, 1994; U.S. DHHS, 2001; Vega, Alderete, Kolody, & Aguilar-Gaxiola, 1998). Gender is also a critical factor for mental health status, with findings indicating different rates of mental disorders between men and women (Breslau et al., 2006; Kessler et al., 1994; Kessler, 2003), including mood disorders (Andrade et al., 2003; Gater et al., 1998; Piccinelli & Homen, 1997; Umberson, Chen, House, Hopkins, & Slaten, 1996), anxiety disorders (Gater et al., 1998), and substance use disorders (Cheng, Lee, & Iwamoto, 2012; Lopez-Gonzalez, Aravena, & Hummer, 2005; Umberson et al., 1996). In a seminal study using the NLAAS, Takeuchi et al. (2007b) showed that Asian men and women differed in the association of immigration-related factors with mental disorders; the authors demonstrated that foreign-born women are less likely than US-born women to have a lifetime case of mental disorder, whereas foreign-born men did not significantly differ from US-born men in lifetime prevalence of any disorder.

Recently, investigations have turned toward understanding the social and cultural factors associated with nativity and gender to determine the reasons for mental health differences

along these axes of stratification. One line of reasoning suggests that immigrants face challenges associated with difficult contexts of exit from their countries of origin and cultural change associated with their reception in the United States (Nicholson, 1997; Sue et al., 1995). On the other hand, recent research suggests that different acculturation processes among those who immigrate as refugees (coming for political or personal safety reasons) versus sojourners (migrating for financial or educational opportunities) explain the differences in psychological adjustment among immigrants (Lui & Rollock, 2012). Abe-Kim et al. (2007) suggest that differences in mental health service use may have some effect on rates of disorders by nativity; they find that US-born Asian Americans use specialty mental health services at a significantly higher rate than foreign-born Asian Americans.

Considering more fully the influence of gender, a recent study among South Asian immigrants found differing effects of gendered family realities on psychological distress; whereas women who lacked extended family support were at a higher risk for psychological distress, men experienced more distress when they had conflict with family culture and lower community social position (Masood, Okazaki, & Takeuchi, 2009). US-born Asian American women, especially in a family context with more patriarchal culture, may experience certain gender role expectations and have relatively lower status than men in the household (Dion & Dion, 2001). In terms of substance use, not only are cultural norms different for Asian American men and women (Canino, Vega, Sribney, Warner, & Alegría, 2008; Chae et al., 2008; O'Hare, 1995; Zane & Kim, 1994), there are differences in the ways that substance abuse affects mental health, with women expressing more depressive and anxiety disorders when they drink heavily (Cheng et al., 2012). Finally, stress may impact men's and women's health behaviors differently through a gendered coping response (Ornelas & Hong, 2012; Thoits, 2010). Men are more likely to cope with the stress via externalizing symptoms (e.g., substance use) while women are more likely to respond to stress via internalizing symptoms (e.g., mood or anxiety disorders) (Aneshensel, Rutter, & Lachenbruch, 1991; Slopen, Williams, Fitzmaurice, & Gilman, 2011).

Research suggests that certain axes of stratification may be important for understanding differences in prevalence of mental health disorders among Asian Americans; particularly, in this study we consider age, marital status, educational attainment, household income, ethnicity, and English language proficiency. Multiple studies have shown that older adults have lower rates of mental disorders (Alegría et al., 2007; Kessler et al., 2005; Kim & Choi, 2009; Williams et al., 2007). Changes in social status upon immigration appear to be important for the effects of age, where declines in status make this relationship more influential for mental health (Lam, Yip, & Gee, 2012). It has been well-established that married individuals have better mental health than the unmarried (Cotten, 1999); being married implies that one is more-deeply embedded in a supportive social network, which may result in having a stronger sense of self, regulation of health behaviors, and more regular sources of care and assistance (Gove, Style, & Hughes, 1990; Umberson, 1987). Education and income are two important aspects of socioeconomic position, which generally relate to mental health in a gradient pattern, where higher educational and income attainment relates to better mental health (Adler et al., 1994; Perry, 1996). Among Asian Americans, there is good reason to believe that the very different experiences of ethnic subgroups in the United States in terms of reasons for immigration, context of exit and reception,

socioeconomic status, and residential community context are associated with variations in mental health disorder prevalence (Takeuchi et al., 2007b). Finally, Asian Americans with limited English proficiency have been shown to be less likely to perceive a need for mental health treatment and wait longer with unmet service needs (Bauer, Chen, & Alegría, 2010).

The purpose of the current study is to examine the lifetime prevalence of detailed categories of mental disorders in a national community sample of Asian Americans with particular attention to the effects of nativity, gender and other sociodemographic factors that are relevant mental health. This study is important because it lays a comprehensive foundation for future work exploring mental health disparities among racial and ethnic groups in the United States. The prevalence rates we report provide national estimates for Asian Americans for detailed categories, but further they provide a basis for comparison among racial and ethnic groups (NCS-1 and NCS-R, see Kessler et al., 1994, 2005; NSAL, see Broman, Neighbors, Delva, Torres, & Jackson, 2008). Accordingly, we have three aims in this study. First, we examine the lifetime prevalence of detailed and summary categories of mental disorders among Asian Americans. Next, we assess how these detailed lifetime rates are patterned by nativity and gender. Finally, we examine whether the lifetime prevalence rates of four broad categories of mental disorders jointly vary with nativity and gender by sociodemographic factors including age, marital status, education, ethnicity, household income, and English proficiency.

## Methods

### Sample

We used data from the National Latino and Asian American Study (NLAAS) (Alegría et al., 2004). The NLAAS collected information primarily from nationally representative samples of Latino and Asian American adults. The following individuals were eligible to participate in the NLAAS survey: non-institutionalized adults (aged 18 and older), residing in any of the 50 states, who self-identified as Asian or Latino American. Trained interviewers administered the NLAAS questionnaire in a face-to-face interview, unless the respondent specifically requested a telephone interview. The NLAAS instrument was available in Spanish, Chinese, Tagalog, and Vietnamese, in addition to English. The current study focuses on the respondents of Asian descent ($N$=2,095). The final weighted response rate was 66% for the Asian American sample. Detailed descriptions of the sampling methods used in NLAAS can be found elsewhere (Heeringa et al., 2004; Takeuchi et al., 2007b). The NLAAS sampling procedures required the construction of weighting corrections to take into account joint probabilities of selection under the three components of the sampling design.

### Measures

**Diagnostic assessment—**The NLAAS diagnoses are based on the World Mental Health Survey Initiative Version of the World Health Organization Composite International Diagnostic Interview (WMH-CIDI; Kessler & Üstun, 2004), a fully structured lay-administered diagnostic interview that generates both *International Classification of Diseases (ICD), 10$^{th}$ Revision*, and *DSM-IV* diagnoses. The *DSM-IV* criteria are used here. Diagnoses include *anxiety disorders* (panic disorder, agoraphobia without panic disorder,

social phobia, generalized anxiety disorder, and post-traumatic stress disorder), *mood disorders* (major depressive disorder and dysthymia), and *substance use disorders* (alcohol abuse/dependence and drug abuse/dependence). Organic exclusion rules and hierarchy rules were used to make all diagnoses other than the diagnoses of substance use disorders. The hierarchy restriction in the case of substance disorders is such that substance dependence is given hierarchy over abuse, so that if a respondent is diagnosed with substance dependence they do not qualify for substance abuse (American Psychiatric Association, 2000). Substance use disorders were diagnosed without hierarchy in the recognition that abuse often is a stage in the progression to dependence. *Any mental disorder* is defined as exhibiting at least one of the anxiety, mood, or substance use disorders as defined above.

**Sociodemographic measures—**Analyses were conducted on the total sample and stratified by sociodemographic variables. Sociodemographic variables included *nativity*, *gender*, *age* (18–29, 30–44, 45–59, or ≥60 years), *marital status* (married, never-married, or separated/widowed/divorced), *education* (0–11, 12, 13–15, or ≥16 years), *ethnicity* (Vietnamese, Filipino, Chinese, or Other Asian), *household income* ($0–14,999; $15,000–34,999; $35,000–74,999; or ≥$75,000), and *English proficiency* (poor/fair or excellent/good). English proficiency was assessed using the item “How well do you speak English?” Response categories ranged from (1) poor to (4) excellent and they were dichotomized into two categories.

**Statistical analysis—**We computed lifetime prevalence rates, the proportion of respondents who had ever had a given disorder up to their age at interview, for four large classes of disorder and detailed categories mentioned above. We conducted prevalence estimates for the total sample, then stratified by nativity and gender, and further stratified by sociodemographic correlates. Thus, in the interpretation of the prevalence estimates it is important to keep in mind that the Total columns in the tables reflect the average for the entire sample and are influenced by subgroups with large proportions of the sample (i.e., immigrants, who make up 78% of the sample). In the current study, we highlight the stratified results and place less emphasis on the total averages; however, we include the total averages to aid in comparison of prevalence rates among Asian Americans with other racial/ethnic groups included in other research studies. Prevalence estimates, standard errors, 95% confidence intervals (CIs), and significance tests were estimated using the Survey Data ANalysis (SUDAAN) software system. SUDAAN provides estimates that account for the incorporation of complex survey design methods, including stratification, clustering, and weighting procedures.

## Results

### Descriptive Characteristics

Table 1 shows the weighted descriptive statistics for the total sample stratified by nativity and gender. While men and women had similar age distributions within their nativity groups, the age distributions differed according to nativity. Particularly, the US-born respondents had a larger young cohort compared to the foreign-born group, and fewer respondents in the late middle age category. Most immigrant respondents were married,

while high proportions of US-born respondents had never married. We speculate that these differences in marriage rates are largely attributed to age differences, where many of the US-born respondents, who are younger on average, have not yet married. The major difference in ethnicity distributions was between the immigrant and US-born groups, with US-born being underrepresented in the Vietnamese category and overrepresented in the Other Asian category. The majority of immigrants and US-born respondents had at least a high school degree. For both immigrants and US-born respondents, a larger proportion of men had college degrees compared to women. Nearly half of foreign-born men, US-born men, and US-born women had household incomes greater than $75,000 per year, while only 40% of foreign-born women attained this income level. At the lower end of the income distribution, only 16% of US-born men had household incomes of less than $35,000 per year, while 24–30% of the other groups fell into these income categories. Overall, almost two thirds of immigrant men and women reported excellent or good English proficiency.

### Lifetime Prevalence by Nativity and Gender

Table 2 shows the lifetime prevalence rates of mental disorders for the total sample, and stratified by nativity and gender. The lifetime prevalence of any mental disorder was 18.1%. (*Note*: This estimate differs from the 17.3% reported by Takeuchi et al. (2007b) which also uses the NLAAS data and calculates major classes of disorder in the same way; early prevalence estimates that came out of the NLAAS study differ slightly because of a clinical reappraisal study that occurred later which resulted in changes to the algorithms for calculating the DSM disorders.) In the total sample, the most prevalent class of disorders was anxiety disorders (10.2%), followed by mood disorders (9.5%) and substance use disorders (4.0%). We should note that each class of mental disorder is comprised of varying numbers of disorder categories which affects the way one should interpret the relative prevalence ranking of each class; there are five categories of anxiety disorders, two categories of mood disorders, and three categories of substance disorders. Within the disorder classes, major depressive disorder (9.1%), social phobia (5.3%), and alcohol abuse (3.4%) were most prevalent. Gender differences were evident in lifetime substance use disorders, where men had significantly higher rates, including both alcohol abuse and drug abuse.

When investigated simultaneously, nativity and gender were distinguishing factors for the lifetime rates of mental disorders. US-born women had significantly higher rates of any mental disorder compared to immigrant men and women. Looking at the classes of disorder, we see that the rates of any anxiety disorders for US-born women were significantly higher than immigrants. For both panic disorder and social phobia US-born women had higher prevalence than foreign-born women, and US-born women had significantly higher rates of post-traumatic stress disorder than both US- and foreign-born men. The rates of any mood disorders for US-born women were significantly higher than all other groups. The differences observed for US-born women in rates of any mood disorder are likely driven by the significantly higher rates of major depressive disorder in this group compared to all other groups. Looking at substance abuse disorders, US-born men had the highest rates while immigrant women had the lowest rates compared to all other groups. Specifically examining differences within the category of substance abuse disorders, the rate of alcohol abuse for

US-born men was significantly higher than the other three groups and the rate of drug abuse was significantly higher than immigrant men and women.

### Lifetime Prevalence by Sociodemographic Characteristics

**Any anxiety disorder—**Among immigrant men, age and English proficiency were associated with any anxiety disorder. The oldest group of immigrant men reported the highest rates of anxiety disorder compared to the youngest group. In addition, immigrant men with poor/fair English proficiency showed significantly higher rates of anxiety disorder than those who speak English well. It is important to note that there is inherent overlap between the two categories, where individuals who are in the oldest group of immigrant men are also likely to be represented in the category of poor/fair English proficiency.

**Any mood disorder—**Age effects were most prominent among immigrant women, while all other groups showed no age differences in the prevalence of any mood disorder. Among immigrant women, the youngest were at the greatest risk for any mood disorder, showing a significantly higher rate of any mood disorder compared to women aged 30–59. Also among immigrants, both men and women who never married had significantly higher rates of mood disorders compared those who were married. Among US-born men and women the higher rates of any mood disorder were most pronounced among the widowed/separated/divorced compared to the married. In observing differences in age and marital status categories in both the US-born and immigrant groups, it is important to note that marital status and age have substantial overlap in their distributions. In other words, those in the never married group are more likely to be young, and thus those young immigrant women with high rates of mood disorder overlap somewhat with the never married with high rates of mood disorder. Immigrant men with the lowest level of education reported the lowest rate of any mood disorder and this rate significantly differed from that of those with a high school degree. On the other hand, immigrant men with low household incomes reported the highest rate of any mood disorders, and this was significantly higher than the highest household income group. Demonstrating a similar pattern with any anxiety disorders, immigrant men with poor/fair English proficiency showed significantly higher rates of mood disorders than those who speak English well. Considering ethnicity, among the US-born, Chinese women had highest rates of mood disorders compared to Filipino and other Asian groups.

**Any substance use disorder—**Age had linear gradient associations with any substance use disorders in the total sample, with older age resulting in lower rates of substance use disorders. Interestingly, this gradient pattern was not evident when the analyses were separated by nativity and gender. Overall, those that were never married status had higher rates of substance use disorders among all groups except US-born women. Immigrant men with at least a 4-year college degree had lower rates of substance use disorders compared to those with a high school degree. Immigrant women were dropped from the analyses for several sociodemographic categories, because there were no respondents with any substance use disorder.

**Any mental disorder—**In the total sample, the youngest age group demonstrated significantly higher rates of any mental disorder than any other age category. These age

results for the total sample may have been particularly influenced by immigrant women, who had higher rates of any mental disorder than those in the middle age ranges. The rates of any disorder these young immigrant women demonstrated were similar to those of both US-born men and women. Immigrant women and US-born men who have never married had higher lifetime rates of any mental disorder compared to their married counterparts. Separated/widowed/divorced US-born women had significantly higher rates of any mental disorder than married US-born women; this rate may not be precise due to small sample size in this category (n=39). Similar to our observations for mood disorders, the demographic overlap in the marital status and age categories should be noted for any disorder. Considering ethnicity, Chinese US-born women showed higher rates of any mental disorder than Filipino and Other Asians. Immigrant men who spoke poor or fair English had higher lifetime rates of any mental disorder compared to proficient speakers.

## Discussion

The present study reveals that nativity, gender and sociodemographic factors are associated in complex ways with mental disorders among Asian Americans. When separating the findings by nativity and gender, we found that immigrants demonstrated significantly lower rates of lifetime prevalence of any mental disorders for both men and women. These findings are consistent with findings among Mexican and Caribbean immigrants (Grant et al., 2004b; Williams et al., 2007). The lower rates of mental disorders among immigrants may be due to selection of healthier individuals to migrate (Rubalcava, Teruel, Thomas, & Goldman, 2008). We also found that gender was associated with higher rates of substance use disorders among men compared to women. This finding is also consistent with existing literature, suggesting that higher risk of substance use disorders for men is generalizable across different groups, including Asian Americans (Canino et al., 2008; Cheng et al., 2012; Lopez-Gonzalez et al., 2005; Umberson et al., 1996).

In addition to their separate effects on mental disorders, nativity and gender had joint effects on mental disorders. Among immigrants, gender differences were evident only in the rates of substance use disorders: immigrant men had significantly higher rates of substance use disorders than immigrant women. Beyond substance abuse, nativity and gender did not have joint effects on other mental disorders among immigrants: immigrant men and women showed similar prevalence rates of lifetime any anxiety, any mood, and any mental disorders. One study on the prevalence of major depressive disorder (MDD) in African Americans and Caribbean Blacks, using Nation Survey of American Life (NSAL) data, found no gender differences in lifetime and 12-month MDD among Caribbean blacks, and that men had non-significant but higher risk of 12-month MDD than women (Williams et al., 2007). Among US-born respondents, however, there were significant gender differences in the prevalence rates of all categories of lifetime mental disorders. US-born men were at the greatest risk for any substance use disorders, and US-born women had significantly higher prevalence of anxiety, mood, and any mental disorders. Examining specific categories of substance abuse, US-born men had higher rates of alcohol abuse than all other groups (including US-born women), and higher rates of drug abuse than immigrant men and women. With the exception of substance disorders, US-born women consistently had much higher prevalence rates of any anxiety, any mood, and any mental disorders than all other

groups. Specifically, we found that higher rates of mood disorders among US-born women can likely be partially attributed to higher prevalence of major depressive disorder in this group. These findings of higher prevalence among US-born women are parallel to health statistics documenting a decrease in health status between immigrants and successive generations (Bates, Acevedo-Garcia, Alegría, & Krieger, 2008; Sue et al., 1995; Takeuchi et al., 1998, 2007a; Uba, 1994) and with research demonstrating that women in general are more likely to have depression, anxiety, and somatic complaints than men (Andrade et al., 2003; Breslau et al., 2006; Gater et al., 1998; Kessler et al., 1994, 2003; Piccinelli & Homen, 1997).

Sociodemographic factors influenced the associations among nativity, gender, and prevalence of mental disorders. One salient finding regards age, where the youngest group of immigrant women (ages 18–29) showed significantly higher rates of any mood disorder compared to older age groups (ages 30–59). A similar pattern was also shown in the rates of any mental disorders, suggesting that the significant age effect may be influenced by mood disorders. This finding about higher mood disorder prevalence among younger US-born women may be partially explained by our finding of a higher prevalence of major depressive disorder among US-born women in general. We were unable to investigate why, among immigrant women, the youngest group may be at the greatest risk for mood disorders, specifically major depressive disorder; however, we speculate that because the youngest immigrant women came to the U.S. when they were young, they are more likely to have similar characteristics to US-born women, who are at the greatest risk for both anxiety and mood disorders. Another explanation is that age at immigration is important, such that those who immigrate at young ages are more vulnerable to stressors accompanying immigration (Kim & Choi, 2010; Takeuchi et al., 2007a) and experience differing socioeconomic developmental contexts (i.e., schools and workplaces) that affect their life course trajectories (Leu et al., 2008).

Another remarkable finding from the sociodemographic stratification is that immigrant men suffer from higher rates of mood disorders when they have low socioeconomic status. Particularly, immigrant men that earn less than $15,000 per year household income or exhibit poor or fair English proficiency are more susceptible to mood disorders than other immigrant men. In line with our findings, a recent study found that at the low end of the socioeconomic spectrum, factors such as perceptions of financial need and limited English proficiency are associated with depression among socially disadvantaged Asian immigrants (John, de Castro, Martin, Duran, & Takeuchi, 2012). However, the relationship of socioeconomic status with health and mental health among Asian immigrants is complex, with other studies demonstrating that this association is not always monotonic (Walton, Takeuchi, Herting, & Alegría, 2009), that higher income and education is not associated with lower risk of major depressive disorder (Gavin et al., 2010), and that traditional measures of socioeconomic status may not adequately capture the ways disadvantage affects well-being among Asian Americans (de Castro, Gee, & Takeuchi, 2010).

The findings from our study should be considered in light of several limitations. While this is the first national study of mental disorders among Asian Americans with relatively large samples of certain Asian ethnic groups (i.e., Chinese, Vietnamese, and Filipino), other Asian

ethnic groups such as Korean, Cambodian, and Indian are included in the “other Asian” category, and therefore conclusions cannot be made about these sub samples of Asian Americans. Second, we focused primarily on mental disorders as defined by the DSM-IV. If immigrant individuals express their problems in ways that are unique to their cultural background (e.g., psychosomatic symptoms) that are not captured by DSM-IV criteria, we may not be accurately assessing prevalence rates of mental disorders. Third, we were unable to address the possibility of cultural stigma associated with mental disorders in reducing the level of reported mental illness among immigrants. Emphases on shame and guilt regarding mental illness in Asian cultures may have lowered self-reporting among immigrants, who are more likely to be influenced by the cultures in their countries of origin compared to individuals born in the United States (Ng, 1997; Zhang, Snowden, & Sue, 1998). Finally, the data used in these analyses come from a cross-sectional survey, and we are unable to determine the causal effects of the immigration process on Asian Americans’ mental health status.

As the proportion of Asian Americans continues to increase through both immigration and growth of the native born population, addressing the unique needs of immigrant men, immigrant women, US-born men, and US-born women is critical. The NLAAS, as the first survey to utilize population-based data to provide lifetime prevalence and sociodemographic correlates of DSM-IV mental disorders among Asian Americans in the U.S., is an ideal data source to reveal prevalence estimates for mental disorders. The current study adds to our knowledge in multiple ways. First, we provide prevalence estimates for detailed subcategories of mental disorders within three large classes, including anxiety, mood and substance disorders. Second, we offer further detail about these prevalence estimates by stratifying by gender and nativity, giving reliable rates for separate categories of US-born, immigrant, male, and female Asian Americans. Finally, we systematically explore sociodemographic correlates of prevalence for the broader classes of mental disorders, providing a firm foundation for future studies to investigate reasons for these differences.

## Acknowledgments

This research is supported by National Institute of Health (NIH) Grants (MH06220, MH62207 and MH62209) funded by the National Institute of Mental Health and Robert Wood Johnson Grant DA18715 with generous support from Office of Behavioral and Social Science Research and the Substance Abuse and Mental Health Services Administration. We would like to thank and acknowledge David Takeuchi for his comments and suggestions on this research and enduring mentorship.

## References

Abe-Kim J, Takeuchi DT, Hong S, Zane N, Sue S, Spencer MS, Alegría M. Use of Mental Health–Related Services Among Immigrant and US-Born Asian Americans: Results From the National Latino and Asian American Study. American Journal of Public Health. 2007; 97(1):91–98. [PubMed: 17138905]

Adler N, Boyce T, Chesney M, Cohen S, Folkman S, Kahn R, Syme S. Socioeconomic status and health. The challenge of the gradient. American Psychologist. 1994; 49(1):15–24. [PubMed: 8122813]

Alegría M, Canino G, Shrout P, Woo M, Duan N, Vila D, Meng X-L. Prevalence of mental illness in immigrant and non-immigrant U. S. Groups. American Journal of Psychiatry. 2008; 165(3):359–369. [PubMed: 18245178]

Alegría M, Mulvaney-Day N, Torres M, Polo A, Cao Z, Canino G. Prevalence of psychiatric disorders across Latino subgroups in the United States. American Journal of Public Health. 2007; 97(1):68–75. [PubMed: 17138910]

Alegría M, Takeuchi D, Canino G, Duan N, Shrout P, Meng X-L, Gong F. Considering context, place and culture: The National Latino and Asian American Study. International Journal of Methods in Psychiatric Research. 2004; 13:208–220. [PubMed: 15719529]

American Psychiatric Association. Diagnostic and statistical manual of mental disorders (4th ed.). 2000 text rev.

Aneshensel CS, Rutter CM, Lachenbruch PA. Social structure, stress, and mental health: Competing conceptual and analytic models. American Sociological Review. 1991; 56(2):166–178.

Andrade L, Caraveo-Anduaga JJ, Berglund P, Bijl RV, De Graaf R, Vollebergh W, Wittchen HU. The epidemiology of major depressive episodes: Results from the International Consortium of Psychiatric Epidemiology (ICPE) Surveys. International Journal of Methods in Psychiatric Research. 2003; 12:3–21. [PubMed: 12830306]

Asnaani A, Richey JA, Dimaite R, Hinton DE, Hofmann SG. A cross-ethnic comparison of lifetime prevalence rates of anxiety disorders. Journal of Nervous and Mental Disease. 2010; 198:551–555. [PubMed: 20699719]

Bates LM, Acevedo-Garcia D, Alegría M, Krieger N. Immigration and generational trends in body mass index and obesity in the United States: Results of the National Latino and Asian American survey, 2002–2003. American Journal of Public Health. 2008; 98(1):70–77. [PubMed: 18048787]

Bauer AM, Chen C-N, Alegría M. English Language Proficiency and Mental Health Service Use Among Latino and Asian Americans With Mental Disorders. Medical Care. 2010; 48(12):1097–1104. [PubMed: 21063226]

Breslau J, Aguilar-Gaxiola S, Kendler KS, Su M, Williams DR, Kessler RC. Specifying race-ethnic differences in risk for psychiatric disorder in a U. S. national sample. Psychological Medicine. 2006; 36(1):57–68. [PubMed: 16202191]

Broman CL, Neighbors HW, Delva J, Torres M, Jackson JS. Prevalence of Substance Use Disorders Among African Americans and Caribbean Blacks in the National Survey of American Life. American Journal of Public Health. 2008; 98(6):1107–1114. [PubMed: 17971551]

Canino G, Vega WA, Sribney WM, Warner LA, Alegría M. Social relationships, social assimilation, and substance-use disorders among adult Latinos in the U.S. Journal of Drug Issues. 2008; 38(1): 69–101. [PubMed: 20011228]

Chae DH, Takeuchi DT, Barbeau EM, Bennett GG, Lindsey J, Stoddard AM, Krieger N. Alcohol disorders among Asian Americans: associations with unfair treatment, racial/ethnic discrimination, and ethnic identification. Journal of Epidemiology & Community Health. 2008; 62:973–979. [PubMed: 18854501]

Cheng AW, Lee CS, Iwamoto DK. Heavy drinking, poor mental health, and substance use among Asian Americans in the NLAAS: A gender-based comparison. Asian American Journal of Psychology. 2012; 3(3):160–167. [PubMed: 25554732]

Chu JP, Sue S. Asian American mental health: What we know and what we don't know. Online readings in psychology and culture, Unit. 2011; 3 Retrieved from http://scholarworks.gvsu.edu/orpc/vol3/iss1/4.

Cotten SR. Marital Status and Mental Health Revisited: Examining the Importance of Risk Factors and Resources. Family Relations. 1999; 48(3):225–233.

de Castro AB, Gee GC, Takeuchi DT. Examining alternative measures of social disadvantage among Asian Americans: The relevance of economic opportunity, subjective social status, and financial strain for health. Journal of Immigrant and Minority Health. 2010; 12(5):659–671. [PubMed: 19434494]

Dion KK, Dion KL. Gender and cultural adaptation in immigrant families. Journal of Social Issues. 2001; 57(3):511–521.

Gater R, Tnasella M, Korten A, Tiemens BG, Mavreas VG, Olatawura MO. Sex differences in the prevalence and detection of depressive and anxiety disorders in general health care settings. Archives of General Psychiatry. 1998; 55:405–413. [PubMed: 9596043]

Gavin AR, Walton E, Chae DH, Alegría M, Jackson JS, Takeuchi D. The Association between Socioeconomic Status and Major Depressive Disorder among Blacks, Latinos, Asians, and Non-Hispanic Whites: Findings from the Collaborative Psychiatric Epidemiology Studies. Psychological Medicine. 2010; 40:51–61. [PubMed: 19460189]

Gove WR, Style CB, Hughes M. The effect of marriage on the well-being of adults: A theoretical analysis. Journal of Family Issues. 1990; 11:4–35.

Grant BF, Stinson FS, Dawson DA, Chou SP, Ruan WJ, Pickering RP. Co-occurrence of 12-month alcohol and drug use disorders and personality disorders in the United States: Results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of General Psychiatry. 2004a; 61:361–368. [PubMed: 15066894]

Grant BF, Stinson FS, Hasin DS, Dawson DA, Chou SP, Anderson K. Immigration and lifetime prevalence of DSM-IV mental disorders among Mexican Americans and non-Hispanic Whites in the United States: Results from the National Epidemiological Survey on Alcohol and Related Conditions. Archives of General Psychiatry. 2004b; 61:1226–1233. [PubMed: 15583114]

Heeringa SG, Wagner J, Torres M, Duan N, Adams T, Berglund P. Sample designs and sampling methods for the Collaborative Psychiatric Epidemiology Studies (CPES). International Journal of Methods in Mental Research. 2004; 13:221–240.

Jackson, JS.; Abelson, JM.; Berglund, PA.; Mezuk, B.; Torres, M.; Zhang, R. The intersection of race, ethnicity, immigration, and cultural influences on the nature and distribution of mental disorders: An examination of major depression. In: Regier, DA.; Narrow, WE.; Kuhl, EA.; Kupfer, DJ., editors. The Conceptual Evolution of DSM-5. Washington, D.C: American Psychiatric Publishing, Inc.; 2010. p. 303-326.

John DA, de Castro AB, Martin DP, Duran B, Takeuchi DT. Does an immigrant health paradox exist among Asian Americans? Associations of nativity and occupational class with self-rated health and mental disorders. Social Science & Medicine. 2012; 75:2085–2098. [PubMed: 22503561]

Kalibatseva Z, Leong FTL. Depression among Asian Americans: Review and recommendations. Depression, Research and Treatment. 2011

Kessler RC. Epidemiology of women and depression. Journal of Affective Disorders. 2003; 74(1):5–13. [PubMed: 12646294]

Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distribution of DSM-IV disorders in the National Comorbidity Survey Replication. Archives of General Psychiatry. 2005; 62(6):593–602. [PubMed: 15939837]

Kessler RC, McGonagle KA, Zhao S, Nelson CB, Hughes M, Eshleman S, Kendler KS. Lifetime and 12-month prevalence of DSM-III-R psychiatric disorders in the United States: Results from the National Comorbidity Survey. Archives of General Psychiatry. 1994; 51(1):8–19. [PubMed: 8279933]

Kessler RC, Üstün B. The World Mental Health (WMH) Survey Initiative Version of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI). International Journal of Methods in Psychiatric Research. 2004; 13(2):93–121. [PubMed: 15297906]

Kim J, Choi NG. Twelve-month prevalence of DSM-IV mental disorders among older Asian Americans: Comparison with younger groups. Aging & Mental Health. 2010; 14(1):90–99. [PubMed: 20155525]

Lam J, Yip T, Gee G. The physical and mental health effects of age of immigration, age, perceived difference in social status among first generation Asian Americans. Asian American Journal of Psychology. 2012; 3(1):29–43.

Leu J, Yen IH, Gansky SA, Walton E, Adler N, Takeuchi DT. The association between subjective social status and mental health among Asian immigrants: Investigating the influence of age at immigration. Social Science & Medicine. 2008; 66:1152–1164. [PubMed: 18191317]

Lopez-Gonzalez L, Aravena VC, Hummer RA. Immigrant acculturation, gender and health behavior: A research note. Social Forces. 2005; 84:581–593.

Lui PP, Rollock D. Acculturation and psychosocial adjustment among Southeast Asian and Chinese immigrants: The effects of domain-specific goals. Asian American Journal of Psychology. 2012; 3(2):79–90.

Masood N, Okazaki S, Takeuchi DT. Gender, family, and community correlates of mental health in South Asian Americans. Cultural Diversity and Ethnic Minority Psychology. 2009; 15(3):265–274. [PubMed: 19594255]

Ng CH. The stigma of mental illness in Asian cultures. Australian and New Zealand Journal of Psychiatry. 1997; 31:382–390. [PubMed: 9226084]

Nicholson BL. The influence of pre-immigration and post migration stressors on mental health: A study of Southeast Asian refugees. Social Work Research. 1997; 21(1):19–33.

O'Hare T. Mental health problems and alcohol abuse: Co-ocurrence and gender differences. Health & Social Work. 1995; 20:207–214. [PubMed: 7557725]

Okazaki S, Kassem AM, Tan JY. Annual review of Asian American psychology: 2010. Asian American Journal of Psychology. 2011; 2:225–290.

Ornelas IJ, Hong S. Gender differences in the relationship between discrimination and substance use disorder among Latinos. Substance Use & Misuse. 2012; 47(12):1349–1358. [PubMed: 22950437]

Perry MJ. The relationship between social class and mental disorders. Journal of Primary Prevention. 1996; 17:17–30. [PubMed: 24254919]

Piccinelli, M.; Homen, FG. Gender differences in the epidemiology of affective disorders and schizophrenia. Geneva: Word Health Organization; 1997.

Rubalcava LN, Teruel GM, Thomas D, Goldman N. The healthy migrant effect: New findings from the Mexican Family Life Survey. American Journal of Public Health. 2008; 98(1):84–78.

Slopen N, Williams DR, Fitzmaurice GM, Gilman SE. Sex, stressful life events, and adult onset depression and alcohol dependence: Are men and women equally vulnerable? Social Science & Medicine. 2011; 73(4):615–622. [PubMed: 21782304]

Sue, S. Mental health. In: Zane, N.; Takeuchi, DT.; Young, K., editors. Confronting critical health issues of Asian and Pacific Islander Americans. Newbury Park, CA: Sage; 1994. p. 266-288.

Sue S, Sue DW, Sue L, Takeuchi DT. Psychopathology among Asian Americans: A model minority? Cultural Diversity and Mental Health. 1995; 1(1):39–51. [PubMed: 9225547]

Takeuchi DT, Chung RCY, Lin KM, Shen H, Kurasaki K, Chun C-A, Sue S. Lifetime and twelve-month prevalence rates of major depressive episodes and dysthymia among Chinese Americans in Los Angeles. American Journal of Psychiatry. 1998; 155:1407–1414. [PubMed: 9766773]

Takeuchi D, Hong S, Gile K, Alegría M. Developmental contexts and mental disorders among Asian Americans. Research in Human Development. 2007a; 1(1–2):46–69.

Takeuchi D, Zane N, Hong S, Chae DH, Gong F, Gee GC, Alegría M. Immigration-related factors and mental disorders among Asian Americans. American Journal of Public Health. 2007b; 97:84–90. [PubMed: 17138908]

Thoits P. Stress and health: major findings and policy implications. Journal of Health and Social Behavior. 2010; 51(Suppl):S41–S53. [PubMed: 20943582]

Umberson D, Chen MD, House JS, Hopkins K, Slaten E. The effect of social relationships on psychological well-being: Are men and women really so different? American Sociological Review. 1996; 61(5):837–857.

Uba, L. Asian Americans: Personality patterns, identity, and mental health. New York, NY: Guilford Press; 1994.

Umberson D. Family status and health behaviors: Social control as a dimension of social integration. Journal of Health and Social Behavior. 1987; 28:306–319. [PubMed: 3680922]

U. S. Census Bureau. The Asian Population: 2010. 2012. Retried from http://www.census.gov/prod/cen2010/briefs/c2010br-11.pdf

U. S. Census Bureau. Facts for features: Asian/Pacific American heritage month: May 2011. 2011. Retrieved from https://www.census.gov/newsroom/releases/archives/facts_for_features_special_editions/cb11-ff06.html

U. S. Department of Health and Human Services. DHHS. Mental health: Culture, race, and ethnicity—A supplement to mental health: A Report of the Surgeon General. Rockville, MD: U. S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration, Center for Mental Health Services; 2001. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK44243/pdf/TOC.pdf

Vega WA, Alderete E, Kolody B, Aguilar-Gaxiola S. Illicit drug use among Mexicans and Mexican Americans in California: The effects of gender and acculturation. Addiction. 1998; 93:1839–1850. [PubMed: 9926572]

Walton E, Takeuchi DT, Herting JR, Alegría M. Does place of education matter? Contextualizing the education and health status association: Evidence from a National Study of Asian Americans. Biodemography and Social Biology. 2009; 55:30–51. [PubMed: 19835099]

Williams DR, Gonzalez HM, Neighbors H, Nesse R, Abelson JM, Sweetman J, Jackson JS. Prevalence and distribution of major depressive disorder in African Americans, Caribbean Blacks, and Non-Hispanic Whites. Archives of General Psychiatry. 2007; 64:305–315. [PubMed: 17339519]

Xu Y, Okuda M, Hser YI, Hasin D, Liu SM, Grant BF, Blanco C. Twelve-month prevalence of psychiatric disorders and treatment-seeking among Asian Americans/Pacific Islanders in the United States: Results from the National Epidemiological Survey on Alcohol and Related Conditions. Journal of Psychiatric Research. 2011; 45(7):910–918. [PubMed: 21238989]

Zane, NW.; Kim, JH. Substance use and abuse. In: Zane, NW.; Takeuchi, DT.; Yank, KN., editors. Confronting critical health issues of Asian and Pacific Islander Americans. Thousand Oaks, California: Sage; 1994. p. 316-345.

Zhang AY, Snowden LR, Sue S. Differences between Asian- and White-Americans' help-seeking and utilization patterns in the Los Angeles area. Journal of Community Psychology. 1998; 26:317–326.

**Table 1**

Sociodemographic characteristics among Asian Americans in the NLAAS (N=2095)

| | Total sample | | | Foreign-born | | | | | | US-born | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men (n=772) | | | Women (n=869) | | | Men (n=226) | | | Women (n=228) | | |
| **Characteristics** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** |
| **Age** | | | | | | | | | | | | | | | |
| 18–29 | 517 | 26.5 | (1.69) | 156 | 23.3 | (2.23) | 170 | 20.5 | (2.51) | 93 | 40.6 | (4.65) | 98 | 43.6 | (5.15) |
| 30–44 | 770 | 35.6 | (1.68) | 292 | 37.9 | (2.21) | 341 | 37.1 | (2.52) | 68 | 31.3 | (4.12) | 69 | 26.9 | (2.84) |
| 45–59 | 552 | 23.9 | (0.94) | 217 | 25.1 | (1.53) | 254 | 27.3 | (1.89) | 43 | 16.1 | (3.18) | 38 | 16.0 | (2.89) |
| ≥ 60 | 256 | 14.1 | (1.94) | 107 | 13.7 | (2.10) | 104 | 15.1 | (1.92) | 22 | 12.1 | (3.56) | 23 | 13.6 | (3.97) |
| **Marital status** | | | | | | | | | | | | | | | |
| Married | 1376 | 65.4 | (2.05) | 571 | 71.8 | (2.69) | 626 | 73.2 | (1.88) | 97 | 44.9 | (6.01) | 82 | 37.9 | (9.15) |
| Never Married | 512 | 25.1 | (1.56) | 161 | 23.1 | (2.00) | 138 | 15.3 | (1.37) | 106 | 43.3 | (4.79) | 107 | 47.7 | (7.31) |
| Widw/Sep/Div | 205 | 9.6 | (1.02) | 40 | 5.0 | (1.36) | 103 | 11.5 | (1.22) | 23 | 11.9 | (2.63) | 39 | 14.4 | (3.05) |
| **Education** | | | | | | | | | | | | | | | |
| 0–11 | 316 | 15.2 | (1.37) | 116 | 16.1 | (2.04) | 187 | 20.9 | (1.78) | 8 | 2.7 | (0.80) | 8 | 4.1 | (2.05) |
| 12 | 371 | 17.6 | (1.25) | 128 | 15.7 | (1.78) | 146 | 16.5 | (1.69) | 55 | 26.3 | (4.62) | 42 | 19.3 | (3.57) |
| 13–15 | 529 | 25.3 | (1.42) | 159 | 19.6 | (1.84) | 211 | 24.5 | (1.82) | 70 | 29.1 | (3.13) | 89 | 41.9 | (3.16) |
| ≥ 16 | 878 | 42.0 | (1.77) | 368 | 48.6 | (2.37) | 328 | 38.2 | (2.44) | 93 | 41.9 | (2.86) | 89 | 34.8 | (3.41) |
| **Ethnicity** | | | | | | | | | | | | | | | |
| Vietnamese | 520 | 12.9 | (2.09) | 236 | 16.0 | (2.46) | 266 | 16.6 | (2.62) | 7 | 1.2 | (0.46) | 11 | 2.2 | (0.80) |
| Filipino | 508 | 21.6 | (2.32) | 154 | 18.2 | (2.49) | 195 | 21.0 | (2.59) | 81 | 26.7 | (3.32) | 78 | 29.3 | (4.29) |
| Chinese | 600 | 28.7 | (2.66) | 222 | 30.1 | (3.73) | 253 | 31.0 | (3.17) | 62 | 21.9 | (3.42) | 63 | 22.9 | (2.40) |
| Other Asian | 467 | 36.8 | (2.34) | 160 | 35.7 | (3.58) | 155 | 31.4 | (2.52) | 76 | 50.3 | (3.69) | 76 | 45.7 | (3.79) |
| **Household Income** | | | | | | | | | | | | | | | |
| $ 0–14,999 | 297 | 14.3 | (1.15) | 101 | 13.5 | (1.49) | 147 | 16.7 | (1.76) | 22 | 9.1 | (2.31) | 27 | 14.0 | (3.44) |
| $ 15,000–34,999 | 297 | 12.0 | (0.71) | 102 | 10.8 | (1.01) | 137 | 13.7 | (1.60) | 22 | 7.2 | (1.90) | 36 | 14.2 | (2.15) |
| $ 35,000–74,999 | 583 | 28.5 | (1.82) | 211 | 27.4 | (2.72) | 246 | 29.2 | (2.12) | 67 | 34.3 | (3.37) | 59 | 23.6 | (2.97) |

| | Total sample | | | Foreign-born | | | | | | US-born | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men (n=772) | | | Women (n=869) | | | Men (n=226) | | | Women (n=228) | | |
| **Characteristics** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** | **N** | **%** | **SE** |
| ≥ $ 75,000 | 918 | 45.2 | (1.88) | 358 | 48.3 | (2.62) | 339 | 40.4 | (2.07) | 115 | 49.5 | (4.99) | 106 | 48.3 | (4.93) |
| **English proficiency** | | | | | | | | | | | | | | | |
| Poor/Fair | 797 | 33.8 | (2.33) | 328 | 36.7 | (3.18) | 437 | 46.3 | (2.13) | 18 | 6.2 | (2.05) | 14 | 7.9 | (2.06) |
| Excellent/Good | 1292 | 66.2 | (2.33) | 442 | 63.3 | (3.18) | 430 | 53.7 | (2.13) | 207 | 93.8 | (2.05) | 213 | 92.1 | (2.06) |

**Table 2**

Lifetime prevalence of DSM-IV/WMH-CIDI disorders by gender and nativity (n=2095)

| | Total | Immigrant (n=1641) | US-born (n=454) | Men Men (n=998) | Women (n=1097) | Immigrant | | US-born | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) |
| | % 95% CI | % 95% CI | % 95% CI | % 95% CI | % 95% CI | % 95% CI | % 95% CI | % 95% CI | % 95% CI |
| **I. Anxiety Disorders** | | | | | | | | | |
| Panic disorder | 2.1 (1.2–3.8) | 1.6 (0.6–4.0) | 4.0 (2.4–6.6) | 2.2 (0.8–6.4) | 2.1 (1.3–3.4) | 2.1 (0.5–8.7) | 1.1 (0.5–2.7) *d* | 2.5 (1.0–5.9) | 5.5 (3.0–9.7) *b* |
| Agoraphobia without panic | 0.4 (0.2–0.8) | 0.4 (0.2–0.9) | 0.4 (0.1–1.3) | 0.2 (0.1–0.6) | 0.6 (0.3–1.2) | 0.3 (0.1–0.8) | 0.6 (0.3–1.3) | Dropped | 0.8 (0.2–2.6) |
| Social phobia | 5.3 (4.2–6.8) | 4.5 (3.5–5.9) | 8.1 (4.6–14.0) | 5.7 (4.2–7.6) | 5.1 (3.5–7.3) | 4.8 (3.4–6.7) | 4.3 (2.7–6.6) *d* | 8.2 (3.3–18.9) | 8.0 (4.9–12.7) *b* |
| Generalized anxiety disorder | 2.5 (2.0–3.2) | 2.5 (1.8–3.5) | 2.6 (1.4–4.8) | 1.4 (0.8–2.6) | 3.5 (2.4–5.3) | 1.6 (0.8–3.3) | 3.3 (1.9–5.7) *c* | 0.8 (0.3–1.8) *e* | 4.5 (2.2–9.2) *c* |
| Post-traumatic stress disorder | 2.0 (1.2–3.3) | 1.7 (0.9–3.2) | 3.1 (1.4–6.5) | 1.4 (0.8–2.6) | 2.5 (1.4–4.5) | 1.7 (0.9–3.3) *d* | 1.7 (0.7–4.2) | 0.5 (0.1–2.9) *d* | 5.7 (2.3–13.7) *€* |
| Any anxiety disorder | 10.2 (8.0–13.1) | 9.3 (7.3–11.8) | 13.3 (8.4–20.5) | 9.3 (5.9–14.5) | 11.1 (8.8–13.9) | 9.2 (6.0–13.8) *d* | 9.5 (7.4–12.1) *d* | 9.8 (4.5–20.1) | 16.9 (10.9–25.2) *€* |
| **II. Mood Disorders** | | | | | | | | | |
| Major depressive disorder | 9.1 (7.5–11.1) | 8.0 (6.5–9.7) | 13.0 (9.5–17.6)** | 8.2 (6.0–11.0) | 10.0 (7.6–13.1) | 8.0 (5.5–11.3) *d* | 8.0 (6.0–10.6) *d* | 8.8 (5.1–14.7) *d* | 17.3 (11.5–25.2) *§* |
| Dysthymia | 2.2 (1.4–3.4) | 2.0 (1.2–3.6) | 2.7 (1.4–5.1) | 2.0 (1.0–4.0) | 2.4 (1.4–4.2) | 2.3 (1.0–5.0) | 1.8 (0.9–3.8) | 1.1 (0.6–2.0) *d* | 4.4 (2.0–9.8) *c* |
| Any mood disorder | 9.5 (7.8–11.4) | 8.3 (6.8–10.1) | 13.4 (9.8–17.9)** | 8.3 (6.1–11.1) | 10.6 (8.3–13.4) | 8.0 (5.6–11.4) *d* | 8.6 (6.8–10.8) *d* | 9.0 (5.6–14.3) *d* | 17.8 (11.8–25.8) *§* |
| **VI. Substance Disorders** | | | | | | | | | |
| Alcohol abuse or dependence | 3.4 (2.3–5.2) | 2.0 (0.9–4.2) | 8.3 (5.6–12.0)** | 6.0 (3.6–9.8) | 1.1 (0.5–2.6)** | 3.8 (1.6–8.7) *†* | 0.4 (0.1–0.9) *§* | 12.6 (8.0–19.3) *§* | 3.9 (1.7–8.8) *†* |
| Drug abuse or dependence | 2.1 (1.4–3.0) | 1.0 (0.5–2.0) | 5.5 (3.7–8.2)*** | 3.1 (1.9–5.0) | 1.2 (0.7–2.0)* | 1.8 (0.8–3.8) *†* | 0.4 (0.1–1.2) *§* | 7.1 (4.2–11.8)*€* | 3.9 (1.9–7.7) *b* |
| Any substance disorder | 4.0 (2.8–5.6) | 2.2 (1.1–4.4) | 9.7 (7.1–13.1)*** | 6.5 (4.1–10.1) | 1.7 (1.0–2.9)** | 4.1 (1.9–8.8) *†* | 0.6 (0.4–1.0) *§* | 13.8 (9.5–19.4) *§* | 5.6 (2.9–10.4) *†* |
| **V. Any Mental Disorder** | | | | | | | | | |
| Any disorder | 18.1 (15.3–21.4) | 15.9 (13.1–19.1) | 25.7 (19.7–32.7)** | 17.7 (13.3–23.2) | 18.5 (15.4–22.1) | 15.9 (11.5–21.5) *d* | 15.9 (13.3–18.9) *d* | 23.5 (15.9–33.1) | 27.9 (20.1–37.3) *€* |

*Significant gender/nativity difference (p<.05)

**Significant gender/nativity difference (p<.01)

***Significant gender/nativity difference (p<.001)

[a] Significantly different from immigrant men (p<.05)

[b] Significantly different from immigrant women (p<.05)

[c] Significantly different from US-born men (p<.05)

[d] Significantly different from US-born women (p<.05)

[§] Significantly different from all other gender and nativity categories (p<.05)

[†] Significantly different from immigrant women and US-born men (p<.05)

[‡] Significantly different from US-born men and US-born women (p<.05)

[e] Significantly different from immigrant women men and US-born women (p<.05)

[€] Significantly different from immigrant men and immigrant women (p<.05)

[€'] Significantly different from immigrant men and us-born men (p<.05)

**Table 3**

Lifetime prevalence of DSM-IV/WMH-CIDI anxiety and mood disorders by nativity, gender, and sociodemographic characteristics (n=2095)

| | Any Anxiety Disorder | | | | | Any Mood Disorder | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Immigrant | | US-born | | Total | Immigrant | | US-born | |
| | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) |
| **Age** | | | | | | | | | | |
| 18–29 (ref) | 10.6 (7.1–15.6) | 5.7 (2.5–12.3) | 11.4 (6.0–20.6) | 11.6 (5.5–22.5) | 16.6 (8.9–29.0) | 13.1 (9.8–17.4) | 11.0 (6.4–18.1) | 16.3 (10.6–24.1) | 6.9 (2.9–15.3) | 17.4 (9.1–30.8) |
| 30–44 | 9.9 (6.4–15.2) | 9.5 (3.8–22.0) | 8.5 (5.3–13.2) | 10.7 (3.5–28.0) | 18.2 (10.9–28.8) | 9.3 (6.4–13.3) | 6.8 (3.2–13.8) | 7.8 (4.7–12.8)* | 16.5 (8.4–29.6) | 19.2 (10.5–34.2) |
| 45–59 | 9.9 (6.9–13.9) | 9.9 (5.0–18.8) | 7.2 (3.9–12.8) | 11.4 (3.9–28.6) | 24.7 (10.2–48.7) | 7.0 (4.9–9.9)* | 7.0 (3.9–12.0) | 5.1 (3.0–8.4)** | 6.9 (2.5–17.7) | 19.8 (10.5–34.2) |
| ≥ 60 | 11.0 (6.5–17.8) | 12.7 (6.3–23.8)* | 13.3 (5.8–27.7) | Dropped | 6.0 (2.2–15.4) | 7.3 (3.9–13.3)* | 8.6 (3.1–21.4) | 6.3 (2.0–17.8) | Dropped | 13.6 (6.4–26.8) |
| **Marital status** | | | | | | | | | | |
| Married (ref) | 8.5 (6.9–10.5) | 8.2 (5.3–12.5) | 8.0 (5.8–11.0) | 9.5 (3.5–23.2) | 12.8 (7.0–22.3) | 6.1 (5.0–7.5) | 6.0 (4.0–8.8) | 6.2 (4.0–9.6) | 3.7 (2.1–6.7) | 8.7 (3.5–20.0) |
| Never Married | 13.4 (8.0–21.7)* | 11.7 (5.9–21.8) | 13.6 (8.6–20.8) | 12.3 (5.1–26.6) | 16.9 (9.4–28.7) | 15.8 (11.7–20.9)*** | 13.4 (7.2–23.5)* | 19.9 (13.2–29.0)** | 10.5 (4.6–22.1)* | 19.6 (11.0–32.3) |
| Widw/Sep/Div | 13.7 (8.4–21.5) | 10.7 (3.5–28.2) | 13.3 (6.5–25.5) | 2.4 (0.3–15.7) | 27.5 (13.1–49.0) | 16.2 (10.8–23.6)*** | 13.1 (3.6–37.9) | 8.5 (4.6–15.1) | 23.7 (9.0–49.4)** | 35.6 (20.9–53.6)* |
| **Education** | | | | | | | | | | |
| 0–11 | 8.6 (4.9–14.6) | 9.8 (3.7–23.4) | 8.6 (4.2–16.7) | Dropped | Dropped | 6.2 (3.5–10.6) | 2.2 (0.8–5.9)*** | 8.5 (4.3–16.2) | 7.6 (0.9–42.3) | 10.9 (4.7–23.3) |
| 12 (ref) | 8.7 (5.4–13.7) | 8.4 (3.6–18.4) | 7.6 (3.6–15.6) | 7.0 (3.9–12.2) | 15.3 (7.1–29.9) | 8.9 (5.6–14.0) | 12.1 (6.7–20.9) | 4.9 (1.5–14.8) | 9.5 (4.1–20.9) | 12.7 (5.0–28.6) |
| 13–15 | 10.8 (7.5–15.4) | 6.7 (3.5–12.4) | 9.5 (6.2–14.2) | 8.6 (3.3–20.7) | 21.2 (10.8–37.6) | 10.8 (8.4–13.8) | 6.5 (2.9–14.1) | 11.4 (7.7–16.6) | 10.4 (3.8–25.4) | 15.9 (8.5–27.7) |
| ≥ 16 | 11.1 (8.6–14.2) | 10.2 (6.7–15.1) | 10.7 (7.4–15.2) | 13.2 (5.1–30.0) | 14.5 (8.2–24.4) | 10.1 (8.0–12.8) | 9.3 (5.8–14.4) | 8.3 (6.2–11.0) | 7.8 (3.8–15.3) | 23.7 (14.1–36.9) |
| **Ethnicity** | | | | | | | | | | |
| Vietnamese | 8.1 (5.6–11.5) | 8.1 (5.0–13.0) | 7.8 (4.3–13.8) | Dropped | 17.7 (4.3–50.8) | 8.7 (5.0–14.6) | 11.8 (5.4–23.8) | 5.8 (3.0–10.9) | Dropped | 21.8 (3.4–68.7) |
| Filipino | 10.3 (8.4–12.7) | 9.9 (6.1–15.5) | 6.8 (4.1–11.0) | 11.0 (5.1–22.1) | 19.8 (11.3–32.3) | 7.2 (4.9–10.5) | 4.0 (1.9–8.0) | 6.1 (3.5–10.4) | 9.9 (3.6–24.5) | 13.9 (6.8–26.2)* |
| Chinese (ref) | 11.5 (8.0–16.3) | 7.9 (4.1–14.7) | 11.4 (7.2–17.7) | 18.6 (6.4–43.3) | 20.1 (10.6–34.8) | 10.2 (7.1–14.4) | 6.7 (3.9–11.5) | 8.5 (5.1–13.8) | 8.8 (4.9–15.3) | 34.1 (23.4–46.7) |
| Other Asian | 10.0 (6.5–15.0) | 10.3 (4.2–23.0) | 10.2 (6.5–15.6) | 5.6 (2.0–15.2)* | 13.4 (6.6–25.3) | 10.5 (7.6–14.4) | 9.5 (4.6–18.8) | 11.7 (7.7–17.6) | 8.9 (4.2–18.0) | 11.9 (5.7–23.0)** |
| **Household Income** | | | | | | | | | | |
| $ 0–14,999 | 11.7 (7.4–17.9) | 15.4 (6.9–30.9) | 8.3 (3.9–16.8) | 13.6 (4.0–37.5) | 12.7 (6.2–24.4) | 15.6 (10.9–21.8)*** | 16.2 (7.4–31.9)* | 13.2 (7.3–22.8) | 15.0 (4.9–37.9) | 22.9 (11.0–41.7) |

| | Any Anxiety Disorder | | | | | Any Mood Disorder | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Immigrant | | US-born | | Total | Immigrant | | US-born | |
| | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) |
| $ 15,000–34,999 | 9.4 (4.8–17.5) | 4.6 (1.6–12.1) | 8.0 (3.4–17.7) | 18.0 (6.7–40.0) | 22.7 (8.5–48.3) | 9.9 (5.5–17.3) | 6.3 (3.2–11.9) | 9.1 (3.7–20.9) | Dropped | 27.9 (12.5–51.3) |
| $ 35,000–74,999 | 10.5 (8.1–13.5) | 7.2 (4.6–11.1) | 11.0 (7.1–16.7) | 11.7 (3.1–35.2) | 21.0 (12.4–33.4) | 8.2 (6.4–10.5) | 8.3 (4.2–15.7) | 7.4 (3.8–14.0) | 5.9 (2.2–15.0) | 15.8 (6.8–32.3) |
| ≥ $ 75,000 (ref) | 9.7 (7.3–12.7) | 9.4 (5.5–15.7) | 9.5 (6.9–12.8) | 5.8 (2.1–14.8) | 15.0 (8.1–26.2) | 7.4 (5.6–9.7) | 5.2 (3.7–7.4) | 6.5 (4.3–9.7) | 10.9 (5.4–21.0) | 13.0 (7.6–21.4) |
| **English proficiency** | | | | | | | | | | |
| Poor/Fair | 10.7 (7.3–15.6) | 13.8 (7.4–24.4)* | 8.9 (5.9–13.2) | 11.5 (3.8–30.2) | 5.1 (0.6–31.3) | 10.6 (8.2–13.5) | 12.6 (7.8–19.6)* | 8.8 (5.4–14.0) | 20.6 (8.4–42.2) | 10.6 (2.8–32.7) |
| Excellent/Good (ref) | 10.0 (7.9–12.4) | 6.5 (4.7–9.0) | 10.0 (7.3–13.6) | 9.5 (4.2–20.2) | 17.6 (11.4–26.3) | 8.9 (7.1–11.1) | 5.5 (3.0–9.7) | 8.4 (6.0–11.7) | 8.1 (5.1–12.7) | 18.1 (11.7–27.0) |

*Significantly different from reference group (*p<.05, **p<.01, ***p<.001)

Note: In instances of zero positive cases, the category was “Dropped” from the analysis.

**Table 4**

Lifetime prevalence of DSM-IV/WMH-CIDI substance and any disorders by nativity, gender, and sociodemographic characteristics (n=2095)

| | Any Substance Disorder | | | | | Any Disorder | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Immigrant | | US-born | | Total | Immigrant | | US-born | |
| | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) |
| **Age** | | | | | | | | | | |
| 18–29 (ref) | 7.5 (4.4–12.2) | 8.8 (2.6–25.5) | 1.7 (0.6–4.6) | 18.0 (9.6–31.1) | 5.1 (2.0–12.2) | 18.6 (10.5–30.9) | 17.5 (9.4–30.2) | 26.6 (17.1–39.0) | 26.4 (17.6–37.6) | 27.9 (15.6–44.9) |
| 30–44 | 3.3 (2.1–5.2)* | 2.4 (1.2–4.4) | 0.6 (0.1–3.4) | 12.1 (8.2–17.6) | 10.3 (4.4–22.3) | 14.4 (7.5–25.9)** | 14.0 (7.1–25.6) | 12.7 (9.2–17.1)* | 28.6 (17.3–43.5) | 29.1 (21.2–38.5) |
| 45–59 | 2.7 (1.5–4.8)** | 3.1 (1.3–7.5) | 0.2 (0.0–1.2)* | 16.7 (7.9–31.8) | 2.3 (0.3–16.9) | 16.6 (11.1–24.0)* | 15.1 (9.7–22.7) | 12.1 (7.8–18.2)* | 23.5 (11.1–43.2) | 32.9 (16.7–54.7) |
| ≥ 60 | 1.2 (0.2–6.0)** | 2.8 (0.4–18.0)* | Dropped | Dropped | 1.7 (0.4–6.6) | 13.9 (7.3–24.9)** | 14.7 (7.9–25.6) | 16.3 (8.0–30.4) | Dropped | 19.6 (11.5–31.6) |
| **Marital status** | | | | | | | | | | |
| Married (ref) | 1.9 (1.1–3.2) | 2.6 (1.4–4.7) | 0.1 (0.0–0.5) | 7.2 (3.1–15.8) | 3.4 (1.2–9.4) | 13.4 (11.4–15.6) | 13.3 (9.6–17.8) | 12.3 (9.7–15.6) | 15.0 (7.0–29.2) | 18.5 (11.4–28.7) |
| Never Married | 9.8 (6.8–13.8)*** | 8.8 (2.8–24.9)* | 3.0 (2.0–4.4)*** | 22.5 (13.5–35.1)* | 7.2 (2.8–17.2) | 27.9 (21.6–35.2)*** | 22.2 (12.1–37.1) | 32.3 (23.6–42.4)*** | 31.0 (20.8–43.4)* | 28.6 (16.7–44.4) |
| Widw/Sep/Div | 3.1 (1.3–7.0) | 4.0 (0.9–16.2) | 0.7 (0.1–5.1) | 6.7 (1.6–24.2) | 5.7 (1.9–16.2) | 25.6 (18.6–34.1) *** | 22.5 (10.2–42.7) | 17.4 (9.7–29.1) | 28.0 (11.7–53.3) | 50.7 (33.2–68.0)** |
| **Education** | | | | | | | | | | |
| 0–11 | 1.8 (0.8–3.9)* | 2.7 (0.9–7.7) | Dropped | 24.3 (5.2–65.4) | 8.1 (0.7–52.2) | 15.1 (10.5–21.4) | 13.6 (6.4–26.4) | 15.7 (9.3–25.1) | 24.3 (5.2–65.4) | 19.0 (8.1–38.5) |
| 12 (ref) | 5.8 (3.4–9.8) | 6.4 (2.2–17.7) | 0.3 (0.0–1.8) | 16.8 (9.9–27.1) | 6.1 (2.6–13.7) | 17.1 (11.8–24.2) | 20.8 (11.2–35.5) | 10.2 (5.5–18.2) | 18.4 (10.9–29.3) | 7.3 (14.0–46.4) |
| 13–15 | 4.6 (2.8–7.6) | 6.2 (2.6–14.4) | 0.9 (0.2–3.5) | 12.7 (5.3–27.4) | 4.4 (1.9–9.5) | 20.4 (15.2–26.9) | 13.8 (8.2–22.3) | 19.8 (13.9–27.6) | 23.9 (12.2–41.5) | 28.6 (15.1–47.5) |
| ≥ 16 | 3.6 (2.3–5.4) | 3.0 (1.1–7.5)* | 1.0 (0.3–3.3) | 11.9 (4.9–26.0) | 6.5 (2.2–17.5) | 18.3 (15.3–21.8) | 15.8 (11.8–21.0) | 16.0 (11.4–21.9) | 26.2 (15.1–41.5) | 28.4 (19.4–39.7) |
| **Ethnicity** | | | | | | | | | | |
| Vietnamese | 1.6 (0.9–3.1) | 2.1 (1.0–4.6) | 0.7 (0.2–2.3) | 8.8 (0.9–51.1) | 10.7 (1.5–49.6) | 14.5 (9.8–20.8) | 16.9 (9.4–28.6) | 12.0 (7.0–19.8) | 8.8 (0.9–51.1) | 28.8 (5.9–72.2) |
| Filipino | 5.1 (3.4–7.6) | 5.5 (2.6–11.4) | 1.1 (0.3–4.0) | 14.5 (9.1–22.5) | 6.2 (2.2–15.8) | 17.6 (14.9–20.6) | 15.9 (11.8–21.2) | 13.7 (9.2–19.8) | 21.6 (12.7–34.2) | 27.3 (17.9–39.3)* |
| Chinese (ref) | 2.7 (1.4–5.0) | 1.3 (0.4–4.4) | Dropped | 13.9 (7.0–25.6) | 10.2 (4.6–21.1) | 19.1 (14.9–24.0) | 13.4 (8.5–20.5) | 16.8 (13.3–25.3) | 27.9 (14.4–47.1) | 44.9 (31.4–59.2) |
| Other Asian | 5.1 (2.6–9.7) | 6.6 (1.7–22.6) | 0.9 (0.2–4.2) | 13.4 (7.4–23.0) | 2.7 (1.0–7.1) *** | 19.0 (13.9–25.5) | 17.4 (8.6–32.3) | 18.6 (13.3–25.3) | 22.8 (12.7–37.7) | 19.8 (11.1–32.7)** |
| **Household Income** | | | | | | | | | | |
| $ 0–14,999 | 4.5 (2.4–8.3) | 7.6 (2.5–20.9) | 0.2 (0.0–1.9) | 14.2 (8.5–22.8) | 4.8 (1.1–18.4) | 21.5 (16.3–27.8) | 21.5 (11.1–37.5) | 20.6 (12.4–32.2) | 17.3 (8.5–32.1) | 28.2 (15.7–45.4) |

| | Any Substance Disorder | | | | | Any Disorder | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total | Immigrant | | US-born | | Total | Immigrant | | US-born | |
| | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) | | Men (n=772) | Women (n=869) | Men (n=226) | Women (n=228) |
| $ 15,000–34,999 | 3.3 (1.7–6.1) | 2.4 (0.8–7.0) | 0.2 (0.0–1.7) | 14.4 (7.0–27.4) | 11.2 (3.2–32.9) | 17.7 (12.2–25.0) | 13.1 (7.1–23.0) | 14.8 (8.2–25.3) | 23.1 (12.1–39.6) | 37.6 (19.8–59.6) |
| $ 35,000–74,999 | 3.6 (2.0–6.5) | 3.8 (1.2–11.0) | 0.5 (0.1–2.1) | 11.9 (5.5–23.9) | 5.1 (1.3–18.2) | 18.0 (14.2–22.4) | 14.6 (9.2–22.5) | 15.7 (11.6–21.0) | 24.0 (11.7–42.8) | 33.8 (22.2–47.7) |
| ≥ $ 75,000 (ref) | 4.2 (2.7–6.4) | 3.5 (1.9–6.4) | 1.2 (0.7–1.8) | 14.9 (8.6–24.5) | 4.3 (1.5–12.0) | 16.9 (13.6–20.8) | 15.3 (10.8–21.3) | 13.8 (10.3–18.3) | 25.2 (16.4–36.6) | 21.9 (13.6–33.3) |
| **English proficiency** | | | | | | | | | | |
| Poor/Fair | 1.9 (0.9–3.7)** | 3.8 (1.6–8.9) | Dropped | 17.5 (11.0–26.8) | Dropped | 18.0 (14.1–22.7) | 23.4 (15.2–34.3)** | 14.2 (10.0–19.7) | 29.9 (15.6–49.6) | 10.6 (2.8–32.7) |
| Excellent/Good (ref) | 5.0 (3.5–7.1) | 4.3 (1.6–10.7) | 1.2 (0.8–1.8) | 13.5 (9.1–19.7) | 5.8 (3.0–11.0) | 18.2 (15.2–21.7) | 11.6 (8.2–16.1) | 17.5 (14.1–21.5) | 22.9 (15.0–33.1) | 29.2 (21.1–38.9) |

Significantly different from reference group (*p<.05, **p<.01, ***p<.001)

Note: In instances of zero positive cases, the category was “Dropped” from the analysis.