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Suicidality, ethnicity and immigration in the United States

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Abstract

Background—Suicide is the eleventh cause of death in the US. This rate varies across ethnic groups. Whether suicide behavior differs by ethnic groups in the US in the same way as observed for suicide death is a matter of current discussion. The goal of this report is to compare the lifetime prevalence of suicide ideation and attempt among four main ethnic groups (Asians, Blacks, Hispanics, and Whites) in the US.

Methods—Suicide ideation and attempts were assessed using the World Mental Health version of the Composite International Diagnostic Interview. Discrete time survival analysis was used to examine risk for life-time suicidality by ethnicity and immigration among 15,180 participants in the Collaborative Psychiatric Epidemiological Surveys, a group of cross-sectional surveys.

Results—Suicide ideation was most common among Non-Hispanic Whites (16.10%), least common among Asians (9.02%), and intermediate among Hispanics (11.35%) and Non-Hispanic Blacks (11.82%). Suicide attempts were equally common among Non-Hispanic Whites (4.69%), Hispanics (5.11%) and Non-Hispanic Blacks (4.15%) and slightly less common among Asians (2.55%). These differences in the crude prevalence rates of suicide ideation decreased but persisted after control for psychiatric disorders, but disappeared for suicide attempt. Within ethnic groups, risk for suicidality was low among immigrants prior to migration compared to the US-born, but equalized over time after migration.

Conclusions—Ethnic differences in suicidal behaviors are partly explained by differences in psychiatric disorders and low risk prior to arrival in the US. These differences are likely to decrease as the US-born proportion of Hispanics and Asians increases.

1. Introduction

According to the Centers for Disease Control and Prevention (CDC), there were 34,598 suicide deaths in the US in 2007, 11.5 per 100,000 people, making suicide the eleventh leading cause of death in the United States (Centers for Disease Control and Prevention (CDC).Web- based Injury Statistics Query and Reporting System (WISQARS), 2011). This rate varies dramatically across ethnic groups; the suicide rate per 100,000 people was 14.4 among Non-Hispanic Whites, 6.2 among Asians, 5.1 among Non-Hispanic Blacks and 5.4 among Hispanics. Differences related to nativity (US vs. foreign-birth) (Choi *et al.* 2007; Duldulao *et al.* 2009; Singh and Hiatt, 2006), adverse social status (Crosby *et al.* 2011) and

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genetic endowment (Galfalvy *et al.* 2009) have been examined as potential explanations for these differences, without conclusive results (Nock *et al.* 2008; Perez-Rodriguez *et al.* 2008).

Studies that focus on suicidal ideation and suicide attempts can offer some insight on the demographic patterns of suicide. Suicide ideation increases the likelihood of suicide attempt and suicide death (Borges *et al.* 2008; Goldstein *et al.* 1991; Kessler *et al.* 1999; Nock *et al.* 2008). Suicide attempts are strongly associated with risk for suicide death (Suominen *et al.* 2004) and repeated suicide attempts (Borges *et al.* 2008). Whether suicidality differs by these ethnic groups in the US in the same way as observed for suicide death is a matter of current discussion (Perez-Rodriguez *et al.* 2008), with inconsistent results across studies (Division of Adolescent and School Health, 2009) (Roberts *et al.* 2007). Reports from national surveys of adults in the US have reported lower prevalence of attempts only among Blacks, relative to Non-Hispanic Whites (Borges *et al.* 2006; Borges *et al.* 2008; Kessler *et al.* 1999), but no studies have systematically focus on possible differences across the main ethnic groups in the US using comparable assessments of suicidality and mental disorders (Moscicki *et al.* 1988; Oquendo *et al.* 2004; Perez-Rodriguez *et al.* 2008).

While most studies focus on a range of psychological, cultural and adverse risk factors among minorities groups to explain alleged differences in suicidality (Perez-Rodriguez *et al.* 2008), here we examined three other potential explanations for ethnic variation in suicide ideation and attempt. First, psychiatric disorders, which are known risk factors for suicidal behavior (Kessler *et al.* 1999), are more prevalent among Non-Hispanic Whites in the US relative to other ethnic groups (Breslau *et al.* 2006). The potential that pre-existing psychiatric disorders and types of disorders (Borges *et al.* 2010; Nock *et al.* 2009) might account for the reported ethnic differences in suicidal behaviors has not been ruled out. Our hypothesis is that the differential distribution of psychiatric disorders among the main ethnic groups in the US may partially explain possible differences in suicidality among these groups.

Second, large portions of Hispanics and Asians in the US are immigrants (about 66% and 75% respectively) (Grieco, 2010; Pew Hispanic Center Fact Sheet, 2010). High rates for suicide death are visible for all US born compared to foreign born of the largest ethnic groups in the US (Singh and Hiatt, 2006). Part of the alleged differences in suicidality among ethnic groups could well be caused by the large influx of new immigrant in the US society. There is evidence that within these groups, immigrants have much lower risk for psychiatric disorders and possibly suicide attempts (Borges *et al.* 2009; Breslau *et al.* 2009; Breslau and Chang, 2006; Fortuna *et al.* 2007). Our hypothesis here is the US born will show higher rates of suicidality compared to immigrants, and that among those US born (second generation) there is no ethnic differences in suicidality.

Third, ethnic comparisons of suicidal behavior in the US may gain from a deeper analysis of possible differences between immigrants and US-born in suicidality, within each ethnic category, as has been suggested (Baca-Garcia *et al.* 2011). Our hypothesis here is that, within ethnic groups, the US born would have higher prevalence of suicide ideation and attempts than foreign born immigrants of the same ethnicity and that immigrants who arrived as children (at age 12 or younger) would have higher risk than immigrants who arrived as adolescents or adults (at age 13 or older). Evidence for these hypotheses came from prior studies of immigration and mental disorders in the US (Breslau *et al.* 2009; Breslau *et al.* 2007).

The goal of this report is to compare the lifetime prevalence of suicide ideation and attempt among four main ethnic groups in the US using data from a multi-ethnic national sample that assessed suicidality with the same survey instrument in five languages (English,

Spanish, Chinese, Tagalog and Vietnamese). Analysis such as the one proposed here can have an impact on public health policies that delves into the health disparities for the treatment and prevention of suicide and suicide behaviors associated with race/ethnicity and migration patterns (Goldsmith *et al.* 2002).

2. Materials & Methods

Data come from the National Institute of mental Health (NIMH) funded Collaborative Psychiatric Epidemiological Surveys (CPES), which includes the National Comorbidity Survey Replication (NCSR), the National Latino and Asian-American Survey (NLAAS) and the National Study of American Life (NSAL) (Heeringa *et al.* 2004). The CPES surveys were conducted during the same time period, using the same diagnostic instrument, and field staffs certified by the Institute for Social Research at the University of Michigan (Alegria *et al.* 2007; Kessler *et al.* 1994; Takeuchi *et al.* 2007; Williams *et al.* 2007). The instrument used in these surveys, the World Mental Health version of the Composite International Diagnostic Interview (WMH-CIDI) was developed with NIMH support to assess DSM-IV mood, anxiety, substance use and impulse control disorders as well as suicidality and a broad range of correlates and suspected risk factors. The CIDI is a fully structured computer assisted diagnostic interview. After complete description of the study to the subjects, informed consent was obtained.

A total of 15,180 respondents were in one of the four ethnic groups in this study. Further analyses on 10,274 US-born and 4,853 immigrants, with complete information about nativity/ migration status was available for: 4,179 Non-Hispanic Whites from the NCS-R; 3,258 Hispanics from the NLAAS (2,553), the NCS-R (527) and the NSAL (178); 2,176 Asians from the NLAAS (2,093) and the NCS-R (83); 5,514 Non-Hispanic Blacks from the NSAL (4,799) and the NCS-R (715).

2.1 Measures of Suicide-Related Outcomes

The WMH-CIDI contains a module that assesses history of suicide ideation (“Have you ever seriously thought about committing suicide?”), and suicide attempts (“Have you ever attempted suicide?”). These questions were printed in a booklet and referred to in the interview by letter given that evidence suggests that participants’ reports of such potentially sensitive behaviors are higher in self-administered than in interviewer-administered surveys (Turner *et al.* 1998). Respondents with a history of any suicide ideation or attempt were asked the age at which they first experienced that outcome. Timing of prior suicide ideation and attempt was obtained using a question sequence shown experimentally to improve recall accuracy (Knauper *et al.* 1999).

2.2 Psychiatric Disorders and Other Covariates

Psychiatric disorders were diagnosed according to Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria. The common diagnostic assessment in all surveys included mood disorders (major depressive disorder and dysthymia), anxiety disorders (panic disorder, agoraphobia without panic disorder, social phobia, generalized anxiety disorder and posttraumatic stress disorder) and substance use disorders (alcohol abuse, drug abuse, alcohol dependence with abuse, and drug dependence with abuse). All respondents were asked the age at which they had first experienced any of those disorders.

2.3 Demographics

Analyses also used sociodemographic information including gender, age, educational attainment, and age at first marriage and divorce (if any). Race/ethnicity was asked in all surveys and the original variables were recorded by CPES processors to harmonize data

across the three studies (Collaborative Psychiatric Epidemiology Surveys, 2008). Twelve categories were identified: Vietnamese, Filipino, Chinese, All other Asian, Cuban, Puerto Rican, Mexican, All other Hispanic, Afro-Caribbean, African-American, Non-Latino Whites and All other (excluded here). These categories were then collapsed into the following broader ethnic groups: Asian, Black, Hispanic and White (Collaborative Psychiatric Epidemiology Surveys, 2008; The Office of Minority Health, 2010).

2.4 Foreign- versus US-birth and age at migration

Respondents were asked whether they were born in the US, and, if not, they were asked the age at which they arrived to the US. Because of possible differences in mental disorder risk by age at immigration (Breslau *et al.* 2009), we divided immigrants into two groups: immigrants who arrived as children (at age 12 or younger) and immigrants who arrived as adolescents or adults (at age 13 or older).

2.5 Analysis

After estimating the lifetime prevalence of suicidal ideation and attempts among various ethnic groups in the CPES, discrete-time survival analysis with time-varying covariates (Efron, 1988; Willett and Singer, 1993) was used to examine the associations between ethnicity, immigration and risk of suicidality, adjusting for sociodemographic variables. Time-varying indicators for DSM-IV disorders were further added to adjust for possible effects of mental health on the differential distribution of suicidality across ethnic and migrant groups. Discrete time survival analysis was used instead of logistic regression to model the lifetime prevalence of suicide-related outcomes as this allows for incorporation of the temporal ordering of onset of mental disorders and suicide-related outcomes, time-varying sociodemographics (e.g., marital status), and most importantly, immigration status among CPES respondents. This, in turn, allowed for comparison of the risk of the onset of suicide-related outcomes among foreign-born immigrants in the CPES before and after their immigration to the United States. We used weights developed by CPES biostatisticians (National Institute of Mental Health, 2010).

Survival coefficients were converted to odds ratios (ORs) for ease of interpretation; significance tests of sets of coefficients in the logistic regression equations were made using Wald X^2 tests based on design-corrected coefficient variance-covariance matrices. Statistical significance was consistently evaluated as p=0.05, two-tailed. We estimated standard errors and significance tests by the Taylor series method with SUDAAN version 9 (Research Triangle Institute, 2005) to adjust for the weighting and clustering of the data.

We also report the 95% confidence intervals (CIs) of the ORs, which were adjusted for design effects on stratification and clustering and for unequal weighting of the observations. Because of the multiple comparisons included in this report for each dependent variable, we emphasize findings with p<0.01.

3. Results

3.1 Suicidality among ethnic groups

Table 1A shows that 14.64% of the sample reported suicidal ideation and 4.58% reported a suicide attempt (Table 1A). Suicidal ideation was most common among Non-Hispanic Whites, and suicide attempts were most common among Hispanics. Asians had the lowest prevalence in both outcomes. The crude analyses (Table 1B) suggested significant differences in suicide ideation (X^2=33.04, p<=0.001) and attempts (X^2=24.41, p<=0.001) across ethnic groups.

As expected, there were differences in the crude lifetime prevalence of any of the psychiatric disorder listed in the methods section. The life-time prevalence of any disorder was: Asians (18%, 1.3 s.e.), Hispanics (31%, 1.3 s.e.), Blacks (31%, 0.9 s.e.) and Non-Hispanic Whites (40%, 1.2 s.e.) (X^2 = 125, 3 d.f., p<=0.001). Discrete time survival estimates of odds ratios (OR) adjusted by age, sex, marital status, educational attainment (Table 2A) and the series of demographic variables and psychiatric disorders (any mood, any anxiety and any substance use disorders) (Table 2B), show that, compared to Non-Hispanic Whites, all ethnic groups had lower risk of suicide ideation (X^2 = 33.5, OR range 0.67–0.74) but similar risk for suicide attempts (X^2 = 7.17, OR range 0.80–1.21) (Table 2B). The lack of association between ethnic groups and suicide attempt was mostly due to the further adjustment of psychiatric disorders, since all ethnic groups had significantly lower odds ratios in models that adjusted only for basic demographic variables (X^2 = 16.88, OR range 0.53–0.92, Table 2 A).

3.2 Suicidality and nativity

Table 3 presents the raw data on suicidality among ethnic groups and nativity. For the total population, the prevalence of suicide ideation is highest in the US-born (15.68%), followed by immigrants who migrated as children (<=12 years) (12.64%), and immigrants who migrated at older ages (>12 years, adolescents or adults) (6.48%). Among the US-born, the prevalence of suicidal ideation was highest in Non-Hispanic Whites and the prevalence of suicide attempt was highest among Hispanics. The results of Table 3 suggest large differences between the US born and the foreign born of the same ethnicity in both ideation and attempts. To examine differences within the US-born population only, discrete time survival models similar to the ones used in Table 2B were estimated in this sub-sample, adjusting for demographic characteristics and psychiatric disorders (results not in table). Only two significant differences emerged in this subsample: Compared with the US-born Non-Hispanic Whites, risk for suicidal ideation was significantly lower among the US-born Non-Hispanic Blacks (OR=0.74, 95% CI (0.65 – 0.86)) and risk for suicide attempt was significantly higher among the US-born Hispanics (OR=1.43, 95% CI (1.10 – 1.87)). In table 3, within the four ethnic groups, immigrants who migrated as adolescents or adults had consistently lower prevalences for suicide ideation and attempts compared to US-born respondents of the same ethnic group. The immigrants who migrated as children of Asian and Black ethnicity showed higher lifetime prevalence of ideation and attempts than the US-born of the same ethnicity. In contrast, among Whites, older immigrants had prevalence of suicide ideation that was higher than younger immigrants.

3.3 Suicidality and immigration

A final set of models was estimated to compare immigrants with the US-born of the same ethnicity during years prior to and following their arrival in the US. In the total sample, risk for both ideation and attempt is lowest during years prior to immigration, and intermediate in the years following immigration, after adjusting for age, sex, marital status and education (Table 4, Model 1). After further adjustment for psychiatric disorders (Table 4, Model 2), the risk remains lowest in years prior to immigration, but is no longer significantly different from the US-born in years after immigration in 3 out of 4 comparisons in the total sample. A similar pattern of results is found across all ethnic groups when we adjusted for psychiatric disorders, except for Non-Hispanic Whites. Focusing on the results from Model 2, there are only two instances where risk is significantly lower among immigrants after they have arrived in the US compared to their co-ethnic US-born population. Both occur in immigrants who arrived after age 12, Hispanics (suicidal ideation) and Non-Hispanic Blacks (suicide attempt). The sample size for the non-Hispanic whites, by migration status, is too small for any conclusive statement.

4. Discussion

This large national survey provided an opportunity to examine suicide ideation and attempt in relationship to ethnicity and immigration in population samples assessed with the same survey instrument. First, crude ethnic differences in suicide ideation and attempt were generally similar to ethnic differences in rates of suicide as compiled by the CDC (Centers for Disease Control and Prevention (CDC).Web- based Injury Statistics Query and Reporting System (WISQARS), 2011). Nevertheless, after adjustment for mental disorders, the ethnic differences in prevalence of suicide ideation was greatly reduced but still persisted. For suicide attempt the ethnic differences were no longer significant when these adjustments were performed.

Second, immigration makes a large contribution to ethnic differences in the prevalence of suicide ideation and attempt, with the US born more likely to report suicidality. Suicidality is less common among the large immigrant segments of the Hispanic and Asian-American populations, contributing to the low crude prevalence of suicide ideation and attempt in these groups. US nativity further attenuated the differences in suicide ideation and attempt across ethnic groups. When an ethnic comparison was performed among the US-born, no differences were found in suicide ideation and attempts with only 2 exceptions: US-born Blacks had lower prevalence of suicide ideation when compared to US-born Whites and US-born Hispanics had higher prevalence of suicide attempt when compared to US-born Whites.

Third, within ethnic groups and using the US-born as the reference, the lowest ORs for both ideation and attempts were found among immigrants prior to their arrival in the US. After arrival in the US, risk among immigrants tended to increase to levels similar to that of the US-born population of the same ethnicity.

4.1 Prevalence of suicidality

The lifetime prevalence of ideation and attempt that we reported here for Blacks, Asians and Hispanics are comparable, but slightly different, than the ones reported by the individual studies from the CPES (Choi *et al.* 2007; Fortuna *et al.* 2007; Joe *et al.* 2006), as we included ethnic groups from the NCS-R in these analyses. The ECA (Moscicki *et al.* 1988), conducted more than 25 years ago, is the only other large epidemiological study to report separated estimates of lifetime suicide attempt for Whites (3.0%), Blacks (2.3%) and Hispanics (3.3%). The ECA estimates are lower than the ones reported here, but are in the same direction. Whether there was an increase in lifetime prevalence of suicidality in the last 30 years is a matter of discussion beyond our results, but more limited evidence from examining the NCS and the NCS-R (Kessler *et al.* 2005), a 10 year interval, and the National Longitudinal Alcohol Epidemiologic Survey and NESARC (Baca-Garcia *et al.* 2010) showed no recent increase in suicide attempt. A recent report based on the NESARC reports data on suicide attempt by ethnicity, 2.4% for Whites, 2.1% for Blacks, 2.1% for Hispanics and 2.0% for Asians, but unfortunately their data is limited to respondents who screened into the depression section and resulted in an extremely low lifetime prevalences (Baca-Garcia *et al.* 2010). A combination of differences in sample representativeness, differential composition of the first and the second generation of immigrants in the 80's and the 2000's, and most importantly, the instrument used in the ECA and the NESARC to assess suicide attempt may account for the differences in the lifetime prevalence between these surveys and the CPES.

4.2 Ethnicity and immigration into the US

Our analyses suggest that ethnicity, per se, has a more limited role in the current epidemiology of suicidality in the US than showed by previous studies (Duldulao *et al.*

2009; Fortuna *et al.* 2007; Joe *et al.* 2006). Differences in suicide attempt among ethnic groups were accounted by differences in psychiatric disorders among these groups and we found only a moderate gap in suicide ideation between the four main ethnic groups in the US that mostly disappeared when we focus exclusively on the second generation ethnic groups. Among the second generation, Blacks were at a lower risk for ideation, but Hispanics were at a higher risk for attempt. Moscicki (Moscicki *et al.* 1988) found lower ORs for suicide attempt for both Blacks (OR=0.59) and Hispanics (OR=0.56, non-significant), contrary to our findings. These differences in results may be due to differences in statistical models used in these studies and, importantly, differences in the composition of first and second-generation ethnic groups in the ECA and in more recent surveys of the US population. As no prior study have reported on ethnic differences in suicidality among the second generation only, future research should confirm these findings and delve in more details on protective and risk factors for the second generation of the ethnic groups in the US before any firm conclusion can be postulated.

Prior studies suggest that differences between foreign born and US-born individuals may be due to acculturation (Canino and Roberts, 2001; Choi *et al.* 2007; Fortuna *et al.* 2007; Joe *et al.* 2006; Smokowski *et al.* 2009) and selectivity of immigration (Duldulao *et al.* 2009). Besides eroding basic culturally-influenced coping strategies and cultural values (Baca-Garcia *et al.* 2011), which are core elements of the concept of acculturation, it is still unclear how exactly the assimilation to the US society may influence suicide ideation and attempts. For example, Fortuna et al. (Fortuna *et al.* 2007) suggested that English proficiency, parental US-nativity, family values, and language spoken as a child may be risk factors among Hispanics; Duldulao et al. (Duldulao *et al.* 2009) on the other hand, argued that acculturation can be seen as both protective and risk factor for Asians. It may be a protective factor because highly acculturated immigrants are more socially integrated; and a risk factor because higher acculturation may imply the presence of new risk factors, such as a loss in traditional values. Crawford et al. (Crawford *et al.* 2005) found that there was no significant effect of acculturation levels on suicidal behavior in a UK immigrants' sample. In addition, our finding that the protection for suicidality decreases after moving into the US, is consistent with the relationship that Duldulao et al. (Duldulao *et al.* 2009) found between suicidality and number of years living in the US for Asians. Similar to Fortuna et al. (Fortuna *et al.* 2007) we also found among Hispanics higher risk of suicidality in second generation and among immigrants who arrived in the US at a younger age. However, for the other ethnic groups, the difference between US-born and foreign-born individuals is mainly present in the years prior to immigration.

Future research should disentangle more precisely how specific mental disorders and socio-demographic factors may differentially affect ethnic groups or even nations (Borges *et al.* 2010). Our results suggest that at least some of the differences in crude rates of suicide among ethnic groups in the US may reflect baseline differences in the prevalence of psychiatric disorders and suicidality prior to immigration among these groups, a factor that have not been fully investigated before.

4.3 Limitations

The results of this study are limited in important ways. First, our analyses were based on retrospective self-reports, which may be affected by recall bias if some groups are systematically more likely to accurately recall and report past life events than others, specially recall over longer periods of time (pre-migration years). Second, the single CIDI questions used to elicit suicide ideation and attempt are clearly limited and did not include any measure of chronicity or severity of suicide ideation or attempt that may also differ by ethnicity and immigration status. Furthermore, no reliability or validity data were obtained on the measures of ideation or attempt and we did not examine non-suicidal self-injury (i.e.,

self-mutilation) (Nock and Prinstein, 2005) and that restricts the inferences that can be drawn from this study and represents areas for improvement in future studies. Clinical studies of suicidal patients that can usually include a much more in-deep evaluation of the patient's state of mind and a larger number of risk factors (Mann *et al.* 1999; Oquendo *et al.* 2005) are therefore needed. Third, the four ethnic groups examined here are internally heterogeneous and future studies with larger samples are needed to explore suicidality among important sub-groups (Baca-Garcia *et al.* 2011). An example of this within ethnic group difference was reported on suicide-related outcomes between African Americans and Caribbean Blacks where Caribbean black men were mostly affected (Joe *et al.* 2006), but was not seem among within Latinos (Fortuna *et al.* 2007). All the ethnic groups and their cultures studied here are richer and show a wider variability of norms, family structure or coping strategies among their members than this succinct description of findings or, sometimes, tentative conclusions may suggest. The careful description and analysis of the multiple cultural components that exist within a particular ethnicity and its constituents nationalities is a fruitful avenue that have been used before in analysis of, for example, suicidality among Hispanics in the US (Baca-Garcia *et al.* 2011; Fortuna *et al.* 2007). Finally, two sources of bias have been identified in studies of mental health and immigration, the selection of healthier immigrants and the return of sick immigrants. Without data from the sending countries, we can only speculate regarding whether these biases could be operating in our study. Nevertheless, the single study to date to test these biases in the context of immigration and suicidality among Mexicans (Borges *et al.* 2009) did not find such bias.

4.4 Conclusion

Despite these limitations, this large epidemiological study on four ethnic groups in the US adds to the literature in showing that ethnic differences in suicidal behaviors are smaller in magnitude than the ones reported for suicide deaths. The findings that ethnic differences in suicidal behaviors are partly explained by differences in psychiatric disorders, nativity and risk prior to arrival in the US are important. Since most immigrants start with low rates of suicidality and these rates tend to increase as they become familiar with the US milieu and eventually settle as US nationals, the ethnic convergence of rates is not a good outcome. These findings suggest that from a public health perspective more preventive efforts should be directed to second-generation immigrants who have lost all protective factors, whatever they were. Pre-migration factors, such as baseline risks of suicidality, social and cultural conditions in the country of origin and selection factors (i.e. ways in which those who migrate differ from those who do not migrate), potentially play a large role. As the proportion of these ethnic groups born in the US increases, the prevalence of suicide ideation and attempt, and potentially of suicide as well, is likely to increase to levels similar to that currently found among Non-Hispanic Whites.

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Table 1

Lifetime prevalence and crude association of suicidality among race/ethnicity in the Collaborative Psychiatric Epidemiology Surveys (CPES) study (n=15,180)[a]

A. Lifetime prevalence of suicidality among race/ethnicity[b]								B. Lifetime crude association of suicidality with race/ethnicity[c]								
		Suicide ideation			Suicide attempt			Suicide ideation					Suicide attempt			
Race/Ethnicity population group	n	n	%	SE	n	%	SE	OR	95% CI	X^2	DF	p	OR	95% CI	X^2	DF	p
Total Sample	**15 180**	**2 280**	**14.64**	**0.55**	**802**	**4.58**	**0.22**			**33.04**	**3**	**<0.001**			**24.41**	**3**	**<0.001**
Asian	2 178	211	9.02	0.78	60	2.55	0.36	0.58	0.47 – 0.71				0.57	0.42 – 0.77			
Hispanic	3 259	414	11.35	0.72	190	5.11	0.39	0.78	0.67 – 0.92				1.19	0.98 – 1.45			
Black	5 563	672	11.82	0.64	235	4.15	0.46	0.76	0.65 – 0.88				0.93	0.71 – 1.20			
White	4 180	983	16.10	0.71	317	4.69	0.29	1.00	- -				1.00	- -			

[a]The total sample includes long version NCSR respondents and excludes the following respondents from the NSAL: non-Hispanic whites (were not asked suicidality section), respondents not willing to think before answer questions or who didn't pass SPMSQ test. There were 17 respondents with missing data on ideation and 21 on attempt.

[b]Frequencies are unweighted; percentages are weighted

[c]OR were estimated by discrete time survival models controlling only for person-years

p-values were computed by the Wald chi-square test

SE Standard error; OR Odds Ratio; CI Confidence Interval; DF Degrees of Freedom

Table 2

Adjusted lifetime association of suicidality with race/ethnicity in the Collaborative Psychiatric Epidemiology Surveys (CPES) study (n=15,180)

Race/Ethnicity population group	A.Model adjusted by demographics variables[a]										B.Model adjusted by demographics variables and DSM-IV psychiatric disorders[b]									
	Suicide ideation					Suicide attempt					Suicide ideation					Suicide attempt				
	OR	95% CI	X^2	DF	p	OR	95% CI	X^2	DF	p	OR	95% CI	X^2	DF	p	OR	95% CI	X^2	DF	p
Total Sample			78.91	3	<0.001			16.88	3	0.001			33.5	3	<0.001			7.17	3	0.067
Asian	0.52	0.42 – 0.64				0.53	0.38 – 0.73				0.67	0.54 – 0.82				0.80	0.58 – 1.10			
Hispanic	0.60	0.51 – 0.71				0.92	0.73 – 1.15				0.71	0.60 – 0.83				1.21	0.96 – 1.52			
Black	0.64	0.55 – 0.74				0.78	0.60 – 1.02				0.74	0.64 – 0.85				1.00	0.77 – 1.29			
White	1.00	- -				1.00	- -				1.00	- -				1.00	- -			

[a] OR were estimated by discrete time survival models controlling for age and sex as fixed covariates and person-year, marital status and education as time-varying covariates

[b] OR were estimated by discrete time survival models controlling for age and sex as fixed covariates and person-year, marital status, education, any mood, any anxiety and any substance DSM-IV disorders as time-varying covariates. Any mood includes major depressive disorder w/hierarchy and dysthymia; any substance includes both alcohol and drug abuse and dependence; any anxiety includes panic disorder, agoraphobia without panic disorder, social phobia, generalized anxiety disorder and posttraumatic stress disorder

p-values were computed by the Wald chi-square test

SE Standard error; OR Odds Ratio; CI Confidence Interval; DF Degrees of Freedom

Table 3

Lifetime prevalence of suicidality among race/ethnicity and nativity in the CPES study by nativity[a]

Race/Ethnicity population group[b]	n	Suicide ideation		Suicide attempt	
		%	SE	%	SE
Total Sample	15 180				
USB	10 274	15.68	0.58	4.93	0.25
FB - Immigrated at age 12 or younger	988	12.64	1.47	4.18	0.75
FB - Immigrated at age 13 or older	3 819	6.48	0.63	1.78	0.26
Asian	2 178				
USB	476	13.52	1.94	3.91	1.08
FB - Immigrated at age 12 or younger	249	15.48	2.64	5.20	1.48
FB - Immigrated at age 13 or older	1 450	6.10	0.70	1.53	0.30
Hispanic	3 259				
USB	1 370	15.46	0.98	7.07	0.69
FB - Immigrated at age 12 or younger	481	13.55	1.99	5.28	1.19
FB - Immigrated at age 13 or older	1 390	5.59	0.61	2.62	0.46
Black	5 563				
USB	4 382	12.10	0.67	4.38	0.48
FB - Immigrated at age 12 or younger	207	17.23	5.44	4.91	2.30
FB - Immigrated at age 13 or older	898	4.85	1.42	0.52	0.18
White	4 180				
USB	4 046	16.32	0.69	4.84	0.30
FB - Immigrated at age 12 or younger	51	7.79	3.18	1.02	0.78
FB - Immigrated at age 13 or older	81	10.81	3.53	0.00	0.00

[a] Frequencies are unweighted; percentages are weighted

[b] There were 53 respondents with missing data on migrant status or age of migration SE Standard Error; USB United States Born; FB Foreign Born

Table 4

Adjusted lifetime association of suicidality among race/ethnicity and immigration in the CPES study by nativity

	Model 1[a]				Model 2[b]			
	Suicide ideation		Suicide attempt		Suicide ideation		Suicide attempt	
Race/Ethnicity population group	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Total Sample								
PY - in country of origin	0.30	0.22 – 0.41**	0.23	0.16 – 0.35**	0.37	0.27 – 0.49**	0.33	0.22 – 0.50**
FB - Immigrated at age 12 or younger	0.74	0.57 – 0.95*	0.70	0.47 – 1.04	0.85	0.66 – 1.09	0.91	0.62 – 1.34
FB - Immigrated at age 13 or older	0.53	0.42 – 0.67**	0.57	0.38 – 0.85*	0.70	0.55 – 0.90*	0.92	0.62 – 1.37
USB	1.00	- -	1.00	- -	1.00	- -	1.00	- -
Asian								
PY - in country of origin	0.37	0.24 – 0.56**	0.30	0.13 – 0.71*	0.40	0.27 – 0.59**	0.36	0.15 – 0.86*
FB - Immigrated at age 12 or younger	1.03	0.63 – 1.66	1.22	0.52 – 2.84	1.04	0.64 – 1.68	1.36	0.58 – 3.17
FB - Immigrated at age 13 or older	0.77	0.40 – 1.47	0.98	0.38 – 2.51	0.92	0.49 – 1.71	1.42	0.58 – 3.44
USB	1.00	- -	1.00	- -	1.00	- -	1.00	- -
Hispanic								
PY - in country of origin	0.27	0.18 – 0.40**	0.26	0.15 – 0.44**	0.30	0.20 – 0.44**	0.33	0.19 – 0.55**
FB - Immigrated at age 12 or younger	0.88	0.64 – 1.21	0.67	0.39 – 1.16	0.94	0.70 – 1.27	0.80	0.47 – 1.35
FB - Immigrated at age 13 or older	0.46	0.33 – 0.63**	0.58	0.33 – 1.02	0.55	0.41 – 0.75**	0.82	0.47 – 1.46
USB	1.00	- -	1.00	- -	1.00	- -	1.00	- -
Black								
PY - in country of origin	0.45	0.20 – 0.99*	0.09	0.04 – 0.22**	0.49	0.23 – 1.03	0.11	0.04 – 0.25**
FB - Immigrated at age 12 or younger	1.40	0.72 – 2.73	1.00	0.36 – 2.73	1.41	0.85 – 2.36	0.93	0.29 – 2.94
FB - Immigrated at age 13 or older	0.63	0.25 – 1.57	0.19	0.06 – 0.67*	0.76	0.31 – 1.88	0.27	0.08 – 0.91*
USB	1.00	- -	1.00	- -	1.00	- -	1.00	- -
White								
PY - in country of origin	0.52	0.17 – 1.56	*c*	- -	0.62	0.21 – 1.77	*c*	- -
FB - Immigrated at age 12 or younger	0.46	0.20 – 1.07	0.20	0.05 – 0.89*	0.55	0.23 – 1.29	0.26	0.06 – 1.12
FB - Immigrated at age 13 or older	0.80	0.40 – 1.60	*c*	- -	1.04	0.52 – 2.10	*c*	- -

Race/Ethnicity population group	Model 1[a]				Model 2[b]			
	Suicide ideation		Suicide attempt		Suicide ideation		Suicide attempt	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
USB	1.00	- -	1.00	- -	1.00	- -	1.00	- -

[a]Estimated in discrete time survival models controlling for age and sex as fixed covariates and person-year, marital status and education as time-varying covariates.

[b]Estimated in discrete time survival models controlling for age and sex as fixed covariates and person-year, marital status, education, any mood, any anxiety and any substance DSM-IV disorders as time-varying covariates.

[c]Could not be estimated due to zero cell OR Odds Ratio; CI Confidence Interval; USB United States Born; FB Foreign Born; PY Person Years

*$p < 0.05$

**$p < 0.001$