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Mental Health, Migration Stressors and Suicidal Ideation among Latino Immigrants in Spain and the United States

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Abstract

Background—Immigration stress appears to augment the risk for suicide behaviors for Latinos. Yet, specific risk factors that contribute to suicidal ideation (SI) among diverse Latino immigrant populations are not well established.

Methods—Data were collected in Boston, Madrid and Barcelona using a screening battery assessing mental health, substance abuse risk, trauma exposure, demographics, and socio-cultural factors. Prevalence rates of lifetime and 30-day SI were compared across sites. Logistic regression modeling was used to identify socio-demographic, clinical, and socio-cultural-contextual factors associated with 30-day SI.

Results—567 Latino patients from primary care, behavioral health and HIV clinics and community agencies participated. Rates of lifetime SI ranged from 29-35%; rates for 30-day SI were 21-23%. Rates of SI were not statistically different between sites. Factors associated with SI included exposure to discrimination, lower ethnic identity, elevated family conflict, and low sense of belonging ($p < 0.01$). In the adjusted model, higher scores on depression, post-traumatic stress disorder, and trauma exposure were significantly associated with 30-day SI (OR = 1.14, 1.04, and 7.76, respectively). Greater number of years living in the host country was significantly associated with increased odds of having SI (OR=2.22) while having citizenship status was associated with lower odds (OR=0.45).

Conclusion—Latinos suffering depression, trauma exposure, and immigration stressors are more likely to experience SI. Despite differences in country of origin, education, and other demographic factors between countries, rates of SI did not differ. Recommendations for prevention and clinical practice for addressing suicidal ideation risk among Latino immigrants are discussed.

Keywords

Suicide; Unipolar Depression; Post Traumatic Stress Disorder; Social and Cross-Cultural Psychiatry; Addiction

1. Introduction

Immigration from Latin America and the Caribbean over the last three decades has transformed the ethnic composition of the United States and many European countries [1]. Latinos are the largest ethnic minority population in the U.S. and the second largest in Spain [2, 3]; however, research on suicidality (suicidal ideation, planning, and attempts) among Latino immigrants in Spain is limited in comparison to the U.S. Past epidemiological studies of U.S. Latinos show that lifetime prevalence of suicidal ideation (SI) and suicide attempts is 10.1% and 4.4%, respectively, with higher rates of each among U.S. born Latinos compared to foreign-born [4]. Although studies have reported important risk factors for SI and attempts among the general population [5], there is no consensus regarding the most prominent risk factors among Latino immigrants. International studies have found that across ethnic groups, current symptoms of mental distress are the most important risk factor for suicide [6]. U.S. and Spanish studies have identified that both passive SI (thoughts of wanting to be dead) and active SI (thoughts of planning to kill oneself) increase lifetime risk for suicide attempts [7, 8].

The risk for suicidality among immigrants is multifactorial, and includes sociocultural and migration/aculturative stressors as well as mental health status. Generation and time in the U.S. appear to influence the risk for suicidality among Latinos [9-11], with SI highest in US-born Latinos, followed by immigrants who migrated as children (≤ 12 years) [4, 12]. This posits an association of acculturation and time in the US with suicidality [13]. Mexicans who have never migrated to the U.S. and lack family living there have lower rates of suicidal behavior compared to those who have migrated or have family in the U.S. [13]. Endorsement of acculturative stress has been associated with over three times increased odds of suicide attempts among Latino emerging adults in the U.S. [14]. A study of immigrants in European countries showed that 27 out of 56 groups studied had higher rates of suicide attempts when compared to the host population and to their counterparts who had not migrated [9]. In a separate study in the Netherlands, living in a neighborhood with high minority density was associated with lower rates of suicide among non-Western immigrants when compared to native Dutch residents [15]. While relative risk for suicidality for immigrants varies by country and context within country, immigrants may experience specific risk and protective factors associated with the migration experience and status in the host country. Furthermore, the recent worldwide economic downturn and high unemployment rates have contributed to significant stress on immigrants in the U.S. and Spain [11]. SI can be an important symptom of distress in the context of poverty, oppression and racism, and acculturative stressors can be particularly salient for marginalized Latino immigrants [14, 16]. Undocumented status likely exacerbates this risk; however, few studies specifically link citizenship status to suicidality. Barriers to mental health care, including linguistic and socioeconomic barriers, may especially be a challenge for noncitizens [17].

In contrast, self-identification as Latino may be associated with cultural values that protect against suicidal behavior even when mental health problems and significant socioeconomic stressors are present. One study [18] found that Latinos report higher rates of survival and coping beliefs, including responsibility to family and moral objections to suicide. Highly acculturated immigrants may be more socially integrated into the host country and at decreased risk for suicidality [19], but greater acculturation may imply the emergence of risk factors, such as a loss in traditional cultural values (i.e. familismo, ethnic identity, religiosity), and the loss of family structure and supports [4, 12, 20-25].

Mental health diagnoses and posttraumatic stress, depression and substance abuse symptoms are significant risk factors for suicide across populations, including Latinos [4, 22, 26-28]. Approximately 60% of people in the U.S. who report SI and 80% who report suicide attempts have a prior mental health disorder, with greater numbers of comorbid disorders increasing the risk [29]. Meeting criteria for any psychiatric disorder, including alcohol and substance use disorders, was highly correlated with lifetime SI and attempts in a national sample of U.S. Latinos, even after adjusting for age, gender, language, and nativity [4]. Experiencing traumatic events has also been associated with increased risk for SI and suicide attempts in cross-national studies [30], with presence of posttraumatic stress symptoms as an important risk factor for attempted suicide among individuals with depression [31].

Given differences between the U.S. and Spain in the national origins of the Latino immigrant population, circumstances of migration, and healthcare systems, this study offers a unique opportunity to examine risk for suicide behaviors for Latino immigrants in the two countries. We hypothesize that relevant risk factors for SI in immigrant Latino populations include depressive disorders, trauma and other mental health problems [32]; substance abuse; immigration-related stressors such as discrimination, poverty and non-citizen status; and related stressors linked to leaving one's home and adjusting to a new context [33]. We hypothesize that immigrants in Spain will experience lower rates of SI, given a lower threshold in the healthcare system to access behavioral health services and presumed fewer barriers to integration in a Spanish-speaking country. We present findings regarding SI in an international sample of first and second-generation Latino immigrants in Spain (Barcelona and Madrid) and the U.S. (Boston, Massachusetts). We focus on three aims: to describe the prevalence of SI and attempts in a largely clinical sample of Latino immigrants residing in these two countries; identify any differences in SI rates between the two countries/ three cities represented; and establish which sociodemographic, clinical and sociocultural factors are associated with SI.

2. Methods

2.1 Procedure

Data were derived from a mental health and substance abuse screening interview conducted between July 2013 and August 2014 as part of the International Latino Research Partnership (ILRP; NIDA 3R01DA034952-02S1). The ILRP unites research institutions and community clinics in the U.S. and Spain to conduct cross-national comparative research investigating Latino migrants' behavioral health service needs. Participants ($n= 567$) were recruited in

waiting rooms from mental health, substance use, primary care and HIV clinics and from community agencies serving Latino immigrants in Boston, Massachusetts, and Madrid and Barcelona, Spain. Approximately 25% of people approached declined to complete the interview. The study was approved by the institutional review boards of the participating institutions.

First-generation Latino immigrants (born in a country other than the interview site) comprised 100% of the Spain sample and 78% of the Massachusetts sample. Boston participants were born in Central America (40%), continental U.S. (22%), Puerto Rico (16%), the Caribbean (11%), South America (10%), and Spain (1%). The majority of participants in Spain were of South American origin (86% in Madrid and 80% in Barcelona), followed by Caribbean (12%) in Madrid and Central American (10%) in Barcelona. The percentage of participants speaking Spanish as a first language was 82% in Boston, 95% in Madrid, and 96% in Barcelona.

3. Measures

3.1 Sociodemographics

Self-report demographic information was coded as binary variables: economic status (i.e., live very well or comfortably; live check to check or poor), highest level of education (i.e., less than high school; completed high school/ GED, or vocational school), and having a primary sexual partner.

3.2 Clinical profile

Depression symptoms were measured using the Patient Health Questionnaire (PHQ-9) [34] [35] using 8 items, dropping the SI item since this was an outcome variable (Cronbach's $\alpha = .89$). We selected the PHQ-9 given its use in primary care and effectiveness in detection of depression symptoms among Latinos. Anxiety symptoms were measured with the General Anxiety Disorder screener (GAD-7) (Cronbach's $\alpha = .90$) [36]. PTSD symptoms were measured using the Post-Traumatic Stress Disorder Checklist, Civilian (PCL-C) [37, 38], a self-report measure of DSM-IV symptoms of PTSD (Cronbach's $\alpha = .96$). Trauma exposure was assessed with the Brief Trauma Questionnaire, a 10-item self-report measure that includes participant perception of risk of death/serious injury, [39] and constructed as a binary variable indicating whether the respondent had experienced any traumatic event.

Three measures assessed substance abuse. The Alcohol Use Disorders Identification Test (AUDIT) is a World Health Organization (WHO) screener for excessive drinking [40] (Cronbach's $\alpha = .90$). The Drug Abuse Screening Test (DAST-10) [41] is a self-report instrument for clinical screening of substance use (Cronbach's $\alpha = .91$). The Benzodiazepene Dependence Questionnaire (BDEPQ) [42] measures dependence on benzodiazepene tranquilizers, sedatives and hypnotics (Cronbach's $\alpha = .88$).

3.3 Cultural, contextual, and social factors

We included measures used in the National Latino and Asian American Study (NLAAS) [43] that evaluate discrimination, family conflict, and the immigration experience. The three-

item discrimination scale assessed experiences due to being Latino or not speaking English (Cronbach's $\alpha = .71$). The Family Cultural Conflict scale is a four-item questionnaire addressing cultural and intergenerational conflict [43] drawn from the Hispanic Stress Inventory (HSI; [44]) (Cronbach's $\alpha = .76$). The immigration experience was assessed via self-report of citizenship status in the country of residence; number of years lived in the host country, and number of return visits to the home country. These questions were derived from the Mexican American Prevalence and Services Survey [45].

Potentially protective factors included sense of belonging to either the home or host country and ethnic identity. Participants who reported that they felt they belonged in either their home or host country were classified as feeling a sense of belonging. The three-item ethnic identity scale was derived from the Cultural Identity Scale for Latinos [46]. The questions addressed identification with, feelings of closeness to, and preferred amount of time spent with people of the same racial/ethnic background (Cronbach's $\alpha = .78$).

3.4 Suicidal Ideation

We used screening questions from the PHQ-9 and the AC-OK Co-occurring Disorder Screen [47] to identify participants who experienced passive or active SI, then administered the Paykel Suicide Questionnaire [48], a five-item measure of past 30-day SI, attempt and/or plan, to identify individuals at greater risk of suicide. A safety protocol was enacted for participants who demonstrated immediate risk.

We measured past 30-day SI by an affirmative response either to PHQ-9 Question 9 or Paykel Question 4. To measure lifetime SI, we included participants who screened positive for 30-day SI and participants who responded affirmatively to AC-OK Question 10. To measure suicide attempt, we used Paykel Question 5. See Figure 1 for full text of questions and a flowchart depicting the development of the final sample.

3.5 Statistical analysis

There were less than 1% missing data on clinical and mental health related variables except for the DAST score, which had 19% missing data due to questionnaire skip patterns. There were less than 2% missing data on cultural/contextual/social variables and less than 4% on sociodemographic variables. To address missing data, we implemented multiple imputation methods using the mi procedure in STATA 14 [49].

Frequency of lifetime and 30-day SI were reported separately for each site. We further disaggregated the sample into subgroups by past 30-day ideation status (positive or negative), comparing the distributions of sociodemographics, clinical profile, cultural/contextual/social factors, and recruitment site between these two groups. Percentages were reported for categorical variables; mean and deviations were reported for continuous variables. Since the Pearson chi-square test is not valid for multiple imputed data, we conducted regressions on SI status to detect any significant differences in sample characteristics by SI status.

Differences in past 30-day SI rates were assessed by a logistic model using the following domains added to the regression model in blocks: sociodemographics; clinical profile;

cultural, contextual and social factors; and recruitment site. Model (1) accounted for differences across study sites (in these models, results from Madrid and Barcelona were combined into one category labeled Spain). Model (2) included sociodemographics. We added cultural/contextual/social factors and clinical profile factors separately in Models (3) and (4), respectively. We combined sociodemographics; cultural, contextual and social factors; and clinical profile in Model (5). Finally, we added recruitment site in Model (6). As a robustness check, we estimated alternative model specifications by adding interaction terms for significant predictors with citizen status, sense of belonging and clinical factors to test whether these associations varied by site.

To evaluate goodness of fit we included the average Nagelkerke's R^2 in Table 3 for each model. We utilized the approach outlined by Harel [50] to calculate Nagelkerke's R^2 for our multiple imputed datasets. In this approach, we first transformed Nagelkerke's R^2 into a z-score for each imputed dataset (using Fisher's z-transformation procedure), calculated an average z-score across datasets, and then transformed the average z-score back into an R^2 .

4. Results

Table 1 shows lifetime SI rates of 28.9% in Boston, 34.9% in Madrid, and 31.3% in Barcelona. The rates of past 30-day SI were 20.6% in Boston, 23.3% in Madrid, and 23.4% in Barcelona, with no significant differences detected across the sites ($P>0.1$). Rates of suicide attempts in the last 30 days were 1.0 % in Boston, 0.7% in Madrid, and 3.1% in Barcelona. A greater percentage of respondents endorsed passive SI (19%-23%) as compared to active SI (7%-10%). There was no significant difference in SI status by region of origin subdivided as South America, Central America, or Caribbean, though these results should be interpreted cautiously given the small sample size.

To further examine subgroup characteristics, Table 2 summarizes sociodemographics, clinical profile, cultural/contextual/social factors, and recruitment site by individual's SI status (i.e., reported past 30-day SI or did not), aggregating across sites. No significant differences were detected between the two groups in terms of sociodemographic characteristics. Individuals with past 30-day SI had higher scores in depression, anxiety, posttraumatic stress, and substance abuse symptoms, and were more likely to report any trauma exposure ($p<0.001$). Having SI was associated with endorsement of exposure to discrimination ($p<0.001$), lower level of ethnic identity ($p<0.01$), elevated family conflict ($p<0.001$), and a low sense of belonging ($p<0.001$). A majority (70%) of those with no SI were recruited from primary care clinics whereas people with SI were more likely to come from mental health and substance abuse services.

Table 3 presents odds ratios (OR) and 95% confidence intervals (CI) from logistic regression estimations that include the full list of predictors. Models (1) through (6) show no detectable differences in terms of SI across sites (Massachusetts and Spain), with or without adjustments for individual demographics and clinical profile. By further adjusting for cultural, contextual and social factors, Model (3) demonstrated that higher self-reported rates of discrimination and family conflict were associated with increased SI (OR = 1.26 and OR=1.28), even after controlling for sociodemographic characteristics and site. A separate

model adjusting for clinical factors only, Model (4), demonstrated that that depression symptoms and posttraumatic stress symptoms were positively associated with increased odds of having SI (OR=1.14 and OR=1.03, respectively), as was lifetime exposure to traumatic events (OR=6.67). When cultural, contextual and social factors and clinical profile were combined in Model (5), the effects of depression, posttraumatic stress, and exposure to traumatic events remained significant. In this model, individuals who experienced traumatic events were 7.76 times more likely to experience SI. The effects of discrimination and family conflict were no longer significant after controlling for clinical factors; however, in this model, having citizenship was associated with lower odds of SI (OR=0.45) and living the US or Spain for 10 years or more was significantly associated with increased odds of having SI (OR=2.22). Adding cultural factors, goodness-to-fit was improved in Model (3) from 0.03 to 0.18 and was further improved to 0.47 after adjusting for clinical factors in Model (4). Slight improvement in fit to 0.496 was seen when combining clinical and cultural factors in Model (5). Addition of recruitment location did not change model results or add substantial improvement in fit.

When each mental health predictor was added individually to the model as a sensitivity check, each was significantly correlated with the outcome. When a model was run without including second-generation immigrants in the sample as a sensitivity check, odds ratios were similar and the same clinical and social/cultural/contextual factors were significant across models.

5. Discussion

Our results suggest that in this clinical sample of Latino immigrants, the cumulative experience of trauma and mental health symptoms, combined with sociocultural factors such as perceived discrimination and family conflict, are associated with suicidal ideation. Protective cultural factors such as religiosity and loyalty to family [51] have been associated with decreased risk for suicide even in the context of serious suicidal thoughts and/or mental distress. Our study supports the possibility that similar protective factors are operating in our sample given the relatively high rates of ideation yet low rates of attempts even in the context of depression, trauma and multiple stressors. However, transnational studies have found that 60% of individuals reporting serious suicidal thoughts make an attempt within a year of the onset of ideation [52] and that traumatized populations may be at particular risk for transitioning from ideation to actual attempt [29].

Rates of SI in the current study appear high as compared to some community samples of immigrants and non-immigrants [4, 6, 10, 53-55], but are consistent with other studies conducted in primary care and clinical samples [56-61] that used comparable measures of suicidality. Contrary to our initial hypothesis, there was no significant difference in SI endorsement rate between the three study sites in the US and Spain, despite differences in cultural/linguistic context and immigrant groups' country of origin. Regardless of the receiving environment, the immigrant experience appears to offer similar behavioral health risks due to stressors experienced through immigration such as disruption of social ties and support, adapting to a new country, the impact of citizenship status and experiences of discrimination. Other studies have suggested that variables such as neighborhood ethnic

density and other community characteristics may be factors in predicting suicidal ideation; however, we are not able to examine this level of variation in potential environmental risk [15].

Consistent with other studies, elevated depression, anxiety and PTSD symptoms and problematic alcohol and substance use are all independently associated with SI [4, 22, 26-31]. Substance abuse was no longer significant in the fully adjusted model, probably linked to the comorbidity between mental health and substance use. Depressive and posttraumatic stress symptoms remained the most significant correlates of SI, consistent with prior research demonstrating that affective disorders are the most frequent risk factors associated with suicidal behaviors across populations and in transnational studies [31, 32, 53]. Among individuals with recurrent major depression, co-occurring PTSD has been found to be both a vulnerability for maladaptive responses to traumatic events and an independent risk factor for attempted suicide [31]. In the current study, exposure to any traumatic event was associated with more than seven times the risk of SI.

Immigration-related social stressors such as experiences of discrimination and family conflicts are independently associated with SI in our unadjusted analyses. Accumulated stress in the family, family loss or instability, significant family conflict in the context of migration, and changes in family supports can be factors linked to depression along with suicidality [4, 25]. Those at risk for more cultural conflict are likely also experiencing high psychological strain and together these contribute to SI [62]. In adjusted analyses, we found that self-reported discrimination and family conflict were significant predictors of suicidal ideation, but these variables were no longer significant after adjusting for clinical profile. This suggests that there is some correlation between discrimination and family conflict with mental health variables. While we are unable to comment on the order of these risk factors, longitudinal studies among Latinos and African-Americans have demonstrated that experiences of discrimination can lead to elevated depression symptoms [63-65]. When it comes to addressing suicidality in Latinos, we need to address common suicide risk factors, including psychiatric and substance use problems, but also address risk factors that are faced by immigrant populations in particular.

Living in the U.S./Spain more than ten years increases suicide risk while achieving citizenship decreases risk, after controlling for clinical profile. Longer time living in the U.S. is associated with increasing prevalence of psychopathology and suicidality, a relationship that has been attributed to frustrations in goal striving and/or acculturative stress, as well as decreasing cultural protective factors such as religiosity and extended family support [66]. On the other hand, citizenship offers a degree of social stability and opportunity as well as access to mental health care when needed. Not having citizenship leads to insecurity about one's life and future [67] and has serious mental health consequences that may lead to anxiety and depression [68]. Perceived barriers to opportunity and negative expectations concerning the future have been linked to problematic alcohol use and distress [68] and SI [22] among Latino immigrants. Similar factors may mediate the relationship between non-citizen status/longer time living in the U.S./Spain and SI in our study.

There are limitations with our study. The cross-sectional nature of our data does not allow for causal inference. Our sample is not representative of the full population of Latino immigrants in the U.S. and Spain, but results do suggest findings of relevance to clinical samples of Latino/a immigrants. The relatively low number of suicide attempts in our sample prevents a deeper examination of this phenomenon. Survey data lacks in-depth clarification of social context and culture, and structured clinical interviews to confirm psychiatric disorders were not conducted. Notwithstanding these limitations, we have found that SI is relatively common among Latin American immigrants in both the U.S. and Spain, despite important differences in demographics between immigrants in the both countries. We additionally found no difference in our results when excluding second-generation immigrants from the analysis. Though second-generation immigrants have been shown to have higher suicide risk in other studies, it is possible that our inclusion of the cultural, contextual, and social variables accounted for the increased risk usually associated with this population. Trauma, depression and social stressors in the context of the immigration experience are important factors associated with suicidality in Latino immigrants, particularly for those with longer duration of residence in the host country. Lack of citizenship further exacerbates this risk.

5.1 Summary

Complete assessment for suicidality in immigrant populations should include screening for depressive disorders, trauma and substance use, in keeping with best practice guidelines [69]. Our use of the PHQ9, GAD, AUDIT and PCL offered useful clinical information in this regard, and are commonly used and freely available for use in primary care and other outpatient settings. Understanding the potentially additive risk of mental health problems and social stress related to the immigration experience are important clinical considerations. Sense of belonging vs. isolation, perceived discrimination, and stress regarding citizenship are important for assessing SI risk. Family conflict is a potential risk factor amenable to intervention for suicidality among Latinos, while sense of belonging and strong ethnic identity may be protective factors to target in prevention and early intervention. Despite fewer barriers, both linguistic and institutional, to behavioral health treatment in Spain, results were similar and evidenced that access alone does not address the unique needs of Latino immigrants.

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Figure 1. Flow chart depicting the development of the final sample

Table 1**Suicidal Ideation Rates By Site (n=567)**

	Boston n=194		Madrid n=146		Barcelona n=227		P-value
	n	%	n	%	n	%	
Ideation (lifetime)							
No	138	71.1%	95	65.1%	156	68.7%	0.490
Yes	56	28.9%	51	34.9%	71	31.3%	
Ideation (last 30 days)							
No	154	79.4%	112	76.7%	174	76.7%	0.764
Yes	40	20.6%	34	23.3%	53	23.4%	

Note: Life time suicidal ideation is yes if yes to ok10 or yes to suicidal ideation over last 30 days. Ideation over last 30 days is yes if yes to PHQ9 or yes to S4. P-values from chi-square test are reported.

Table 2

Sample Characteristics by Suicidal Ideation Status (n=567)

	Ideation=0 n=440		Ideation =1 n=127		p-value
	%/mean	SD	%/mean	SD	
Sociodemographics					
Site					
Massachusetts	35%		31%		reference
Spain	65%		69%		0.464
Age	41.4	(12.4)	41.6	(12.0)	0.851
Gender					
Male	39%		35%		0.364
Female	61%		65%		
Race					
Non-White	77%		73%		0.320
White	23%		27%		
Economic Status					
Live very well or comfortably	31%		25%		0.209
Live check-to-check or poor	69%		75%		
Education Level					
Less than high school	42%		34%		0.077
HS diploma, GED, vocational school, or more	58%		66%		
Had a Primary Sexual Partner in the Past Year					
No	24%		30%		0.155
Yes	76%		70%		
Clinical Profile					
Depression (PHQ-9)*	6.4	(5.2)	13.7	(5.3)	<0.001
Generalized Anxiety (GAD-7)	4.9	(4.7)	10.8	(5.1)	<0.001
PTSD (PCL-C)	28.2	(14.0)	49.1	(16.9)	<0.001
Drug Abuse (DAST)	0.6	(1.7)	1.7	(2.7)	<0.001
Alcohol Use Disorders (AUDIT)	4.4	(6.3)	8.8	(10.4)	<0.001
Benzodiazepines	1.8	(3.6)	5.9	(6.1)	<0.001

	Ideation=0 n=440		Ideation =1 n=127		p-value
	%/mean	SD	%/mean	SD	
Any Trauma Exposure					
No	21%		2%		<0.001
Yes	79%		98%		
Cultural, Contextual and Social Factors					
Citizenship					
Noncitizen	38%		45%		0.170
Citizen	62%		55%		
Sense of Belonging					
No	25%		45%		<0.001
Yes	75%		55%		
Years in US/Spain					
Less than 10 years	30%		27%		0.500
10 years or more	70%		73%		
Number of Home Visits in the Past 12 Months	0.3	(0.7)	0.4	(0.7)	0.429
Discrimination Scale	0.7	(1.1)	1.2	(1.4)	<0.001
Ethnic Identity Scale	9.6	(2.2)	8.9	(2.5)	0.003
Family Conflict Scale	1.4	(1.9)	2.8	(2.3)	<0.001
Recruitment Site					
Primary Care Clinics	70%		40%		reference
Mental Health Clinics	10%		26%		<0.001
Substance Abuse Clinics	8%		24%		<0.001
HIV Clinics	9%		7%		0.363
Community Agencies	2%		3%		0.109

Note: All statistics were calculated using the imputed sample. One item relating to suicidal ideation was omitted from PHQ-9 in this analysis. Column percents are reported for categorical variables whereas mean and standard deviations are reported for continuous variables. Since Chi square test is not valid for multiple imputed data, we regressed each covariate on suicidal ideation status over the last thirty days to obtain the p-value.

Table 3
Association Between Suicidal Ideation over past 30 days and Sociodemographics, Cultural Factors, Clinical Characteristics, and Type of Clinic (Presented as Odds Ratios(ORs) (n=567)

	Model (1) Site Only	Model (2) (1) +Sociodemographics	Model (3) (2)+Cultural Factors	Model (4) (2)+Clinical Profile	Model (5) (2)+Cultural Factors+ Clinical Profile	Model (6) (5) +Recruitment Site
Sociodemographics						
Site						
Massachusetts	Reference					
Spain	1.17 [0.77,1.78]	1.12 [0.72,1.74]	1.33 [0.81,2.20]	1.42 [0.79,2.56]	1.73 [0.90,3.31]	1.58 [0.81,3.08]
Age						
		1.00	1.00	0.99	0.99	0.98
		[0.98,1.02]	[0.98,1.02]	[0.97,1.02]	[0.96,1.02]	[0.96,1.01]
Female		1.27	1.39	1.58	1.65	1.74
		[0.83,1.93]	[0.89,2.17]	[0.91,2.74]	[0.93,2.93]	[0.95,3.21]
White		1.23	1.26	0.90	0.89	0.84
		[0.77,1.96]	[0.77,2.07]	[0.50,1.61]	[0.49,1.62]	[0.45,1.54]
Economic Status						
Live very well or comfortably	Reference					
Live check-to-check or poor	1.41 [0.88,2.25]		1.20 [0.73,1.99]	0.88 [0.49,1.57]	0.80 [0.44,1.48]	0.84 [0.46,1.55]
Education Level						
Less than high school	Reference					
HS diploma, GED, vocational school, or more	1.51 [0.98,2.32]		1.37 [0.86,2.18]	1.32 [0.78,2.23]	1.43 [0.82,2.50]	1.46 [0.83,2.57]
Had a Primary Sexual Partner in the Past Year	0.73 [0.46,1.15]		0.79 [0.48,1.29]	0.65 [0.37,1.16]	0.68 [0.38,1.22]	0.63 [0.35,1.15]
Cultural, Contextual and Social Factors						
Citizenship						
			0.75		0.45**	0.44**
Sense of Belonging						
			[0.48,1.18]		[0.26,0.77]	[0.26,0.77]
Years in US/Spain						
			0.78 [0.48,1.26]		0.91 [0.52,1.59]	0.91 [0.51,1.61]

	Model (1) Site Only	Model (2) (1) + Sociodemographics	Model (3) (2) + Cultural Factors	Model (4) (2) + Clinical Profile	Model (5) (2) + Cultural Factors + Clinical Profile	Model (6) (5) + Recruitment Site
Less than 10 years			Reference			
10 years or more			1.41 [0.83, 2.40]		2.22* [1.18, 4.18]	2.22* [1.17, 4.22]
Number of Home Visits in the Past 12 Months			1.17 [0.88, 1.55]		1.02 [0.69, 1.51]	1.07 [0.72, 1.59]
Discrimination Scale			1.26* [1.05, 1.51]		1.11 [0.89, 1.37]	1.12 [0.90, 1.39]
Ethnic Identity Scale			0.92 [0.84, 1.01]		1.02 [0.90, 1.14]	1.03 [0.92, 1.16]
Family Conflict Scale			1.28*** [1.15, 1.41]		1.02 [0.90, 1.16]	1.02 [0.90, 1.17]
Clinical Profile						
Depression (PHQ-9)*				1.14** [1.05, 1.23]	1.14** [1.06, 1.24]	1.14** [1.05, 1.23]
Generalized Anxiety (GAD7)				1.00 [0.93, 1.08]	1.01 [0.93, 1.09]	1.02 [0.94, 1.10]
PTSD (PCL-C)				1.03** [1.01, 1.06]	1.04** [1.01, 1.06]	1.03** [1.01, 1.06]
Drug Abuse (DAST)				1.11 [0.95, 1.29]	1.11 [0.94, 1.30]	1.07 [0.90, 1.28]
Alcohol Abuse (AUDIT)				1.02 [0.99, 1.06]	1.02 [0.98, 1.05]	1.01 [0.98, 1.05]
Benzodiazepines				1.03 [0.97, 1.09]	1.03 [0.97, 1.10]	1.02 [0.96, 1.09]
Any Trauma Exposure				6.67* [1.38, 32.30]	7.76* [1.37, 43.90]	7.39* [1.31, 41.65]
Recruitment Location						
Primary Care Clinics						Reference
Mental Health Clinics						1.80 [0.86, 3.76]
Substance Abuse Clinics						1.98 [0.79, 4.94]
HIV Clinics						1.19 [0.43, 3.30]
Community Agencies						2.69 [0.63, 11.49]

	Model (1) Site Only	Model (2) (1) +Sociodemographics	Model (3) (2)+Cultural Factors	Model (4) (2)+Clinical Profile	Model (5) (2)+Cultural Factors+ Clinical Profile	Model (6) (5) +Recruitment Site
Average Nagelkerke's R square	0.005	0.030	0.177	0.474	0.496	0.507

Note: Models were estimated using the imputed sample. 95% Confidence Intervals of ORs are reported in brackets.

* p<0.05,
** p<0.01,
*** p<0.001.