

Somatic, Anxiety, and Depressive (SAD) Symptoms in Young Adult Latinx Immigrants: Prevalence and Predictors

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Abstract

Certain immigration factors may increase somatic, anxiety, and depression (SAD) symptoms in Latinx immigrants. Our study examined prevalence of SAD symptoms in Latinx immigrants 18-29 presenting to primary care with correlates of acculturation, immigration, and legal status. SAD symptoms were measured using the PHQ-14, GAD-7 and PHQ-8. Moderate somatization (37%), anxiety (20%), and depression (25%) were common. Multivariable analysis found five immigration factors predicted a higher composite SAD score and the presence of each additional factor increased likelihood of a SAD score ≥ 20 (OR=1.7; 95% CI, 1.1 to 2.5). SAD scores increased in a dose-response fashion (8.3, 10.5, 14.8, 17.1, 21.7, 29.3) with the added presence of each factor. Elevated SAD scores were not associated with gender, marital status, education, income, country of origin, or acculturation. Screening with our five factor immigration distress index may help identify patients at risk for higher SAD scores during a primary care visit.

Key Words: depression, anxiety, somatization, Latinx, immigration, undocumented

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Background

An estimated 11 million people reside in the United States (U.S.) without a federally recognized lawful status and of these, nearly eight million are from Mexico and Central America[1]. Though commonly referred to collectively as undocumented immigrants (UIs), it is a highly diverse group of Latinx immigrants facing a range of legal marginalization. The majority of UIs are from Mexico, but since 2007 there has been a marked increase in UIs from Central America as people flee violence, poverty, and attempt to reunite with family members in the U.S.[2]. Studies have suggested a link between psychological distress and UI status, but it has not recently been examined within the context of primary care where patients commonly both present and receive treatment for anxiety, depression, and physical symptoms [3-11].

UIs have a unique set of circumstances that may increase the risk for psychological distress and the American College of Physicians has even highlighted the need for this population to have comprehensive primary care access [3-5, 9, 12]. The social stresses faced by UIs are complex and include varying degrees of marginalization, discrimination, deportation fears, and other social determinants of health [9]. English language proficiency and acculturation, occupation type, and low educational level likely contribute to distress particularly in immigrants from Mexico and Central America and can be compounded by the chronic stress of poverty [13, 14]. Recent changes in the political climate have likely heightened the stress among this group, as well [9].

Most prior studies examining psychological distress in Latinx UIs have studied middle age immigrants from Mexico living in large, well-established immigrant communities, but not specifically in the healthcare setting [1, 4, 9, 13, 15]. Young adult UIs in particular may have increased risk for psychological distress as they attempt to assume adult roles, but because of undocumented status, face double standards when applying for jobs or higher education [16][17]. A recent study by Raymond-Flesch et al. cited the risk posed to mental health of UI young adults as they attempt to navigate a critical developmental period marked by increased autonomy, self-reliance, and increasing legal responsibility while simultaneously facing

significant barriers to legal job acquisition and higher education [1]. A similar paradox has also been described in young adults with chronic conditions of childhood and young adults exiting foster care who both face varying degrees of activity limitation as they enter adulthood [18, 19].

Methodological rigor for assessing immigration status also presents unique challenges [1, 3, 20]. In a 2016 literature review of mental health among adult Latinx UIs, Garcini et al. discussed the need for future research to include sounder methods for determining legal status, sampling of non-Mexican Latinx immigrants, and consideration of the potential differences between recent and non-recent UIs [4]. The present study aims to contribute to these gaps in the literature and includes the consideration of both psychological and physical symptoms. In particular, somatic, anxiety, and depressive symptoms (SAD triad) have high rates of co-occurrence and may respond to common treatments [21-23]. Specifically, our study addressed three questions. First, what is the prevalence of depression, anxiety, and somatization in Mexican and Central American young adult immigrants accessing primary care? Second, which patient and immigrant contextual factors predict higher levels of SAD symptoms? Third, is there a relationship between legal marginalization (being “undocumented”) and SAD symptom burden?

Methods

Participants and Data Collection

The Midwest has a growing number of UIs and access to healthcare for this population is limited, with safety-net health care systems often providing the only consistent and affordable access to care. We conducted a one-time questionnaire study of 18 to 29 year-olds from Mexico, Guatemala, El Salvador, or Honduras. Study participants were recruited at a Midwest safety-net primary care health system that provides care to undocumented/legally marginalized immigrants. We focused on a more homogenous sample by: limiting the study to younger adults, more clearly defining immigration status, and including immigrants from both Mexico and the northern triangle of Central America [2]. We did not include Latinx patients born in the U.S.

The study was approved by the Indiana University Institutional Review Board. The study was awarded exempt status, in keeping with recommendations to safekeep patient identity for vulnerable populations. Consent was obtained for all participants per usual methods introducing the study and presenting a study design sheet to all participants with contact information, but the recording signatures/names was omitted.

Survey administration occurred from January to September 2019. Potential participants were identified on the clinic schedule and approached either before or after their clinic visit to determine eligibility. Enrollment and verbal consent were obtained by one of four clinical staff. The use of verbal consent helped to safeguard and assure anonymity, as has been done in other studies with vulnerable patient populations [1, 3, 24, 25]. Due to the potentially vulnerable nature of the study population, great care was taken to emphasize the anonymity of the study, the sensitive nature of some of the content, and the option to omit any questions the respondent considered too sensitive. Patients were able to choose a Spanish or English version of the survey.

Measures

The study survey included measures of depression, anxiety, and somatic symptoms as well as questions about sociodemographic and immigration contextual factors and a measure of acculturation. Depressive symptoms were assessed with the well-established 8-item Patient Health Questionnaire depression scale (PHQ-8) which has nearly identical scores and severity thresholds as the nine-item PHQ [26]. Anxiety symptoms were assessed with the 7-item Generalized Anxiety Disorder scale (GAD-7), [27]. Although initially developed for generalized anxiety disorder, the GAD-7 also has good operating characteristics for assessing other common anxiety disorders as well [28]. Somatic symptoms were assessed with the 14-item version of the PHQ somatic symptom scale (PHQ-14).which is similar to the fifteen-item version (except for eliminating the sexual health item) and has nearly identical scores and severity thresholds [29]. Scores for the PHQ-8, GAD-7, and PHQ-14 range from 0 to 24, 0 to 21, and 0

to 28, with higher scores representing more severe depressive, anxiety, and somatic symptoms, respectively. The reliability and validity of all three scales have been well-established in multiple studies [8].

Acculturation was measured using the Brief Acculturation Scale for Hispanics [30, 31]. BASH total scores range from 0 to 20 with higher scores representing greater levels of acculturation, with a score >12 considered acculturated. The immigration contextual factor questions were developed after an extensive review of the available literature specifically as it pertains to Latinx UIs and mental health. Items chosen were based upon previously identified factors impacting mental health in the literature as well as clinical experience with this population. Some factors linked to mental health in this population were not included (e.g., substance use) in order to reduce survey length and the number of sensitive items.

Immigration status and legal marginalization were determined through a rule out system that attempted to identify immigration status by a series of yes and no questions through which one can infer undocumented status. This has previously been described in the literature as a method for ascertaining immigration status in a more sensitive manner [32]. The questions were intended to be specifically relevant to the Latinx patient population at the clinic and included whether participants had Deferred Action for Childhood Arrivals (DACA), pending or approved asylee status, pending or approved visas or lawful status related to victims of human trafficking and violence, permanent resident status, or naturalized citizen status.

The questionnaire was administered on a tablet device via a secure web-based survey tool (REDCap), except in some instances when a paper copy was provided if a tablet device was not available. Previous research has suggested tablet survey tools may confer additional security when answering sensitive questions [33]. Participants were able to choose between a Spanish or English questionnaire and in almost all cases, the questionnaire was self-administered. The symptom scales and BASH already have validated Spanish-language versions and in the case of the depression and anxiety scales, are already incorporated in both Spanish and English versions at our healthcare system. The sociodemographic and immigration

questions were translated by a language services company specializing in medical translation and interpretation in our community. The study investigators were available if any questions or clarifications were needed during the completion of the questionnaire. After the first ten surveys were completed, a few minor edits in word choices were made in the Spanish language version. Participants were given a \$5 gift card to compensate their time.

Statistical Analysis

Descriptive statistics were used to characterize patient and contextual variables. The primary outcome was the composite SAD score which combined the scores of the PHQ-8, GAD-7, and 12 of the 14 somatic items (the fatigue and sleep items were already captured by the PHQ-8 so were not counted twice). Thus, the total SAD score ranged from 0 to 69. ANOVA was used to examine bivariate associations of patient and contextual factors with the PHQ-8, GAD-7, PHQ-14, and SAD scores. Variables significant at $P < 0.20$ were entered into four separate multivariable linear regression models to determine independent correlates of each symptom scale score. PHQ-8, GAD-7, and PHQ-14 scores were analyzed as binary variables with scores ≥ 10 on each scale being classified as elevated.[34] We aimed to enroll 100 participants because a sample sizes of 96 allowed binary variable point estimates to have a 95% confidence interval of $\pm 10\%$. A SAD composite score ≥ 20 was operationally defined as high for several reasons. First, this would correspond, on average, to at least one SAD condition to be moderately elevated (≥ 10) and the other two at least mildly elevated (≥ 5). Second, this cut point exceeded the sum of the mean scores for the three individual symptom scales as well as the mean SAD composite score, which were 19.5 and 17.7, respectively. The same variables used in the linear regression models were entered into separate multivariable logistic regression models where the dependent variable was the dichotomized scale score. Finally, we used receiver operating curve analysis to determine the area under the curve (AUC) for the IDI score in predicting a SAD score ≥ 20 . AUC values of ≥ 0.70 and ≥ 0.80 represent good and very good predictive models.

Results

Of 124 patients invited to participate, only 14 declined to complete the survey, most commonly reporting time restraints. Three participants left most portions of the questionnaire blank, for unclear reasons, resulting in a study sample of 107. Study population characteristics are presented in **Table 1**. The mean age in years of the sample was 23.9 (3.9) and the mean age at which individuals had moved to the U.S. was 13.0 (8.5). Of the 33 patients who reported having received prior mental health treatment, the majority (94%) received it after immigrating to the U.S. The mean (SD) symptom scale scores were 5.9 (5.5) for PHQ-8 depression; 5.7 (5.5) for GAD-7 anxiety; 7.9 (5.3) for PHQ-14 somatization; 17.7 (14.1) for composite somatic-anxiety-depression (SAD); and 8.5 (4.3) for BASH. Threshold level scores (≥ 10) for clinically important symptoms were 37% for somatization, 25% for depression, and 20% for anxiety. The PHQ-8 correlated highly with the GAD-7 ($r = 0.84$) and PHQ-14 ($r = 0.77$), and the GAD-7 and PHQ-14 were also highly correlated ($r = 0.73$).

Table 2 shows the bivariate associations between patient characteristics and SAD symptom scores. Notably, factors significantly associated with the total SAD score generally were also significantly associated with the individual somatic, anxiety and depression scores. Earlier age of arrival to the U.S. and a history of formal education in the U.S. were significantly associated with higher SAD scores. There was a trend towards higher distress in individuals categorized as “legally marginalized” (this included any individual without asylum, permanent residency, or citizenship), but it did not reach significance. Composite SAD scores were lowest in participants having asylum and highest in the group reporting pending asylum (8.3 and 26.7, respectively), whereas SAD scores in the other 3 residency categories ranged from 15.2 to 18.3. Among participants without a legally recognized immigration status, having DACA did not significantly influence the SAD score. Sex, marital status, education, income, country of origin, and degree of acculturation were also not associated with increased SAD scores.

Table 3 lists the immigration contextual factors significantly associated with higher SAD scale scores. The most frequently endorsed factors were fear of deportation of a family member (77%) and fear of self being deported (78%). SAD scores were nearly doubled in participants reporting discrimination, with a mean of 27.4. An immigration distress index (IDI), which was a simple count of the 5 factors, predicted distress in a dose-response fashion: SAD scores in patients with 0, 1, 2, 3, 4, and 5 IDI factors being 8.3, 10.5, 14.8, 17.1, 21.7, and 29.3, respectively. The AUC for the IDI in predicting a high SAD score was 0.73 indicating reasonably good predictive value. IDI cutpoints of 2, 3, and 4 had sensitivities of 0.94, 0.74, and 0.54 and specificities of 0.30, 0.57, and 0.78.

Table 4 summarizes the multivariable modeling results for sociodemographic and immigration contextual factors associated with significant distress. Three factors associated with SAD scores in bivariate analyses were not entered into the models: education in the U.S. since it strongly corresponded to age of arrival, and mental health treatment and self-rated health because they are expected consequences rather than the cause of higher SAD scores. Both the immigration distress index and younger age at arrival to the U.S. predicted higher SAD scores. Participants who immigrated before the age of 18 had nearly a 7-point higher SAD score than those arriving in the U.S. at age 18 years or older. Each additional IDI factor increased the SAD continuous score by 3 points (effect size of 0.21) and increased the likelihood of a SAD score \geq 20 (OR=1.7; 95% CI, 1.1 to 2.5). When gender and acculturation were added to the models, these two variables were neither significant nor did they change the significance of the other predictors.

The **Figure** displays the frequency of somatic symptoms endorsed by participants, of which the most common were fatigue (66%), headache (66%), back pain (64%), and insomnia (56%). Greater symptom severity was reported most often for insomnia (32%), headache (29%), and fatigue (24%).

Discussion

This is the first study to examine somatization, anxiety, and depression both as individual domains and as a composite construct in a primary care setting of Latinx patients facing legal marginalization/undocumented status. The study provides evidence for the co-occurrence of the SAD triad symptoms in this patient population and contributes to the rationale for a joint assessment of the symptoms as described in other areas of primary care [35, 36]. Assessing the SAD triad is of particular significance to the primary care provider since patients with distress commonly present reporting somatic, rather than anxiety or depression symptoms [37, 38]. For certain Latinx immigrant patient populations, including somatic symptoms in the evaluation of distress may be especially relevant [35, 39].

This study also allowed the identification of a set of five immigration contextual factors most predictive of distress. The presence of each additional factor was associated with greater SAD symptoms in a striking dose-response fashion and we are newly describing this group of factors as the immigration distress index (IDI). Among the different IDI factors, discrimination was associated with the highest SAD scores, consistent with other studies reporting a strong link between discrimination and psychological distress [40]. Fears of deportation for both self and family member were also notable contributors to the IDI and highlight stresses specific to this patient population.

We attempted to describe immigration legal status with greater specificity in this study, as well, to better understand how marginalized/undocumented legal status might relate to SAD symptoms. Participants who reported having asylum had a trend towards lower SAD scores as compared to the highest scores in those with pending asylum. The small number of individuals in some of these subgroups limited meaningful statistical analysis, but our study adds to a growing body of literature supporting the ability to include legally marginalized/undocumented persons in healthcare research and the willingness and interest of this patient population to participate in studies that promote improvements in their healthcare [1]. More research is needed to further explore SAD symptoms in the context of varying levels of legal marginalization/undocumented status.

Although earlier research in DACA recipients demonstrated an association with DACA and improved health [41, 42], the DACA recipients in our study did not have a trend towards lower SAD scores. The previously described health benefit may have diminished amidst the rescinding of DACA and looming fears of deportation or loss of educational/employment opportunities. Another possibility is that experiences of discrimination or other IDI factors in our study population may have negated a protective benefit of DACA.

An additional unexpected finding in our study was the lack of association between acculturation and higher SAD scores. Acculturation has previously been at least partially implicated in the deterioration of mental health over time among immigrants after moving to the U.S. [43]. Our findings may be a result of the specific patient population examined or a protective benefit of certain aspects of acculturation, for example higher medical literacy and ability to access care despite being undocumented. Further studies in a community setting comparing different groups of Latinx immigrants might serve to further explain the finding.

While acculturation was not associated with higher SAD scores, living in the U.S. since an earlier age and having formal education in the U.S. were both associated with higher SAD scores in the bivariate analyses. While purely speculative, it seems plausible that being undocumented disrupts normal middle and late adolescent development by limiting the typical access points to adulthood like obtaining a driver's license, legal employment, and higher education. For a young adult who has grown up with access to K-12 education somewhat integrated into the community, and possibly without full comprehension of the implications of undocumented status, it could certainly cause significant distress upon reaching adulthood with undocumented status. The perception and experience of discrimination might also be greater for a young adult who has lived in the U.S. since an early age and had access to more formal education.

Young adults who immigrate in their late teenage years and early 20s often do not attend formal schooling in the U.S. nor arrive with that expectation. They also may not integrate into the community to the same degree as an immigrant who has grown up here since early

childhood or infancy, thus potentially limiting some of their exposures to discrimination. Certainly there may be biological factors related to the trauma of living undocumented or even in a family with undocumented members, but epigenetic changes secondary to trauma and poverty and disease would also be a factor impacting some of our more recent immigrant populations who have fled increasing violence and poverty in their native countries.

It was also unexpected in our study to find SAD scores as high in the men as in the women, since women routinely present with higher rates of anxiety, depression, and somatization [44-46]. While the study was underpowered for men, it is interesting to consider whether the impact of certain immigration factors causes similar levels of distress in both groups when also facing legal marginalization or undocumented status. Further studies exploring the rates of SAD symptoms and IDI factors in young adult Latinx patients within the surrounding community might help to illuminate this unexpected finding.

Limitations

The current study has several limitations. Participants were identified by convenience sampling in a Midwest healthcare system providing care to many undocumented and legally marginalized Latinx immigrants, but is not representative of all Latinx immigrants. Although our SAD cut point of 20 had a theoretical rationale, it warrants further empirical validation in studies that include additional measures such as functional status or quality of life. While our results did not show a significant difference in SAD scores based on a binary grouping of legal marginalization, the small study size did not allow for an adequate statistical comparison of different sub-categories of immigration status. Further research among those unable to present to healthcare is warranted to determine whether they are at an even greater risk of distress and whether the IDI factors identified in our study also contribute to fear of accessing healthcare. While protective factors were not focused on in great detail in the current study, it remains another area of interest when looking at ways for primary care providers to have meaningful contributions to improving SAD symptoms.

New Contribution to the Literature

Our study provides a potential pathway for studying both mental and physical symptoms of distress in a vulnerable Latinx immigrant patient population with attention to immigration distress factors and there are numerous clinical and health policy implications. The brief IDI could be administered during a clinic visit to identify Latinx immigrants at higher risk for SAD symptoms and could prompt referrals for medical-legal or other targeted community resources in conjunction with mental health evaluation and treatment. Provider acknowledgement of immigration distress factors may also foster more confidence in the patient-provider relationship and in this way, contribute to better health outcomes, as well. Our study also contributes to a growing body of literature highlighting the impact of social determinants of health on vulnerable immigrant populations and can help inform health care policy makers striving to better understand health inequities and the impacts of chronic stress on health.

Compliance with Ethical Standards

Ethical Approval

This study was approved the Indiana University IRB.

Consent to Participate

Informed verbal consent was obtained prior to conducting the interview.

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Table 1. Characteristics of Study Sample (n = 107)

Patient Characteristic	N	%
Survey language		
Spanish	72	67.3
English	35	32.7
Gender		
Women	87	81.3
Men	20	18.7
Country of birth		
Mexico	67	62.6
Honduras	17	15.9
Guatemala	12	11.2
El Salvador	11	10.3
Education in U.S*		
None	33	32.0
8 th grade or less	7	6.8
Some high school	18	17.5
High school	40	38.8
College	5	4.9
Marital status*		
Never married	46	44.2
Member of unmarried couple	29	27.9
Married	22	21.2
Separated	7	6.7
Income		
Comfortable	41	38.3
Just enough	56	52.3
Not enough	10	9.4
Residency/immigration status*		
Unauthorized	41	41.0
DACA	21	21.0
Pending asylum	21	21.0
Asylum or non-immigrant visa	9	9.0
Citizen or permanent resident	8	8.0
Self-rated health		
Excellent	13	12.2
Very good	29	27.1
Good	33	30.8
Fair	31	29.0
Poor	1	0.9
Mental health treatment		
Yes	33	30.8
No	74	69.2

* Education, marital status, and residency status available for 103, 104 and 100 patients

Table 2. Bivariate Associations between Patient Characteristics and Somatic-Anxiety-Depression (SAD) Scores*

Patient Characteristic	N	PHQ-8 Depression Mean (SD)	P	GAD-7 Anxiety Mean (SD)	P	PHQ-14 Somatic Mean (SD)	P	SAD Total Score Mean (SD)	P
Age moved to U.S.									
18 or greater	33	3.9 (3.9)	.004	3.5 (3.6)	.001	5.5 (4.3)	.003	11.4 (10.0)	.0008
0-17	70	6.8 (5.9)		6.8 (6.0)		8.9 (5.3)		20.4 (14.8)	
Education in U.S.									
No formal schooling in U.S.	33	3.9 (4.0)	.003	3.1 (3.7)	.0001	5.6 (4.1)	.002	10.9 (10.0)	.0002
Formal schooling in U.S.	70	6.9 (5.9)		7.1 (5.9)		9.1 (5.4)		21.1 (14.6)	
Country of birth									
Central America	40	4.5 (4.3)	.02	4.4(4.5)	.08	6.6(4.9)	.08	13.7(11.7)	.04
Mexico	67	6.8 (5.9)		6.5 (6.0)		8.5 (5.4)		19.8 (14.8)	
Marital status									
Married or partnered status	51	4.5 (4.9)	.02	4.3 (5.3)	.02	7.3 (4.9)	.35	14.7 (13.2)	.06
Not in partnership	53	7.2 (5.8)		6.9 (5.6)		8.3 (5.5)		20.2 (14.6)	
Income									
Comfortable	41	4.6 (5.1)	.06	4.3 (5.1)	.03	5.8 (4.5)	.002	13.2 (12.5)	.01
Just or not enough	66	6.7 (5.6)		6.7 (5.6)		9.1 (5.3)		20.6 (14.4)	
Self-rated health									
Excellent or Very good	42	3.2 (3.2)	<.0001	3.1 (3.1)	.0001	5.5 (4.1)	<.0001	10.3 (8.1)	<.0001
Good	33	6.5 (6.0)		6.6 (6.3)		8.2 (5.3)		19.3 (15.4)	
Fair or Poor	32	9.1 (5.6)		8.5 (5.9)		10.9 (5.1)		26.4 (13.9)	
Mental health treatment history									
No	74	4.3 (4.4)	<.0001	4.1(4.5)	<.0001	6.6 (4.7)	.0003	13.2 (11.4)	<.0001
Yes	33	9.5 (6.0)		9.3 (6.0)		10.6 (5.4)		26.8 (14.8)	
Legally marginalized									
No	17	3.6 (3.6)	.02	4.0 (3.7)	.07	6.8 (4.3)	.37	13.0 (9.0)	.057
Yes	83	6.3 (5.6)		6.1 (5.9)		8.0 (5.5)		18.4 (14.8)	
Gender									
Women	87	5.8 (5.6)	.69	5.6 (5.7)	.61	7.9 (5.3)	.79	17.6 (14.3)	.99
Men	20	6.4 (4.9)		6.3 (5.0)		7.6 (5.1)		18.1 (13.1)	
Acculturated (BASH > 12)									
No	80	5.7 (5.3)	.38	5.3 (5.6)	.18	7.7 (5.5)	.58	16.9 (14.3)	.31
Yes	26	6.8 (6.0)		7.0 (5.4)		8.4 (4.5)		20.1 (13.4)	
DACA									
			.26		.44		.57		.39

Yes	58	5.3 (5.1)	5.5 (5.4)	7.7 (5.0)	16.6 (13.4)
No	32	6.7 (6.5)	6.5 (6.2)	8.3 (6.0)	19.4 (16.1)

* Variables significant for one or more psychological scores are included in the table. Gender, acculturation, and DACA status are included because each was postulated to be significant. Total N for several variables is less than 107

Table 3. Immigration Distress Factors and Somatic-Anxiety-Depression (SAD) Scores

Immigration Distress Factor	N	PHQ-8 Depression Mean (SD)	P	GAD-7 Anxiety Mean (SD)	P	PHQ-14 Somatic Mean (SD)	P	SAD Total Score Mean (SD)	P
Fears of limited health access			.005		.002		.0006		.0009
No	55	4.5 (4.8)		4.1 (4.8)		6.1 (4.9)		13.1 (12.7)	
Yes	50	7.4 (5.8)		7.5 (5.8)		9.7 (5.0)		22.4 (14.0)	
Discrimination experiences			<.0001		.0005		.0002		<.0001
No	78	4.7 (4.7)		4.4 (4.6)		6.7 (4.7)		14.2 (11.7)	
Yes	27	9.4 (6.0)		9.4 (6.2)		11.0 (5.4)		27.4 (15.6)	
Worries about employment			.12		.007		.007		.008
No	53	5.1 (4.9)		4.3 (4.2)		6.4 (4.4)		14.0 (11.2)	
Yes	52	6.8 (5.9)		7.2 (6.3)		9.3 (5.7)		21.5 (15.7)	
Deportation worries about family			.005		.07		.14		.02
No (or lives alone)	24	3.7 (3.4)		3.8 (5.0)		6.4 (4.6)		12.7 (10.4)	
Yes	79	6.6 (5.9)		6.3 (5.6)		8.3 (5.4)		19.2 (14.8)	
Deportation worries about self			.18		.02		.19		.046
No	22	4.8 (3.9)		3.8(3.4)		6.5(4.8)		13.4 (10.1)	
Yes	80	6.3 (5.9)		6.3 (6.0)		8.2 (5.4)		19.0 (15.0)	
Immigration Distress Index (IDI) *			.008		.002		.001		.001
0	6	3.5 (2.1)		1.7 (1.6)		4.7 (3.1)		8.3 (5.5)	
1	16	3.4 (3.9)		2.7 (2.8)		5.9 (4.8)		10.5 (8.6)	
2	27	4.9 (4.7)		4.5 (4.5)		7.0 (5.1)		14.8 (12.5)	
3	22	5.5 (5.3)		6.3 (5.3)		6.7 (4.1)		17.1 (12.6)	
4	18	7.3 (6.1)		7.4 (6.3)		9.2 (5.4)		21.7 (14.4)	
5	16	9.9 (6.4)		9.4 (6.7)		12.5 (5.3)		29.3 (16.9)	

* IDI = number of immigration distress factors

Table 4. Multivariable Modeling to Identify Factors Independently Associated with Somatic-Anxiety-Depression (SAD) Scores

Predictor *	N	Somatic-Anxiety-Depression (SAD) Score				Somatic-Anxiety-Depression Binary (SAD score ≥ 20)			
		Multivariate Linear Regression				Multivariate Logistic Regression			
		Beta	SE	T	P	Beta	SE	OR (95%)	P
Age moved to US									
• ≥ 18	33	<i>reference</i>				<i>reference</i>			
• 0-17	70	6.85	3.25	2.11	0.038	1.27	0.70	3.58 (0.91, 14.1)	0.069
Country									
• Central America	40	<i>reference</i>				<i>reference</i>			
• Mexico	67	1.02	3.02	0.34	0.738	-0.13	0.61	0.88 (0.27, 2.88)	0.830
Married or partnered									
• Yes	51	<i>reference</i>				<i>reference</i>			
• No	53	3.36	2.62	1.28	0.204	0.24	0.51	1.28 (0.47, 3.44)	0.628
Income									
• Comfortable	41	<i>reference</i>				<i>reference</i>			
• Just or Not Enough	66	4.52	3.04	1.49	0.140	0.62	0.60	1.85 (0.58, 5.96)	0.300
Legally marginalized									
• No	17	<i>reference</i>				<i>reference</i>			
• Yes	83	2.19	3.38	0.65	0.519	-0.20	0.66	0.82 (0.23, 2.96)	0.758
Immigration distress Index (each 1-point increase)	105	3.18	1.02	3.13	0.002	0.52	0.21	1.68 (1.12, 2.51)	0.012

