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ORIGINAL PAPER

Immigrant Disparities in Suicide Ideation: Variation Across Age of Migration, Gender, and Nativity

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Abstract
While mounting evidence reveals an immigrant paradox whereby foreign-born individual's exhibit better than expected health outcomes, this advantage is not evenly distributed with evidence of differential vulnerabilities for suicidality comparing 1.5 and first generations. We use a developmental framework to explore for variation in suicidality by developmental stage across gender and nativity. Data come from the National Latino and Asian American Study (NLAAS). ANOVA and logistic regression models are used to examine patterns in the prevalence of suicide ideation. The association between suicidality and age at migration is non-linear with differential vulnerabilities to suicide ideation between age of migration groups and across gender and nativity. Findings support calls for a more nuanced disaggregation of age of migration and its intersection with gender and nativity.

Keywords Immigration · Suicide ideation · Age at migration · Life course · Immigrant paradox

Introduction

Counter to expectations and anti-immigrant rhetoric, in many ways today's immigrants appear particularly resilient to the disruptive forces of migration [1]. A considerable body of research reveals an immigrant paradox where, despite a high degree of economic disadvantage and immigrant specific stressors, foreign-born individuals evidence better than expected resiliency and health outcomes, and are less likely to engage in risky and criminal behaviors compared to their similarly situated U.S.-born peers [2–7]. Though the immigrant paradox appears to be wide-spread, the benefit is not evenly distributed across all immigrants for every outcome [8–10]. In particular, there appear to be differential vulnerabilities for mental duress depending upon one's age at migration, gender, and ethnicity [4, 11, 12].

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The growth of the U.S. immigrant population generally, and particularly immigrant children, in the U.S. has focused attention on the health and behavioral profile of immigrants [13]. In 2014, more than 13% (roughly 42 million persons) of the United States population was foreign-born representing a fourfold increase from 1960 to 2014 [14]. Simultaneously, following a period of decline, suicide rates nationally have been on the rise and currently represent a 30-year high [15]. The increase has disproportionately affected youth and Latina adolescents specifically [9, 16, 17]. The confluence of rising suicidality and historically high immigrant flows [14] signals an important public health challenge. Drawing on data from the National Latino and Asian American Study (NLAAS), this research adds to our understanding of the distribution of suicidality among first-generation immigrants by adapting the life course principle of timing to explore variation in suicide ideation by developmental stage. Specifically, we examine whether age of migration—distinguishing child, adolescent, young adult, and adult migrants—modifies patterns of suicide ideation among first-generation immigrants. In light of evidence from extant research revealing differential vulnerabilities across gender and nativity [4, 11, 12], we explore for differences in suicide ideation at the intersection of age of migration and gender among Latinx and Asian immigrant groups. Patterns of differential vulnerabilities observed in these data support arguments for a more

nuanced disaggregation of age of migration and its intersection with gender and nativity [18–21].

Review of the Literature

On average, the foreign-born exhibit lower levels of mental illness and suicidality compared to the native born [4, 8, 22, 23]; a pattern that holds when assessing within-ethnic group comparisons [24, 25]. Yet, the protective benefit of immigrant-status is not universal with the risk of mental illness varying by factors such as immigrant generation, duration in the United States, nativity, and context of reception [4, 10, 26–29] and there are indications that the protective benefit may wane over time [30]. For instance, while the precise patterns are unclear, evidence suggests that those with greater exposure to the American mainstream have a heightened risk of duress. Wadsworth and Kubrin [27] suggest that "[a]s individuals and communities become more "Americanized," they may let go of shared belief systems, rituals, and social networks that promote integration into ethnic communities and strengthen group solidarity."

Central to understanding differences in the mental health of immigrants is the age at which migration occurs. As Jasso [18] notes "All the processes associated with migration are rooted in time. … They occur at different ages and bear the imprint of those ages." The age at which individuals experience events is a critical focal point for the life course perspective; the principle of timing suggests that an event or experience will differentially impact individuals depending upon when they occur in a person's life [31, 32] and emphasizes developmental differences across childhood, adolescence, young adulthood, and adulthood. Specifically, the age at which individuals experience events characterizes not only short-term development, but also later life transitions and outcomes [33, 34]. Highlighting the centrality of age for understanding the developmental impact of events and experiences draws attention to the potential for variation in long-term outcomes for individuals who may encounter the same event at different ages.

Traditionally, immigration research points to important generational distinctions within the foreign-born population distinguishing those who migrate as children (the 1.5 generation) from those who migrate at older ages (the first-generation) [19]. This approach recognizes the vast social and developmental differences of child migrants; however, it treats homogenously individuals who migrate during early adolescence with those who migrate as older adults (and everyone in between). Yet, differences in the intentionality of migration (i.e., voluntary versus forced), access to social support resources (e.g., schooling, social programs), histories of socialization in one's country of origin (e.g., education history, employment), and exposure to the U.S. environment (e.g., duration in the U.S., language proficiency), are vastly different depending upon one's age at migration [19, 35, 36]. For instance, child migrants may have little or no memory of their country of birth or migration experience, and harbor little agency in the decision to migrate subsequently experiencing powerlessness. Though immigrants of all ages may suffer from acculturation stress, older immigrants, who often have limited language proficiency and are ineligible for social assistance programs, experience a heightened vulnerability compared with their younger counterparts [37, 38]. Consequently, a more fine-grained analysis that disaggregates further the immigrant population by age at migration may reveal important patterns of variation in mental health outcomes ([19–21], see also [39]).

In short, in the context of immigration, the delineation of age at migration may signal important differences in migration experiences and the developmental stage at which this major transition occurs—factors that affect the mental health of immigrants [29, 40, 41]. In this vein, variation in life course outcomes across immigrants may be directly related to the age at which individuals migrated to the U.S. Importantly, age of migration only tells part of the story. There are also complex patterns within age groups—for example gender and nativity may exacerbate or attenuate the effects of age of migration [9, 42]. There is a well-established concern about suicidality among Latina adolescents [9, 25] who may be more vulnerable to experiences with family conflict and gendered oppression [43, 44] compared to their male and older peers. Across nativity groups, research suggests that immigrants from Asian countries may experience depression and suicidality at different stages of life than their peers migrating from Spanish speaking countries [29, 41, 45]. Gong et al. [41] found that when compared with young Asian migrants (six or younger), those who migrated during preteen and adolescent years experienced higher levels of psychological distress whereas those who migrated during adulthood (25 years or older) were less likely to suffer from depressive disorders. In contrast, mental health disorders increased in a more linear fashion among Latinx immigrants with an older age of immigration associated with comparatively worse mental health [29]. Thus, while age of migration is crucial to understanding mental health and suicidality, there exists an intersectionality with other demographic factors that must be explored to better understand this connection.

Current Research

The extent to which developmental differences at the time of migration across the full life course hold sway on outcomes such as suicidality remain underdeveloped [41] and even less

is known about differential vulnerabilities in the risk of suicide ideation at the intersection of age of migration, gender, and nativity. We contribute to the understanding of disparities in immigrant suicide ideation by examining whether age of migration modifies patterns of suicide ideation among first-generation immigrants, and exploring for differences in suicide ideation at the intersection of age of migration and gender among Latinx and Asian immigrants. To this end, we ask the following research questions:

RQ1: What is the prevalence of suicide ideation among first-generation immigrants distinguished by age of migration (i.e., child, adolescent, young adult, older adult)?
RQ2: Do gender and nativity (Latinx and Asian) modify patterns in the prevalence of suicidality among first-generation immigrants by age of migration?
RQ3: What is the association between suicidality and age of migration controlling for gender, nativity, age of respondent?

Sample and Measures

We use data from the nationally representative National Latino and Asian American Study (NLAAS), a subset of the Collaborative Psychiatric Epidemiology Surveys (CPES [46]). The NLAAS includes data on 4649 adults aged 18 and older in the U.S. Immigrant generational status is determined using data on country of birth of the focal respondent and their parents. First-generation immigrant refers to individuals born outside the U.S. with foreign-born parents (n = 3260; 70.4% of the full NLAAS sample). Among the first-generation sample, respondents migrated as children (aged 12 years or younger at migration: the 1.5 generation; n = 602), adolescents (13–17 years of age; n = 346), young adults (18–34 years of age; n = 1621), and adults (aged 35 years or older; n = 691).

Demographic variables were self-reported (see Table 1). Sex is coded 1 = male, 0 = female. A slight minority of the respondents are male (45.75%). Nativity measures region of birth 1 = Latinx, 0 = Asian. The sample is equally split by nativity (Latinx = 49.75%; Asian = 50.25%). To control for birth cohort influences [12], we include a measure of respondent age at the time of the interview (mean = 42.84 years).

Suicide ideation captures a range of behaviors from thoughts about death to attempting suicide. Clinicians have argued that this should be considered a separate psychiatric diagnosis because of the urgency associated the risk of suicide [47]. Respondents were asked if they: often thought of death, would be better if dead, thought about suicide, made a suicide plan, and attempted suicide. Items are measured individually and coded 1 = yes, 0 = no. Prevalence of suicide ideation = 1 with an affirmative response to at least one of the five items. Just under 10% of immigrant respondents reported suicidality.

Analysis

We first examine the prevalence of suicide ideation among first-generation immigrants by age of migration, gender, and nativity (RQ1 and 2). ANOVA analyses were used to test for significant differences in suicidality across groups. Because of the unequal variances and group sizes, we utilized the Games Howell post hoc test. Next, we conduct a series of logistic regression models regressing the binary indicator of prevalence of suicidality on age at migration, gender, nativity, and age (RQ3).

Table 1 Characteristics of the total first-generation immigrant sample and age at migration subsamples

		Age at migration subsample			
	First generation immigrant sample	Adult migrant	Young adult migrant	Adolescent migrant	Child migrant
N	3260	691 (21.2%)	1621 (49.7%)	346 (10.6%)	602 (18.5%)
Male	45.75%	41.40%	45.90%	52.89%	46.18%
Age	42.84	58.48	41.48	34.23	33.52
Latinx	49.75%	44.30%	45.34%	62.54%	60.63%
Asian	50.25%	55.70%	54.66%	37.57%	39.37%
Prevalence of suicide ideation	9.80%	11.0%	8.1%[a]	11.30%	12.50%

[a]Significant difference compared with child migrant group

Results

Before proceeding to the core analyses, we present descriptive statistics disaggregating the first-generation sample by age at migration (see Table 1). Results show that males comprise a smaller proportion of the adult migrant group (41.40%) compared with more than half of the adolescent migrant group (52.89%). Older migrant groups (adult and young adult) are, on average, older (58.48 and 41.48 years, respectively) at the time of the interview compared with younger migrant groups (adolescent and child, 34.23 and 33.52, respectively). Older migrant groups are also more likely to be of Asian descent (roughly 55%) whereas younger migrant groups are more likely to be of Latinx descent (roughly 62%).

Bivariate Analyses

Analyses disaggregating suicide ideation by age of migration are presented in Table 1. Child migrants have the highest prevalence of suicidality (12.5%) followed by adolescent (11.3%) and adult migrants (11.0%). Young adult migrants have the lowest prevalence of suicidality (8.1%); a rate that is significantly lower than their child migrant peers ($p = 0.05$).

Table 2 reports prevalence rates of suicide ideation by age of migration within gender and nativity subsamples. Among all first-generation immigrants, females have a higher risk of suicide ideation compared to males ($p = 0.000$). Females who migrate as young adults ($p = 0.000$) or as children ($p = 0.008$) have a significantly higher risk of suicidality compared with their male counterparts at the same age of migration. Gender differences approach significance for adolescent migrants ($p = 0.056$). No gender differences were observed among adult migrants.

Prevalence rates for Latinx and Asian subgroups reveal that suicide ideation is more prevalent among Latinx immigrants ($p = 0.000$). Across Latinx and Asian subsamples, adult ($p = 0.000$) and young adult ($p = 0.000$) Latinx immigrants have a significantly higher prevalence of suicide ideation compared with their same age of migration Asian peers. No differences were observed by nativity among child and adolescent migrants.

Multivariate Analyses

Recall from Table 1 that subsamples distinguished by age of migration reveal differences in the demographic composition (e.g., % male) of each group. Logistic regression analyses were conducted to model suicide ideation after adjusting for these demographic differences (Table 3). Analyses conducted on the full foreign-born sample show that age of migration is significantly associated with the prevalence of suicide ideation. Both young adult and adult migrants have a significantly lower likelihood of suicidality compared to child migrants (the contrast group).

To explore further how differences in the prevalence of suicide ideation by age of migration may be modified by gender and nativity, we conduct logistic regression analyses on each age of migration subsample (child, adolescent, young adult, and adult) to examine gender and nativity patterns within age groups (Table 3). To ease interpretation, we present visually the odds [*exp*(B)] of suicide ideation for each age at migration by gender and nativity in Fig. 1. Among child immigrants, the odds of suicide ideation for males are half that of females (odds ratio = 0.49), regardless of nativity. No gender or nativity differences are observed for adolescent migrants. The relatively low prevalence of suicidality observed among young adult migrants appears to exclude Latinas who are at significantly greater risk of suicide ideation (odds = 0.17) compared to their Latino (odds = 0.08) and Asian male (odds = 0.02) and Asian female (odds = 0.05) peers. Among adult migrants, no gender differences were observed, however, the odds of suicidality are 2.8 times greater among Latinx respondents compared to Asians.

Table 2 Prevalence of suicide ideation by age at migration within gender and nativity subsamples

	Male (%)	Female (%)	Sig. diff. across gender (F-test)	Latinx (%)	Asian (%)	Sig. diff. across nativity (F-test)
First generation immigrant	7.10	12.20	***	13.60	6.10	***
Adult migrant	10.10	10.10		16.70	6.50	***
Young adult migrant	5.10	10.60	***	12.90	4.10	***
Adolescent migrant	8.20	14.70		13.00	8.50	
Child migrant	8.60	15.70	**	12.90	11.80	

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 3 Logistic regression prevalence of suicide ideation by age of migration

	First generation immigrant sample			Child migrant			Adolescent migrant			Young adult migrant			Adult migrant		
	n = 3260			n = 602			n = 346			n = 1621			n = 691		
	B	Sig	Exp(B)	B	Sig	Exp(B)	B	Sig	Exp(B)	B	Sig	Exp(B)	B	Sig	Exp(B)
Constant	− 2.778	***	0.062	− 2.202	***	0.111	− 2.607	***	0.074	− 3.457	***	0.032	− 3.801	***	0.022
Male	− 0.581	***	0.559	− 0.715	**	0.489	− 0.594		0.552	− 0.807	***	0.446	− 0.078		0.925
Age	0.015	**	1.015	0.016		1.016	0.016		1.016	0.014	*	1.015	0.020	*	1.020
Hispanic	0.805	***	2.236	− 0.037		0.964	0.383		1.467	1.229	***	3.417	1.016	***	2.763
Age at migration[a]															
Adolescent	− 0.106		0.900												
Young adult	− 0.487	**	0.614												
Adult	− 0.413	*	0.662												

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

[a]Constrast group is child migrants

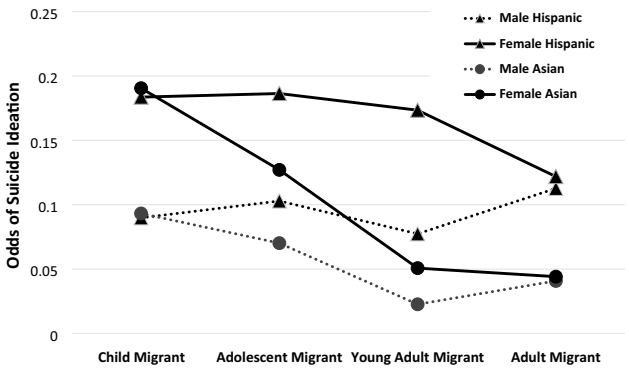

Fig. 1 Prevalence of suicide ideation by age of migration among Latinx and Asian males and females

Discussion

Results of this research challenge prior strategies that distinguish only among child migrants (1.5 generation) and older migrants (first-generation) and suggest that important variation is masked when treating the older migrant group as a homogenous entity. While the data support prior research findings that the prevalence of suicidality is high among those who migrate as children [29], we also find that the risk of suicide ideation begins to rise again among adult migrants. This study lends support to arguments for integrating more systematically a developmental lens for understanding the dynamic and complex social process of migration and health risk outcomes [18, 36, 41, 48, 49]. The age at which individuals experience events is a critical focal point for the life course perspective [34]. For immigration, the age at which individuals migrate taps into vast social and developmental differences emanating from one's country of origin as well as those consequent to increasing exposure to the American mainstream. Understanding these sources of variation, and the potential for different risks linked to one's age of migration, may shed light on the differential vulnerabilities to health risk behaviors among first-generation immigrants.

Furthermore, the findings from this research suggest that differences in age of migration that amplify or suppress one's vulnerability to risk of suicidality depend upon gender and/or nativity. Age of migration appears to be more salient for females with younger female migrants more vulnerable to suicide ideation than their male counterparts. Gender differences dissolve among those who migrate as adults. If age of migration is a proxy for acculturation, then our results are consistent with those positing a gendered process of acculturation [50, 51], and suggest that acculturation may be a more potent force for females. The differences observed at the intersection of age of migration and gender may also link to different selection processes occurring among male and female migrants (see e.g., [52]). Nativity differences complicate further the gender by age of migration suicide nexus; Whereas young female migrants experience an elevated risk of suicidality among both Latinx and Asian groups, the risk drops among adolescent and older Asian female migrants, but persists among young Latinas from childhood through young adulthood. Research revealing a growing risk of suicide ideation and attempts among Latina adolescents in recent years [9] has spurred a focused effort aimed at understanding and responding to the unique risks adolescent Latinas encounter [43, 53]. Results of this research suggest that these efforts should consider events and experiences occurring earlier in the life course.

The importance of intersectionality is a crucial feature of these findings. While age of migration, gender and country of origin all have distinct influences on the mental health

of migrants, these demographics can also interact in ways that can't be fully described by merely adding their effects together. This intersectionality may help explain equivocal patterns in prior research whereby some evidence finds that a younger age of migration is detrimental [29] while other evidence finds that an older age of migration is detrimental [37]. Our results suggest that the level of vulnerability for suicidality differs depending upon one's age of migration, gender, and nativity. Thus advancing understanding of suicidality among immigrants will require a more nuanced disaggregation on the basis of age of migration *and* its intersection with gender and nativity [54, 55].

A particularly intriguing finding from this research involved young adult migrants. Counter to research on the age-graded distribution of risky behavior whereby young adults are one of the highest risk groups [3, 56], with the exception of young adult Latinas, those who migrated as young adults were least at risk of suicidality compared to their migrant peers. Research should identify factors that appear to be differentially insulating young adult immigrants from mental health risks as well as those that are placing young adult Latinas at greater risk [16, 17].

The data used in this research were cross-sectional and as a result we are unable to assess differences that may emerge over time with changing sources of immigration and related policies. Increasingly small samples sizes when disaggregated by age at migration as well as the study of a rare event restricted our analysis to the use of pan-ethnic classifications yet given important differences in suicide ideation by country of origin [29], research replications should test the robustness of these patterns by country of origin. Finally, while this research was intentionally descriptive in nature, future research should exploit theory to understand the factors driving this variation.

Conclusions

Understanding how immigrant status and various dimensions of integration impact suicidality is a public health imperative. The patterns observed in this study reveal important complexities for understanding risk for suicide ideation at the intersection of age of migration, gender, and nativity. Notably, these data tap into a particular socio-historical time characterized by greater access to healthcare among the foreign-born in the U.S. relative to the current historical context. With the dismantling of the Affordable Care Act and steps taken to deny access to public benefits for immigrants, it is likely that duress is amplified. Findings from this research can inform a changing healthcare landscape particularly the direction of resources to suicide prevention for underserved populations. For instance, by disaggregating the data beyond subsamples of 1.5 generation (child immigrants) and first-generation (those who immigrate at older ages), with the exception of Latinas, these data suggest a pattern of risk characterized by a curvilinear trend with declining risk of suicidality from child to young adult migrant groups that rises again among adult migrants. Collectively, findings suggest that advancing understanding of variation in outcomes within the first-generation would benefit from greater precision in age-graded distinctions such as the parsing out of the "decimal" generations [19–21].

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Compliance with Ethical Standards

Ethical Approval The data used in this study are publically available in de-identified format from the Inter-university Consortium for Political and Social Research data repository; Institutional approval is not required as no interaction with human subjects were performed by the authors of this study.

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