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Nativity, Family, Disability: Results from the Hispanic Established Populations for the Epidemiologic Study of the Elderly

Elizabeth Vásquez, DrPh, MPH[1]; Weihui Zhang, MS, MPA[2];
Joanna Dreby, PhD[3]; Sunghee Lee, PhD [4];
Anda Botoseneanu, MD, PhD[5]

Objectives: Nativity and family support may influence attitudes and behaviors that delay or accelerate the disability process in older adults. The objectives of this study were twofold: 1) to evaluate nativity and migration cohort differences in trajectories of disability (assessed by activities of daily living [ADL]) among older Mexican Americans; and 2) to determine the role of objectively measured family support in the association between nativity, migration cohort, and disability changes over time.

Methods: This is a longitudinal study with up to 18 years follow-up (1993-2011) using data from the Hispanic Established Populations for the Epidemiologic Study of the Elderly (N=2,785, mean age =72.4 years). Disability was assessed using self-reported limitations in activities of daily living (ADL). Nativity and migration cohort were self-reported. Family support was assessed by marital status and the number of their children participants saw each month. Linear growth curve models evaluated the trajectory of ADL disability over 18 years and assessed variations by nativity status, migration cohort and family support.

Results: Foreign-born respondents who migrated before age 20 had more starting ADL limitations (β= .36, P<.001) and accumulated disability faster (β=.04, P<.01) compared with their US-born counterparts. In contrast, foreign-born respondents who migrated at later ages showed disability trajectories similar to US-born respondents. Married respondents had a lower level of disability (β= -.14, P<.01) and a lower rate of accumulation over time (β= -.02, P=.001) compared with participants who were not married.

Discussion: Mexican Americans who migrate at younger ages may experience greater disability over time; however, family support may help mitigate the accumulation of disability among older Mexican Americans. *Ethn Dis.* 2021;31(2):253-262; doi:10.18865/ed.31.2.253

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[1] University at Albany School of Public Health (SUNY), Department of Epidemiology, Albany, NY
[2] University at Albany School of Public Health (SUNY), Department of Sociology/ Biostastics/Epidemiology, Albany, NY
[3] University at Albany School of Public Health (SUNY), Department of Sociology, Albany, NY
[4] University of Michigan, Institute for Social Research, Ann Arbor, MI
[5] University of Michigan, Department of Health & Human Services and Institute of Gerontology, Ann Arbor, MI

Address correspondence to Elizabeth Vásquez, DrPH; School of Public Health, University at Albany (SUNY) One University Place, Room 121; Rensselaer, NY 12144; evasquez2@albany.edu

Background

Disability rates in older adults in the United States appear to be decreasing, yet disparities in disability rates persist between racial/ethnic groups.[1] Nativity is an important characteristic in the context of racial/ethnic disparities in disability, as the place of birth may influence health-related attitudes and behaviors that can delay or accelerate the disability process. The immigrant health paradox suggests that, in general, individuals who are born abroad are healthier than subsequent generations born in the United States. Foreign-born persons are often reported to enjoy a mortality advantage over individuals born in the United States.[2-4] However, some of the existing research challenges this paradigm and finds faster self-reported health declines among foreign-born individuals as they age.[3, 5-7] This may be particularly true for Mexican Americans, who have longstanding patterns of migration with the United States; notably existing research finds inconsistent evidence for health selectivity among Mexican migrants.[8, 9]

Along with nativity, the age at migration (migration cohort) from the country of origin to the United States may further distinguish disability profiles and help explain differences in health trajectories over time.[3] For instance, increased time spent in the United States is reported to decrease much of the mortality advantage associated with nativity status.[10] In

terms of language proficiency and adaptation to social norms, less acculturated foreign-born have been reported to exhibit higher rates of social isolation and compromised health.[11-13] Access to formal and informal support systems may also differ by nativity and in some cases decrease immigrant access to assistance.[11,14] Consequently, immigrants may be less likely or able than native-born individuals to seek assistance, because they either lack health insurance or have no lay or professional referral networks available.[7,15] Nevertheless, the role of nativity and migration cohort in the development of disability has received relatively little attention.

Few studies have examined the impact of age at migration and family support on the disability trajectories of US-born and foreign-born Mexican Americans...

Family support in the form of the presence of a spouse or nearby children may have beneficial direct effects on the trajectories of disability during and after migration.[16] Evidence suggests racial/ethnic variations in the availability and delivery of family support. For instance, Mexican Americans, and in particular older Mexican Americans, are especially reliant on the family as a source of support.[17,18] For Mexican immigrants, household family members and extended familial social network help facilitate migration at key moments in the life course and thus may intrinsically shape later disability patterns and the ability to age in place.[19,20] Theories of environmental aging suggest that as people age and their mobility declines, household composition and the presence of family support may become increasingly important to managing their health and daily tasks/activities.[18, 21] The role of family support in shaping the long-term disability trajectories among Mexican Americans (US-born and immigrants), while considering migration cohort differences has not been extensively evaluated.

Latino older adults in the United States represent one of the fastest-growing minority populations and are projected to account for 16% of the older US population by the year 2050. Currently, most older Latinos in the United States are estimated to be of Mexican origin.[22] Moreover, the rising longevity in the Latino population in recent decades has been reported to be accompanied by increased disability rates despite the recently reported decline in disability rate in the general population.[6, 23] Yet, few studies have examined the impact of age at migration and family support on the disability trajectories of US-born and foreign-born Mexican Americans using a dataset specific to the Mexican American older adult population. The Hispanic Established Population for Epidemiological Studies of the Elderly (HEPESE) was the ideal dataset for us to explore the intersection of age at migration and nativity given the long-standing migratory patterns between Mexico and the United States.

The objectives of this study were twofold: 1) to evaluate nativity and migration cohort differences in trajectories of disability (assessed by activities of daily living [ADL]) among older Mexican Americans; and 2) to determine the role of objectively measured family support in the association between nativity, migration cohort, and disability changes over time. We expect results from this study will help identify vulnerable groups based on nativity and migration cohort factors that may lead to clinical and policy solutions to improve family support and reduce the burden of disability among Mexican American older adults.

Research Design and Methods

This study uses data from the HEPESE[24] a large, multistage probability sample of Mexican Americans aged ≥65 years who reside in Texas, California, New Mexico, Arizona, and Colorado. The first wave in 1993 surveyed 3,050 individuals. From wave 2 to wave 4, 939 respondents died in the United States or Mexico, and a refresher cohort of 902 new respondents was added in 2004 at wave 5. Further description of sample characteristics is provided at https://www.icpsr.umich.edu/web/ICPSR/studies/36537.

For this study, we evaluated growth curve trajectories using seven survey waves (1993-2011), while assessing the role of migration cohort,

family support, and controlling for relevant demographic and socioeconomic covariates. To contribute at least one change in disability to the calculation of trajectories, only respondents present for at least two waves were included in the analysis. The resulting final sample included 2,785 respondents with 9,122 person-wave observations. Respondents were followed for an average of 3.3 waves (approximately 8 years).

Disability

Disability was assessed at each wave using seven activities of daily living (ADL). The HEPESE participants were asked if they needed assistance with the following seven ADLs (0=if no assistance needed, 1=if assistance needed): walking across a small room, bathing, personal grooming, dressing, eating, getting out of bed and into a chair, and toileting.[25] An ADL disability score was created by summing up the responses to the seven questions (score range=0 – 7; a higher score indicates more disability).

Nativity and Migration Cohort

We evaluated nativity status by the respondent's self-reported birthplace. To address migration cohort effects, we constructed four nativity categories, similar to those used by Angel and colleagues[17]: category 1: Mexican Americans born in the United States (reference); category 2: born in Mexico and migrated to the United States before aged 20 years; category 3: born in Mexico and migrated to the United States between the aged 20 and 49 years; and category 4: born in Mexico and migrated to the United States when aged ≥50 years.

Family Support

Family support was measured by two time-varying variables that assess the availability of support in a context of family interaction, which has been reported to be relevant for Mexican Americans[14, 17]: 1) respondents' marital status, which indicated likely proximal spousal support (currently married=1, otherwise 0); and 2) family social support in the form of monthly contact with children assessed by a question: "How many of your children do you see at least once a month?" (range 0-30 monthly contacts).

The following demographic and socioeconomic characteristics were accounted for: age at baseline (in years), sex (female=1, male=0), education at baseline (in years), and self-reported financial difficulty (four-level categorical variable: no difficulty (reference), a little, somewhat, and a great deal of difficulty).

Health status was evaluated using self-rated health, number of chronic diseases, and body mass index (BMI). For self-rated health, a strong predictor of mortality and other health outcomes among the elderly,[26] respondents were asked at each wave to provide a global assessment of their health: "Overall, how would you rate your health: excellent, good, fair, or poor?" Self-rated health was then re-categorized into a binary variable, with excellent and good health coded 1, and otherwise 0. Chronic diseases were assessed by self-report of the following physician-diagnosed conditions: arthritis, diabetes, hypertension, heart attack, stroke, or cancer (yes=1, no=0 for each). A summary score of chronic diseases (range 0-6, higher numbers indicating more diseases) was created by summing up the responses to these questions, and then was recoded into a three-level variable: no chronic disease (reference), one chronic disease, and two or more chronic diseases (multi-morbidity). BMI was computed as weight in kilograms divided by height in meters squared. In addition, a cohort indicator was included in all models (1=refresher cohort, 0=original cohort). To control for attrition, we also included a binary variable, with 0 indicating the respondents who stayed from the beginning to the end of the follow-up time or missed some waves but returned, and 1 for those who dropped out and never returned.

Statistical Analysis

Descriptive characteristics for the overall sample and by nativity status and age at migration were examined. Group differences were assessed by the chi-square test for categorical variables or one-way ANOVA test for continuous variables. We estimated two-level linear growth curve models to depict individual disability trajectories and to explore the heterogeneity in these trajectories by nativity status, age at migration, and family support. The models were structured as follows:

Level-1 model (intra-individual changes):

$$Y_{ti}=B_{0i}+B_{1i}(Year_{ti}-Mean(year)) + e_{ti} \quad (1)$$

where Y_{ti} is the number of ADL limitations of individual i at time t. β_{0i} is the intercept of ADL limitation for individual i at the midpoint of all observed years, and β_{1i} is the linear slope (intrapersonal rate of change) in the

outcome for individual i over time. e_{ti} is the random error term at level 1. Following the hierarchical linear modeling literature, we centered the years from baseline with the grand mean of all observed years[27]; as such, the intercept should be interpreted as the level of ADL disability at mid-observation point. The level-1 model described the intra-individual changes over time in the number of ADL limitations.

Level-2 model for inter-individual differences in intercept:

$$B_{0i} = Y_{00} + Y_{01}\text{Nativity(Age of Migration)} + Y_{02}\text{Family Characteristics} + u_{0i} \quad (2)$$

Level-2 model for inter-individual differences in linear rate of change:

$$B_{1i} = Y_{10} + Y_{11}\text{Nativity(Age of Migration)} + Y_{12}\text{Family Characteristics} + u_{1i} \quad (3)$$

In the level-2 models, the parameters of the time trajectories, β_{0i} and β_{1i}, are modeled as functions of person-level attributes. The associated coefficients of these predictors are denoted as γ. For example, γ_{01} in Equation 2 is the coefficient for the intercept model that includes the main effects of nativity status and age at arrival, and γ_{11} in equation 3 is the coefficient for the linear rate of change. Similarly, γ_{02} and γ_{12} capture the effects of family support on the intercept and linear rate of change in the outcome over the years from the baseline. Additional models (not shown) considered quadratic and cubic patterns of change in ADL disability; goodness-of-fit indicators and statistical non-significance for quadratic and cubic terms indicated that the linear model best represents the change in ADL disability over time. A cohort indicator and a variable for attrition were included in all the models.

In accordance with recommendations on the use of survey weights in regression analysis and because we did not aim for generalizability beyond the older Mexican American population aged ≥65 years, unweighted multivariate regression results are presented henceforth.[28,29] This is warranted because many of the attributes at the basis of sampling weights calculation (eg, sex, education, marital status) are explicitly included or controlled for in the adjusted models. As such, unweighted ordinary least squares estimates are anticipated to be less biased than and preferable over weighted estimates.[29] This approach is similar to that which has been undertaken in prior studies investigating trajectories of disability or other time-changing health outcomes in non-representative populations.[30,31]

The statistical significance level was set at P<.05 (two-tailed). All analyses were performed using Stata 15.

Results

Sample Characteristics

Table 1 presents sample descriptive characteristics by nativity status and migration cohort. The majority (60.0%) of the respondents were female and the average age at baseline was 72.4 years (SD=5.9*).* The overall sample reported an average of .47 (±1.32) ADL limitations at baseline. Although, the average number of limitations was lower among the US-born (.42) compared with the foreign-born, there were differences by migration cohort. For example, the baseline number of ADL limitations was higher among those who migrated at young age (aged <20 years (.59), followed by those who migrated at aged ≥50 years (.54), and lowest among those who migrated at aged between 20-49 years (.48). These baseline ADL differences by nativity and age at migration were significant at the .001 level. Family support indicators showed that only 50% of those who migrated before aged 20 years were married compared with 63% among the US-born and 66% among those who migrated when between aged 20-49 years. The US-born reported an average of 3.53 monthly contacts with children, similar to those who migrated when under aged 20 years, but this number increased to 3.99 for those who migrated when aged ≥50 years.

Disability Trajectories by Nativity, Age at Migration and Family Support

Table 2 presents the results of the multilevel growth curve models for the ADL limitations score. Model 1 indicated a difference in the ADL score by nativity status and migration cohort across the 18 years of follow-up. Compared with US-born respondents, foreign-born respondents who migrated before aged 20 years had more ADL limitations at the midpoint (β= .36, P<.001). In addition, the linear growth coefficient was positive and significant (β=.04, P<.01) for those who migrated before aged 20 years, indicating that they accumu-

Table 1. Descriptive statistics by nativity status and age at migration

	Total	US-born	Migrated when age 0-19 years	Migrated when age 20-49 years	Migrated when age ≥50 years	P
	N=2785	N=1445	N=335	N=712	N=293	
Number of ADL limitations, mean(SD)	.47(1.32)	.42(1.26)	.59(1.43)	.48(1.37)	.54(1.42)	<.001
Marital status, % married	62.19	63.03	50.61	66.77	58.02	<.001
Number of children seeing monthly, mean (SD)	3.59(2.59)	3.53(2.47)	3.50(2.46)	3.60(2.75)	3.99(2.90)	<.001
Cohort, % new	6.73	.00	10.14	15.50	18.04	<.001
Age, years, mean (SD)	72.44(5.86)	71.49(5.15)	75.75(6.95)	72.37(5.80)	74.31(6.64)	<.001
Sex, % female	59.35	61.74	57.43	55.14	59.26	<.001
Education, years, mean (SD)	4.87(3.88)	5.73(4.13)	4.24(3.45)	4.00(3.26)	2.94(2.93)	<.001
Financial difficulty (%)						<.001
None	19.74	24.79	16.97	13.53	10.51	
A little	22.19	22.27	23.39	22.22	20.19	
Some	36.76	33.62	36.85	41.14	43.01	
A great deal	21.31	19.32	22.79	23.12	26.28	
Self-reported health ,% good	40.09	42.94	39.86	37.11	31.78	<.001
Chronic diseases, %						<.001
No disease	20.27	21.36	18.98	18.71	19.71	
One disease	29.59	29.84	28.71	29.45	29.51	
Two or more diseases	50.14	48.80	52.31	51.84	50.78	
BMI, mean (SD)	27.46(6.26)	27.60(6.42)	26.92(6.23)	27.44(6.04)	27.31(5.89)	<.001
Attrition (% yes)	57.14 %	60.77%	64.06%	47.52%	54.24%	<.001
N of persons	2,785	1,445	335	712	293	
N of person-waves	9,122	4,953	996	2,336	837	
Mean waves of follow-up	3.28	3.43	2.97	3.28	2.86	
Mean years of follow-up	8.42	8.81	7.65	8.44	7.35	

Ps are from Chi-square tests or one-way ANOVA.
Ref, reference; US, United States, BMI, body mass index.
Individuals were followed up for an average 3.3 waves (roughly 8 years).

lated ADL disability faster compared with their US- born counterparts. In contrast, those who migrated at later ages were similar to US-born participants in both intercept and rate of change in ADL disability.

In the fully adjusted model, the difference in disability intercept between US-born and those who migrated before age 20 years was further attenuated (β=.22, P=.03), as was the linear growth coefficient (β=.032, P=.02). The coefficients for marital status indicated that married respondents had a lower level of disability (β=-.14, P<.01 for intercept) and lower rate of accumulation over time (β=-.02, P=.001 for linear slope) compared with participants who were not married, suggesting that the protective effect of marriage against disability persists over time. Figures 1 and 2 depict the trajectories of disability by migration cohort and by marital status, respectively, as derived from the fully adjusted model (Model 4).

Discussion

Our primary findings suggest substantial differences in disability trajectories between US-born and foreign-born respondents, as well as between the three migration cohorts, with those who migrated before age 20 years having more initial disability and a faster accumulation of disability than those who migrated later in life and those who were US-born. This result aligns with the findings from Garcia et al,[3] but incrementally contributes to existing knowledge by showing that differences in family support, in particular less availability of marital support and fewer contacts with one's children, may partially explain the faster accumulation of

Table 2. Disability trajectories among Mexican Americans aged ≥ 65 years: HEPESE, 1993-2011

	Model 1	Model 2	Model 3	Model 4
Intercept, at midpoint				
Intercept	.54(.05)[c]	-1.41(.21)[c]	-1.43(.22)[c]	-1.37(.23)[c]
Migration cohort, ref. = US-born				
0-19	.36(0.10)[c]	.25(0.10)[a]	.23(0.10)[a]	.22(.10)[a]
20-49	.04(.07)	.04(.07)	.03(.07)	.03(.07)
50 and older	.01(.11)	-.06(.11)	-.08(.11)	-.09(.10)
Married, ref. =not married				-.14(.05)[b]
Number of children seeing monthly				.00(.01)
Linear slope, per year of follow-up				
Intercept	.08(.01)[c]	.08(.01)[c]	.07(.01)[c]	.08(.01)[c]
Migration cohort, ref. = US-born				
0-19	.04(.01)[b]	.04(.01)[b]	.03(.01)[a]	.03(.01)[a]
20-49	.01(.01)	.02(.01)	.02(.01)	.02(.01)
50 and older	-.01(.01)	-.01(.01)	-.01(.01)	-.01(.01)
Married, ref. =not married				-.02(.01)[b]
Number of children seeing monthly				.00(.00)
Covariates				
Financial difficulty, ref. = no difficulty				
A little		.03(.04)	.02(.04)	.03(.04)
Somewhat		.08(.04)[a]	.06(.04)[d]	.07(.04)[d]
A great deal		.23(.04)[c]	.20(.04)[c]	.20(.04)[c]
Chronic diseases, ref. = no disease				
One condition			.05(.04)	.06(.04)
Two or more conditions			.18(.04)[c]	.18(.04)[c]
Good self-rated health, ref. = poor health			-.22(.03)[c]	-.22(.03)[c]
BMI			.00(.00)	.00(.00)
Age at baseline, years		.03(.00)[c]	.03(.00)[c]	.03(.00)[c]
Education, years		-.01(.00)	.00(.00)	.00(.00)
Female, ref. =male		.13(.03)[c]	.09(.03)[a]	.09(.03)[a]
New cohort, ref. = original cohort	.71(.06)[c]	.48(.06)[c]	.41(.06)[c]	.41(.06)[c]
Attrition, ref.=non-attrited	.28(.03)[c]	.21(.03)[c]	.17(.03)[c]	.17(.03)[c]
Random effects				
Intraindividual rate of change	.01	.01(.00)	.01 (.00)	.01 (.00)
Intraindividual baseline status	1.03	.90(.06)	.84(.06)	.84(.06)
Covariance between slope and intercept, intraindividual	.11	.10(.01)	.10(.01)	.10(.01)
Interindividual residuals	1.08(.02)	1.08(.02)	1.08 (.02)	1.08 (.02)
Goodness-of-fit				
AIC	29246.79	29107.48	28986.66	28983.08
BIC	29346.45	29249.85	29157.51	29182.40
N of person-periods	9,122	9,122	9,122	9,122
N of persons	2,785	2,785	2,785	2,785

Standard errors are in parentheses.
a. P < .05.
b. P < .01.
c. P < .001.
d. P<.01(two-tailed tests).
Ref.= reference; US= United States; BMI= body mass index. Coefficients represent the number of ADL limitations.
Model 1 included ADL, nativity and age at migration; Model 2 added demographic and socioeconomic variables to Model 1; model 3 added health related covariates to model 2; model 4 added family support to model 3

disability among younger migrants.

Our findings further help disentangle the "healthy immigrant effect" (in this case Mexican immigrants), and the growing body of evidence indicating that US-born Mexican Americans spend more years of life with functional limitations and chronic morbidity.[2, 32]

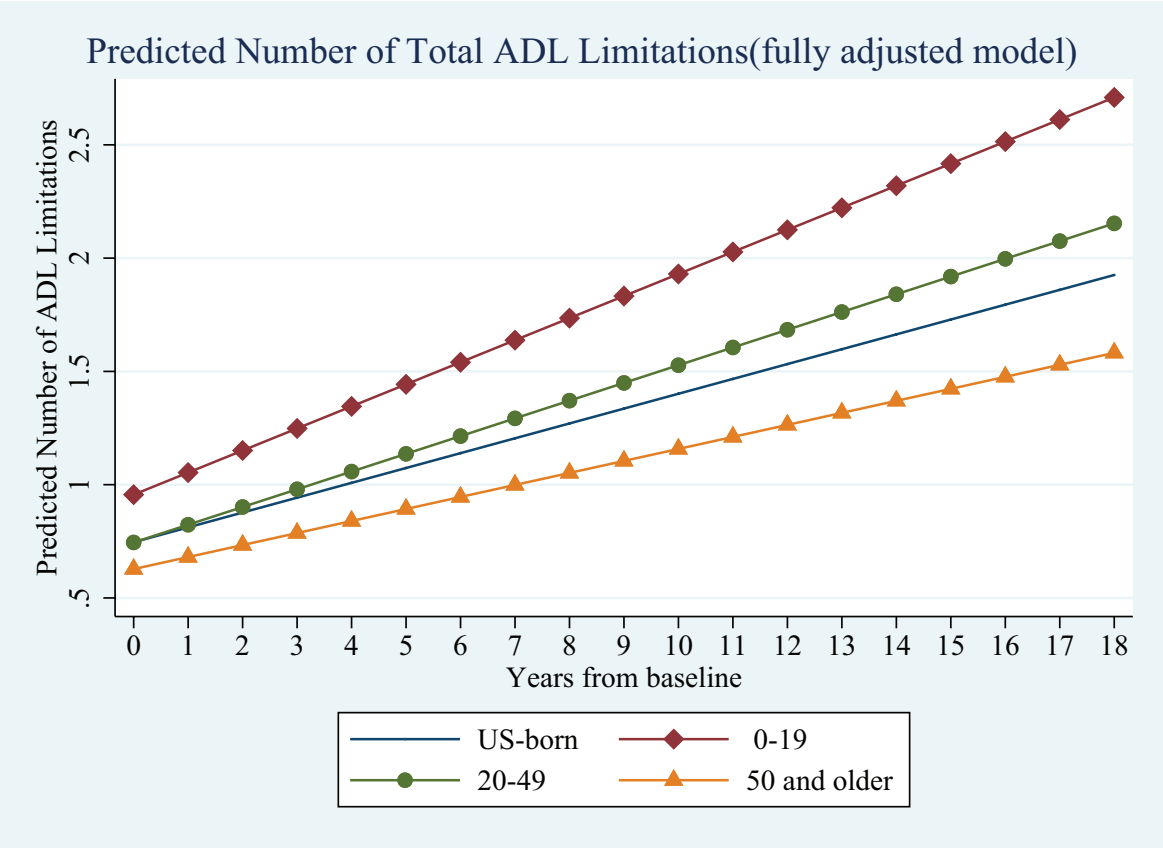

Figure 1. Linear growth curves of ADL limitations based on the results in Table 2, Model 4. HEPESE, 1993-2011, by migration cohort

In the context of disability, Cantu et al[32] reported findings similar to ours, namely a health advantage in morbidity and physical functioning among older foreign-born Mexican Americans, which was not shared by US-born Mexican Americans. However, this earlier study did not test the differential in outcomes based on migration cohort. Thus, our focus on disability patterns among those who were not born in the United States but migrated to the United States at different ages (as compared with their US-born peers) adds to our understanding on how the age at migration from Mexico influences the level and progression of disability in older ages.

When evaluating the role of family support, we found that foreign-born respondents who migrated before age 20 years not only started with higher initial levels of disability, but also experienced a faster rate of accumulation of ADL disability over time. This is a key finding to help disentangle the effect of nativity and migration cohort on disability, since the Hispanic health paradox predicates a health advantage for foreign-born immigrants and those living in the United States for fewer years. Yet, there is a gap in research describing the paradox in the context of migration cohorts, as reflected by age at migration.[33,34] We propose that differentiating foreign-born and US-born Mexican Americans by migration cohort may enable us to investigate disability trajectories in greater detail and evaluate if the protective effects may eventually pass from one generation to the next (eg, from parents who migrated at a later age together with children vs those who migrated at younger ages), which in turn could have implications for

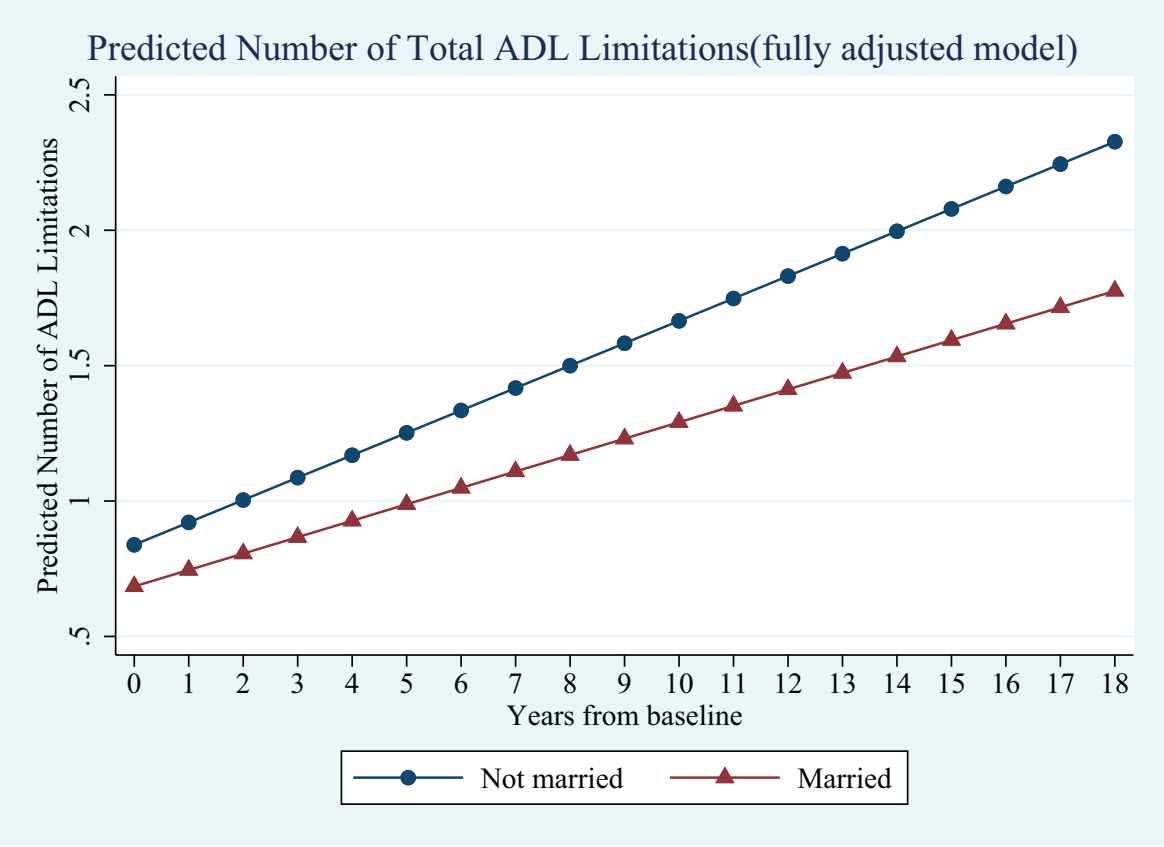

Figure 2. Linear growth curves of ADL limitations based on the results in Table 2, Model 4. HEPESE, 1993-2011, by marital status

immigration laws and public health policy. In addition, the common practice of aggregating migration cohorts within nativity constructs may mask significant differences between migration cohorts, especially among Mexican Americans, who have not generally experienced uniform or similar assimilation paths across generations.[35] Our findings advance our understanding of how nativity differences may contribute to disability trajectories in an increasingly large segment of the Latino population.

These findings are in line with our understanding that for immigrant Mexicans, family support may be an essential protective factor against disability. Indeed, Angel and colleagues[14,36] evaluated social support and the interchange of supportive resources and found this interchange to be more highly valued among Mexican Americans than non-Latino Whites. Our research adds to the existing literature by showing that objectively measured family support networks are less readily available and/or developed for those who migrated at younger ages as compared with those who migrated at older ages, which may at least partially explain the higher levels and more rapid accumulation of disability in early-age migrants.

Study Limitations

Our findings should be interpreted considering several limitations. First, we were unable to differentiate between objective and perceived family support because the variables measuring perceived support were not available in the dataset. It is plausible that these two types of support may differentially relate to disability and should be separately evaluated in future studies. Second, HEPESE is not represen-

tative of the overall US Latino population, so the question of whether the results observed here can be generalized to broader Latino groups remains, especially since norms of aging and the perception of disability vary by culture and by ethnic background. Third, given the secondary nature of our analysis we were not able to measure other potential members of the family networks such as cousins, siblings. In addition, our assessment of family support was limited by the available data. We understand that recently the nature of family relations in our society is changing, perhaps as a reflection of family norms and geographic mobility which in turn, alters the type and amount of support that can be provided and received via family member. This is a limitation of our research that needs to be further explored. Finally, higher levels and more accelerated disability may have greater effects on the lives of immigrant older adults living in more rural vs urban settings, because rural locales tend to be more geographically isolated and have fewer supportive services available for older adults. Additional characteristics relevant to the aging of various immigrant populations, such as rural vs urban residence, should be considered in future investigations.

…those who migrated before aged 20 years had more initial disability and a faster accumulation of disability than those who migrated later in life and those who were US-born.

Several strengths should also be noted. Our findings add to prior investigations evaluating the dynamics of disability and family support among US-born and foreign-born Mexican Americans over time. Our ascertainment of family support as a possible protective factor also allows us to elucidate context-specific variations and improve our understanding of the specific mechanisms through which these variances affect long-term disability and help our understanding of its relationship to nativity and migration cohort. Taking a closer look at our results may add urgency to the need for policies aimed at maximizing cost-effective and culturally sensitive options in long-term care for older Mexican American with disability.

Conclusion

Our results describe the importance of family support for older adults. Furthermore, our result also underscore how migration cohort and family support are associated with disability trajectories among older Mexican Americans. We contribute to the dialogue by showing the protective health benefits of family support for older adults. New immigration rules and changes in family dynamics that seek to further restrict family-based migration and lead to periods of prolonged family separations, particularly for Mexicans, will likely have negative health impact on older foreign-born populations. Specifically, factors related to the disruption of family support among foreign- and native US-born Mexican Americans have potential negative impacts on disability trajectories over time. Future research needs to evaluate the plausible mechanisms through which family support might help curtail the accumulation of ADL disability among the Mexican American older adult population.

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Conflict of Interest

No conflicts of interest to report.

Author Contributions

Research concept and design: Vásquez, Dreby, Botoseneanu; Acquisition of data: Vásquez, Zhang; Data analysis and interpretation: Vásquez, Zhang, Dreby, Lee, Botoseneanu; Manuscript draft: Vásquez, Dreby, Lee, Botoseneanu; Statistical expertise: Vásquez, Zhang, Lee, Botoseneanu; Acquisition of funding: Vásquez; Administrative: Vásquez, Dreby; Supervision: Vásquez,

References

1. Crimmins EM, Hayward MD, Hagedorn A, Saito Y, Brouard N. Change in disability-free life expectancy for Americans 70-years-old and older. *Demography*. 2009;46(3):627-646. https://doi.org/10.1353/dem.0.0070 PMID:19771948
2. Mutambudzi M, Chen NW, Howrey B, Garcia MA, Markides KS. Physical Performance Trajectories and Mortality Among Older Mexican Americans. *J Gerontol A Biol Sci Med Sci*. 2019;74(2):233-239. https://doi.org/10.1093/gerona/gly013 PMID:29438556
3. Garcia MA, Downer B, Crowe M, Markides KS. Aging and Disability Among Hispanics in the United States: Current Knowledge and Future Directions. *Innov Aging*. 2017;1(2):igx020. https://doi.org/10.1093/geroni/igx020 PMID:30480115
4. Singh GK, Miller BA. Health, life expectancy, and mortality patterns among immigrant populations in the United States. *Canadian J Public Health*. 2004;95(3):I14-21. https://doi.

org/10.1007/BF03403660
5. Gubernskaya Z. Age at migration and self-rated health trajectories after age 50: understanding the older immigrant health paradox. *J Gerontol B Psychol Sci Soc Sci*. 2015;70(2):279-290. https://doi.org/10.1093/geronb/gbu049 PMID:24859225
6. Garcia MA, Reyes AM. Prevalence and trends in morbidity and disability among older Mexican Americans in the Southwestern United States, 1993-2013. *Res Aging*. 2018;40(4):311-339. https://doi.org/10.1177/0164027517697800 PMID:29298598
7. Garcia MA, Reyes AM. Physical functioning and disability trajectories by age of migration among Mexican elders in the United States. *J Gerontol B Psychol Sci Soc Sci*. 2018;73(7):1292-1302. https://doi.org/10.1093/geronb/gby142 PMID:28052929
8. Bostean G. Does selective migration explain the Hispanic paradox? A comparative analysis of Mexicans in the U.S. and Mexico. *J Immigr Minor Health*. 2013;15(3):624-635. https://doi.org/10.1007/s10903-012-9646-y PMID:22618355
9. Rubalcava LN, Teruel GM, Thomas D, Goldman N. The healthy migrant effect: new findings from the Mexican Family Life Survey. *Am J Public Health*. 2008;98(1):78-84. https://doi.org/10.2105/AJPH.2006.098418 PMID:18048791
10. Downer B, Kumar A, Veeranki SP, Mehta HB, Raji M, Markides KS. Mexican American dementia nomogram: development of a dementia risk index for Mexican American older adults. *J Am Geriatr Soc*. 2016;64(12):e265-e269. https://doi.org/10.1111/jgs.14531 PMID:27996114
11. Angel JL, Angel RJ, Cantu P. Medicaid use among older low-income Medicare enrollees in California and Texas: A tale of two states. *J Health Polit Policy Law*. 2019;44(6):885-910. https://doi.org/10.1215/03616878-7785799 PMID:31408881
12. Angel RJ, Angel JL, Hill TD. Longer lives, sicker lives? Increased longevity and extended disability among Mexican-origin elders. *J Gerontol B Psychol Sci Soc Sci*. 2015;70(4):639-649. https://doi.org/10.1093/geronb/gbu158 PMID:25412615
13. Markides KS, Gerst K. Immigration, health, and aging in the United States. In: Settersen R, Angel JL, eds. *Handbook of the Sociology of Aging*. New York: Springer; 2011. https://doi.org/10.1007/978-1-4419-7374-0_7
14. Angel JL, Rote SM, Brown DC, Angel RJ, Markides KS. Nativity status and sources of care assistance among elderly Mexican-origin adults. *J Cross Cult Gerontol*. 2014;29(3):243-258. https://doi.org/10.1007/s10823-014-9234-9 PMID:24909895
15. Jones A. Disability, health and generation status: how Hispanics in the US fare in late life. *J Immigrant and Minority Health*. 2012;14(3):467-474. https://doi.org/10.1007/s10903-011-9500-7
16. Peek MK, Howrey BT, Ternent RS, Ray LA, Ottenbacher KJ. Social support, stressors, and frailty among older Mexican American adults. *J Gerontol B Psychol Sci Soc Sci*. 2012;67(6):755-764. https://doi.org/10.1093/geronb/gbs081 PMID:23009957
17. Angel JL, Angel RJ. Age at migration, social connections, and well-being among elderly Hispanics. *J Aging Health*. 1992;4(4):480-499. https://doi.org/10.1177/089826439200400402 PMID:10125149
18. Almeida J, Kawachi I, Molnar BE, Subramanian SV. A multilevel analysis of social ties and social cohesion among Latinos and their neighborhoods: results from Chicago. *J Urban Health*. 2009;86(5):745-759. https://doi.org/10.1007/s11524-009-9375-2 PMID:19543835
19. Massey DS. A missing element in migration theories. *Migrat Lett*. 2015;12(3):279-299. https://doi.org/10.33182/ml.v12i3.280 PMID:27398085
20. Curran SR, Rivero-Fuentes E. Engendering migrant networks: the case of Mexican migration. *Demography*. 2003;40(2):289-307. https://doi.org/10.1353/dem.2003.0011 PMID:12846133
21. Eschbach K, Ostir GV, Patel KV, Markides KS, Goodwin JS. Neighborhood context and mortality among older Mexican Americans: is there a barrio advantage? *Am J Public Health*. 2004;94(10):1807-1812. https://doi.org/10.2105/AJPH.94.10.1807 PMID:15451754
22. Pew Research Center. US Population Projections: 2005-2050. February 11, 2008. Last accessed January 20, 2021 from http://www.pewhispanic.org/2008/02/11/us-population-projections-2005-2050.
23. Alba R, Deane G, Denton N, Disha I, McKenzie B, Napierala J. The role of immigrant enclaves for Latino residential inequalities. *J Ethn Migr Stud*. 2014;40(1):1-20. https://doi.org/10.1080/1369183X.2013.831549 PMID:24563610
24. National Research Council (US) Committee on Population. Racial and Ethnic Differences in the Health of Older Americans. Martin LG SB, ed. Washington, DC: National Academies Press. 1997.
25. Katz S, Ford AB, Moskowitz RW, Jackson BA, Jaffe MW. Studies of illness in the aged. The Index of Adl: A standardized measure of biological and psychosocial function. *JAMA*. 1963;185(12):914-919. https://doi.org/10.1001/jama.1963.03060120024016 PMID:14044222
26. Mossey JM, Shapiro E. Self-rated health: a predictor of mortality among the elderly. *Am J Public Health*. 1982;72(8):800-808. https://doi.org/10.2105/AJPH.72.8.800 PMID:7091475
27. Newman D, Newman I. Multilevel modeling: clarifying issues of concern. *Multiple Linear Regression Viewpoints.* 2012;38(1):26-33.
28. Gelman A. Struggles with survey weighting and regression modeling. *Stat Sci*. 2007;22(2):153-164. https://doi.org/10.1214/088342306000000691
29. Winship C, Radbill L. Sampling weights and regression analysis. *Sociol Methods Res*. 1994;23(2):230-257. https://doi.org/10.1177/0049124194023002004
30. Liang J, Bennett JM, Shaw BA, et al. Gender differences in functional status in middle and older age: are there any age variations? *J Gerontol B Psychol Sci Soc Sci*. 2008;63(5):S282-S292. https://doi.org/10.1093/geronb/63.5.S282 PMID:18818448
31. Liang J, Xu X, Bennett JM, Ye W, Quiñones AR. Ethnicity and changing functional health in middle and late life: a person-centered approach. *J Gerontol B Psychol Sci Soc Sci*. 2010;65(4):470-481. https://doi.org/10.1093/geronb/gbp114 PMID:20008483
32. Cantu PA, Angel JL. Demography of living arrangements among oldest-old Mexican Americans: evidence from the Hispanic Epidemiologic Study of the Elderly. *J Aging Health*. 2017;29(6):1015-1038. https://doi.org/10.1177/0898264317727790 PMID:30231830
33. Hayward MD, Hummer RA, Chiu CT, González-González C, Wong R. Does the Hispanic Paradox in US adult mortality extend to disability? *Popul Res Policy Rev*. 2014;33(1):81-96. https://doi.org/10.1007/s11113-013-9312-7 PMID:25821283
34. Thomson EF, Nuru-Jeter A, Richardson D, Raza F, Minkler M. The Hispanic Paradox and older adults' disabilities: is there a healthy migrant effect? *Int J Environ Res Public Health*. 2013;10(5):1786-1814. https://doi.org/10.3390/ijerph10051786 PMID:23644828
35. Balcazar AJ, Grineski SE, Collins TW. The Hispanic health paradox across generations: the relationship of child generational status and citizenship with health outcomes. *Public Health*. 2015;129(6):691-697. https://doi.org/10.1016/j.puhe.2015.04.007 PMID:26002345
36. Angel JL, Angel RJ, Aranda MP, Miles TP. Can the family still cope? Social support and health as determinants of nursing home use in the older Mexican-origin population. *J Aging Health*. 2004;16(3):338-354. https://doi.org/10.1177/0898264304264203 PMID:15155066