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Cognitive Disability Among Arab Americans by Nativity Status and Arrival Year: Lack of Evidence for the Healthy Migrant Effect

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Abstract

Limited research exists on cognitive disabilities among Arab Americans, especially as it relates to arrival year among the foreign-born. The objectives of this study were to estimate the age- and sex-adjusted prevalence and associations of cognitive disability by (1) nativity status and (2) arrival year (pre-1991, 1991–2000, 2001–2013, and 2014–2018). We analyzed 11 years (2008–2018) of data from the American Community Survey (ACS) Public Use Microdata Samples (weighted n = 264,086; ages ≥ 45 years). Weighted means, percentages, age- and sex-adjusted prevalence estimates, and logistic regression results (crude and adjusted) were calculated. Among all Arab Americans, the age- and sex-adjusted prevalence of cognitive disability was 6.5%. The prevalence was lower for US-born (4.0%) compared to foreign-born (6.0%) (p-value < 0.0001). In logistic regression results, foreign-born Arab Americans were more likely to have a cognitive disability compared to US-born Arab Americans after adjusting for age and sex (OR = 1.41; 95% CI = 1.24, 1.61). Among foreign-born, Arab Americans arriving in 2014 or later had a lower prevalence of cognitive disability (3.4%) compared to all other arrival years at approximately 4.7%. With those arriving prior to 1991 as the reference category, those arriving between 1991 and 2000 were more likely to report a cognitive disability (OR = 1.05; 95% CI = 1.00, 1.08). However, those arriving between 2014 and 2018 were less likely to report a cognitive disability (OR = 0.81; 95% CI = 0.73, 0.88). These findings challenge the universality of the “healthy migrant effect” and highlight the relevance of socioeconomic disparities for Arab American cognitive health.

Keywords

Cognitive disability; Arab American; American Community Survey; Foreign-born

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Introduction

The health of immigrants in the United States (US) has been studied extensively [1–6]. Traditionally, this research has estimated mortality and morbidity rates between US- and foreign-born groups [1–5]. One condition that is rarely investigated is cognitive disability, [6–10] especially as it relates to arrival cohort, which may have a strong influence on the health of immigrants due to sociopolitical shifts in the US and abroad [11–15]. Cognitive disability is defined as “difficulty concentrating, remembering, or making decision, which could affect everyday life” [16].

Relatively little research on immigrant health in the US has considered immigrants from the Middle East and North Africa, who are classified by the federal government as non-Hispanic whites. Non-Hispanic whites are heterogeneous and defined as persons from Europe, the Middle East, or North Africa (from hereafter, individuals from the Middle East and North Africa are referred to as Arab American) [17]. To date, most of the health research on Arab Americans focuses on physical health and health behaviors [18]. There is a paucity of research on cognitive disabilities among Arab Americans [19–21].

Given that cognitive disability is not commonly ascertained, is not well understood for Arab Americans, and could be influenced by nativity status and arrival cohort, the aims of this study were to (1) estimate the age- and sex-adjusted prevalence of cognitive disability by nativity status and arrival year among Arab Americans and (2) examine the associations of nativity status and arrival cohort on having a cognitive disability while adjusting for potential confounders and other contributing factors. Our aims were successfully achieved using data from the American Community Survey (ACS).

Materials and Methods

The sample comprised 11 years (2008–2018) of cross-sectional data from the ACS Public Use Microdata Samples (PUMS). The ACS PUMS data files were obtained directly from the ACS website [22]. The US Census Bureau conducts the ACS using monthly samples to produce annual national estimates of demographic and socioeconomic factors. The sample was limited to Arab Americans ages 45 and older based on previous studies showing that signs of cognitive disability emerge among middle-aged adults [23] and to be consistent with other studies using 45 years or older as the age cut off [24]. The final sample included 27,564 Arab American adults (unweighted sample sizes: US-born = 10,727; foreign-born = 16,837).

Independent Variable

The independent variable was a combined measure of race nativity, place of birth, and ancestry. The ACS asked participants to indicate their race and whether they were “of Hispanic, Latino, or Spanish origin” [22]. To determine nativity and place of birth, the ACS asked, “where was this person born?” [22] US-born participants checked the box for “In the United States” and were asked to provide the state where they were born. Foreign-born participants checked the box “Outside the United States” and were asked to print the name of the foreign country or US territory where they were born [22]. For purposes of this study,

participants who reported they were born in one of the 50 US states or a US territory were considered US-born, while all others were considered foreign-born. To determine ancestry, participants were asked to indicate their ancestry or ethnic origin. Participants could enter up to two ancestry groups. Based on previous studies, adults who reported at least one of 43 Arab ancestries that comprise the Arab League of Nations or were born in Comoros, Djibouti, or United Arab Emirates were considered Arab American. Participants who listed an Iranian, Israeli, Armenian, or Turkish ancestry were not included as Arab American because these countries are not included in the Arab League of Nations [25]. Nativity status, place of birth, and ancestry were combined to create the following two categories for the independent variable: US-born Arab Americans and foreign-born Arab Americans. Within foreign-born Arab Americans, we categorized year of entry (1925 or later) arrival cohorts as pre-1991, 1991–2000, 2001–2013, and 2014–2018 modeling a study that focused on Arab Americans using ACS data [11].

Dependent Variable

The dependent variable in this study was having a cognitive disability, which was self-reported by the participant or a proxy. The ACS asked whether participants “have difficulty concentrating, remembering or making decisions” due to a physical, mental, or emotional condition (yes or no) [22].

Covariates

Age (mean), sex (male or female), marital status (now married with spouse present, other), educational attainment (none or less than high school, high school graduate, some college, college degree or higher), and poverty level (≤ 231%, 232–500%, or ≥ 500%) were selected as covariates based on risk for cognitive disability [23] and previous research [24]. Poverty variable was divided into tertiles based on the distribution of the sample.

Citizenship status (naturalized citizen or non-citizen), length of time in US (years), and English language proficiency (limited or not limited) were controlled for as acculturation characteristics among foreign-born participants. Length of time in the US was determined by subtracting the ACS completion year from the participant’s answer to the question, “When did this person come to live in the United States?” Limited language proficiency was operationalized as their ability to speak English “well,” “not well,” or “not at all,” as compared to the reference group of “very well.”

Statistical Analysis

Weighted means and standard errors were used to report participants’ age and length of time in the US (foreign-born only). Weighted column percentages and standard errors were used to report other demographic, socioeconomic, and acculturation characteristics (foreign-born only). The age- and sex-adjusted prevalence of cognitive disability was obtained for US- and foreign-born Arab Americans.

Multivariable logistic regression was used to examine the association between nativity status and having a cognitive disability. Foreign-born Arab Americans were compared to US-born Arab Americans (reference group). Odds ratios and 95% confidence intervals were

estimated using crude (model 1) and adjusted (model 2, model 3, and model 4) models. Model 2 controlled for demographic characteristics (age and sex). Model 3 controlled for demographics plus socioeconomic status (education and poverty level). Model 4 controlled for demographics, socioeconomic, and acculturation characteristics (citizenship, length of time living in the US, English language proficiency) among foreign-born participants only. The ACS utilizes demographers and economists for an extensive process of editing and imputing survey data. Any missing responses from the dependent, independent, or covariates in the PUMS files were edited or imputed. The only variable with missing responses in our dataset was income. Because the proportion of missing income data was minimal (1.08%), we did not perform any imputations for our own analysis. SAS 9.4 was used for statistical analysis procedures [26]. The University of Texas Southwestern Medical Center Institutional Review Board approved this study as exempt based on criteria 45 CFR 46.104(d).

Results

Sociodemographic and acculturation characteristics are presented in Table 1. Among US-born Arab Americans, those with a cognitive disability were older (mean age = 65.6 versus 60.2), less likely to be married, and less likely to have a college degree or more (24.2% versus 46.9%). Among foreign-born Arab Americans, those with a cognitive disability are more likely to have lived in the US longer (mean 26.7 versus 25.2 years) and to report limited English language proficiency (81.5% versus 52.5%). There were no statistically significant differences in cognitive disability for arrival year to the US ($p = 0.2247$).

The age- and sex-adjusted prevalence of cognitive disability is presented in Table 2. The prevalence was 4.0% for US-born Arab Americans compared to 6.0% for foreign-born. Among the foreign-born, these estimates varied by arrival year. For those arriving between 2014 and 2018, the prevalence of cognitive disability was 3.4% compared to 4.6% and 4.8% for years 2013 or earlier (p-value < 0.0001).

Crude and adjusted logistic regressions results are reported in Table 3. Foreign-born Arab Americans had 32% greater odds (95% CI = 1.16, 1.50) of having a cognitive disability than US-born Arab Americans. Among the foreign-born, those arriving between 1991 and 2000 had 31% lower odds (95% CI = 0.67, 0.71) of having a cognitive disability compared to those arriving prior to 1991 (reference category). There was a similar pattern for arrival years 2001–2013 and 2014–2018. In model 2, adjusted for age and sex, foreign-born Arab Americans had 41% greater odds (95% CI = 1.24, 1.61) of having a cognitive disability compared to US-born Arab Americans. Among the foreign-born, those arriving between 1991 and 2000 had 6% greater odds (95% CI = 1.03, 1.09) of having a cognitive disability compared to those who arrived prior to 1991 (reference category). There were no statistically significant differences for those who arrived from 2001 to 2013 or 2014–2018 in this model. In model 3, adjusted for age, sex, education, poverty level, and marital status, all the associations became statistically not significant except for arrival years 2001–2013 and 2014–2018, where individuals were still less likely to report a cognitive disability [2001–2013, OR = 0.93 (95% CI = 0.90, 0.96); 2014–2018, OR = 0.71 (95% CI = 0.64, 0.75)]. In the fully adjusted model that included English language proficiency and citizenship status,

individuals who arrived in the US between 2014 and 2018 were 19% less likely (95% CI = 0.73, 0.88) to report a cognitive disability compared to those who arrived prior to 1991.

Discussion

The goals of this study were two-fold: (1) estimate the age- and sex-adjusted prevalence of cognitive disability by nativity status and arrival year among Arab Americans and (2) examine the associations of nativity status and arrival cohort on having a cognitive disability while adjusting for potential confounders and other contributing factors. The prevalence of age- and sex-adjusted cognitive disability was higher, at 6.0%, for foreign-born Arab Americans compared to US-born Arab Americans (4.0%). The novel addition to this study is it includes arrival cohort in the context of cognitive disability: among the foreign-born, and with those arriving prior to 1991 as the reference category, those arriving between 2014 and 2018 were less likely (OR = 0.81; 95% CI = 0.74, 0.88) to report a cognitive disability. This finding is consistent with other studies published on disability or functional limitations among Arab Americans using data from the ACS [11, 27, 28]. A notable finding is the pronounced change in the odds ratio for foreign-born compared to US-born Arab Americans when adjusting for socioeconomic factors such as education and poverty level. It appears that these factors may explain the disproportionate prevalence of cognitive disability between foreign-born Arab Americans compared to their US-born counterparts. Specifically, foreign-born Arab Americans were more likely to report low education and less likely to be living above the poverty level than US-born Arab Americans, and socioeconomic resources have long been associated with better physical and cognitive health. However, future studies, especially qualitative research, should explore these variables and how they may affect cognitive disability because this phenomenon is not well understood among Arab Americans.

There are several reasons that may explain the higher prevalence (6.0%) of cognitive disability among foreign-born Arab Americans. One is that many Arab Americans, especially in the last 10 years, have immigrated to the US from war torn countries, perhaps as refugees [29]. The toll of this process has greatly affected their mental health, as was observed with the study on serious psychological distress [28]. A second reason may be that foreign-born Arab Americans may have different access to healthcare and other reasons that could protect against disability. A third factor that may have influenced the results is how the questions about cognitive disability were translated and interpreted by Arab American respondents. To our knowledge, valid and reliable questionnaires to assess cognitive disability in the Arabic language have not been thoroughly evaluated in Arab American samples, and this is a worthwhile next step to pursue.

The second main finding from this study is the burden of having a cognitive disability is more pronounced among Arab Americans who immigrated to the US prior to 2014. Contextualizing the findings to include arrival cohort helps us understand the importance of the political, social, economic, and other issues that inform health status of immigrants. The Immigration Act of 1924, the Displaced Persons Act of 1948, the Immigration and Nationality Act of 1952, Refugee Relief Act of 1953, Act of September 26, 1961, Immigration and Nationality Act of 1965 and its Amendments of 1976 and 1978, Refugee

Act of 1980, Homeland Security Act of 2002, Deferred Action for Childhood Arrivals (DACA, 2012), and the Muslim Travel Ban of 2017 all affected the health status of immigrants prior to and after arrival to the US. All these acts were in effect at some point during the lifetimes of the foreign-born Arab Americans in this study. These Acts determined who could immigrate, why they could immigrate, how long it would take for immigration, what benefits (if any) they would receive as immigrants, what health screenings they would need to obtain prior to and post arrival, and which employment opportunities were available in the US. In other words, immigration policies can have both adverse and positive health effects on the individual [30]. The authors of this systematic review state, “Many punitive immigrant policies have decreased immigrant access to and utilization of basic healthcare services, while instilling fear, confusion, and anxiety in these communities” [30]. Arab Americans are no exception to this fact, and the current study sheds light on how immigration policies may affect the health of Arab Americans.

Strengths and Limitations

The strengths of this study are the use of nationally representative data, a large sample size, and the ability to disaggregate the Arab American population from non-Hispanic whites using two questions on ancestry. Unlike other national surveys, the ACS collects data from a robust sample of both community-dwelling and institutionalized adults. Additionally self-reported cognitive disability is a limitation because recognition and communication of cognitive limitations may be influenced by cultural factors that systematically differed across groups in the sample. However, due to the high rates of underdiagnosis of cognitive disorders such as Alzheimer’s disease, particularly in minority communities, self-report may have higher sensitivity than formal diagnoses. Nevertheless, the challenge is the same for other self-reported health outcomes (e.g., general health, limiting long-term illness, and chronic illness), upon which many published works have been based. Previous work in and outside of the US compared the validity of self-reported measures of health across different nativity, ethnic, and racial groups (with contrasting findings) [31, 32]. Additional studies that use comprehensive cognitive and functional evaluations are needed to better understand group differences observed in the current study.

Another limitation is that the ACS does not collect information on other social determinants of health (e.g., environmental or cultural contexts) or individuals’ physical and mental health characteristics, such as chronic disease and depression. Another interesting way to approach our research aim was to use age-at-arrival instead of length of time in the US. However, one limitation of these data is the small sample sizes do not allow for such a nuanced analysis. Nevertheless, the current study provides preliminary data to motivate future studies of cognitive disabilities among Arab Americans. Lastly, another potential limitation is selection bias. That is, the same individuals might appear in multiple surveys. According to the ACS, individual households cannot be sampled more than once over a 5-year period. Given our analyses spanned over 11 years, there might be some individuals who were included twice, but this is highly unlikely, and if it occurred, it would not have affected our results.

Future Studies

One interesting observation that is emerging from the literature on Arab American health is that Arab Americans do not align with the “healthy migrant” hypothesis [33]. This hypothesis portends immigrants tend to be healthier than their US-born counterparts. One study in Europe demonstrated that the healthy migrant effect is weaker for self-reported health outcomes than for mortality outcomes [34]. We are still working to better understand how this hypothesis applies to both mortality and morbidity among Arab Americans. The immigration process and journey can be physically, mentally, and financially challenging; therefore, only individuals who are resilient and “hearty” may be able to immigrate to another country. The health literature on Arab Americans demonstrates that they do not fit this pattern. In fact, Arab immigrants to the US tend to have poorer health compared to US-born Arab Americans. Even though these individuals may not be “healthy” in their country of origin, the political predicaments may have forced them to leave as refugees or asylees, as opposed to their own free will. From a policy perspective, both state and national level efforts need to include an ethnic identifier for Arab Americans so that health and health behavior patterns can more easily be observed and used in prevention and intervention efforts.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Declarations

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References

1. Singh GK, Siahpush M. All-cause and cause-specific mortality of immigrants and native born in the united states. Am J Public Health. 2001;91(3):392–9. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11236403. Accessed 20 Apr 2021. [PubMed: 11236403]
2. Singh GK, Siahpush M. Ethnic-immigrant differentials in health behaviors, morbidity, and cause-specific mortality in the united states: an analysis of two national data bases. Hum Biol; an international record of research. 2002;74(1):83–109. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=11931581. Accessed 20 Apr 2021.
3. Singh GK, Miller BA. Health, life expectancy, and mortality patterns among immigrant populations in the United States. Can J Public Health. 2004;95(3):14. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=15191127. Accessed 20 Apr 2021.
4. Singh GK, Rodriguez-Lainz A, Kogan MD. Immigrant health inequalities in the United States: use of eight major national data systems. ScientificWorldJournal. 2013;2013: 512313. 10.1155/2013/512313. [PubMed: 24288488]
5. Singh GK, Hiatt RA. Trends and disparities in socioeconomic and behavioural characteristics, life expectancy, and cause-specific mortality of native-born and foreign-born populations in the United States, 1979–2003. Int J Epidemiol. 2006;35(4):903–19. http://www.ncbi.nlm.nih.gov/

entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=16709619. Accessed 20 Apr 2021. [PubMed: 16709619]

6. Li LW, McLaughlin SJ, Zhang J. Healthy aging in older Chinese Americans: associations with immigrant experiences. J Aging Health. 2019:898264319889122. 10.1177/0898264319889122
7. Waldman K, Koyanagi A, Wang JS, Ko J, DeVylder J, Oh H. Acculturative stress, disability, and health treatment utilization among Asian and Latin American immigrants in the United States. Soc Psychiatry Psychiatr Epidemiol. 2019;54(10):1275–84. 10.1007/s00127-019-01691-0. [PubMed: 30895354]
8. 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. 10.1093/geroni/igx020.
9. Hill TD, Angel JL, Balistreri KS, Herrera AP. Immigrant status and cognitive functioning in late-life: an examination of gender variations in the healthy immigrant effect. Soc Sci Med. 2012;75(12):2076–84. 10.1016/j.socscimed.2012.04.005. [PubMed: 22609085]
10. Fuller-Thomson E, Brennenstuhl S, Hurd M. Comparison of disability rates among older adults in aggregated and separate Asian American/Pacific islander subpopulations. Am J Public Health. 2011;101(1):94–100. 10.2105/AJPH.2009.176784. [PubMed: 20299647]
11. Read JG, Ajrouch KJ, West JS. Disparities in functional disability among Arab Americans by nativity, immigrant arrival cohort, and country of birth. SSM Popul Health. 2018;7: 100325. 10.1016/j.ssmph.2018.100325. [PubMed: 30581961]
12. Read JG, West JS, Kamis C. Immigration and health among non-Hispanic Whites: the impact of arrival cohort and region of birth. Soc Sci Med. 2020;246: 112754 (S0277–9536(19)30749-X[pii]). [PubMed: 31887628]
13. Bostean G, Ro A, Fleischer NL. Smoking trends among U.S. latinos, 1998–2013: The impact of immigrant arrival cohort. Int J Environ Res Public Health. 2017;14(3). 10.3390/ijerph14030255. doi: E255 [pii]
14. Hamilton TG, Palermo T, Green TL. Health assimilation among Hispanic immigrants in the United States: the impact of ignoring arrival-cohort effects. J Health Soc Behav. 2015;56(4):460–77. 10.1177/0022146515611179. [PubMed: 26589971]
15. Xi J, Takyi B, Lamptey E. Are recent immigrants larger than earlier ones at their arrival? Cohort variation in initial BMI among US immigrants, 1989–2011. J Immigr Minor Health. 2015;17(6):1854–62. 10.1007/s10903-014-0129-1. [PubMed: 25376130]
16. Cognitive impairment: a call to action. CDC. 2021. https://www.cdc.gov/aging/pdf/cognitive_impairment/cogimp_poilicy_final.pdf. Accessed 1 Aug 2021.
17. Proposals from the federal interagency working group for revision of the standards for maintaining, collecting, and presenting federal data on race and ethnicity. https://www.federalregister.gov/documents/2017/03/01/2017-03973/proposals-from-the-federal-interagency-working-group-for-revision-of-the-standards-for-maintaining. Updated 2017. Accessed 05/16 2017
18. Abuelezam NN, El-Sayed AM, Galea S. The health of Arab Americans in the United States: an updated comprehensive literature review. Front Public Health. 2018;6:262. 10.3389/fpubh.2018.00262. [PubMed: 30255009]
19. Ajrouch KJ, Zahodne LB, Antonucci TC. Arab American cognitive aging: opportunities for advancing research on Alzheimer's disease disparities. Innov Aging. 2018;1(3):igx034. 10.1093/geroni/igx034.
20. Chatkoff DK, Leonard MT. A preliminary investigation of cognitive appraisal and cardiovascular reactivity and recovery in Arab Americans. Ethn Dis. 2009;19(3):258–64. http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Citation&list_uids=19769006. Accessed 20 Apr 2021. [PubMed: 19769006]
21. Dallo FJ, Kindratt TB, Zahodne L. Prevalence of self-reported cognitive impairment among Arab American immigrants in the United States. Innov Aging. 2020. 10.1093/geroni/igaa058.
22. United states census bureau. PUMS data. https://www.census.gov/programs-surveys/acs/data/pums.html. Accessed 20 Apr 2021.

23. Hersi M, Irvine B, Gupta P, Gomes J, Birkett N, Krewski D. Risk factors associated with the onset and progression of Alzheimer's disease: a systematic review of the evidence. Neurotoxicology. 2017;61:143. [PubMed: 28363508]
24. Taylor CA, Bouldin ED, McGuire LC. Subjective cognitive decline among adults aged >/=45 years - United States, 2015–2016. MMWR Morb Mortal Wkly Rep. 2018;67(27):753–7. 10.15585/mmwr.mm6727a1. [PubMed: 30001562]
25. League of arab states. http://www.al-bab.com/arab/docs/league.htm. Updated 2013. Accessed 1 Jan 2008
26. SAS Institute Inc 2013. SAS/ACCESS® 9.4. Cary, NC: SAS Institute Inc
27. Dallo FJ, Booza J, Nguyen ND. Functional limitations and nativity status among older Arab, Asian, Black, Hispanic, and White Americans. J Immigr Minor Health. 2013. 10.1007/s10903-013-9943-0.
28. Dallo FJ, Al Snih S, Ajrouch KJ. Prevalence of disability among US- and foreign-born Arab Americans: results from the 2000 US census. Gerontology. 2009;55(2):153–61. 10.1159/000151538. [PubMed: 18714143]
29. FY 2015 served populations by state and country of origin (refugees only). https://www.acf.hhs.gov/orr/resource/fy-2015-refugees-by-state-and-country-of-origin-all-served-populations. Updated 2016. Accessed June/10, 2016
30. Vernice NA, Pereira NM, Wang A, Demetres M, Adams LV. The adverse health effects of punitive immigrant policies in the United States: a systematic review. PLoS ONE. 2020;15(12): e0244054. 10.1371/journal.pone.0244054. [PubMed: 33326463]
31. DeyAkAlyass A, Muir RT, Black SE, Swartz RH, Murray BJ, et al. Validity of self-report of cardiovascular risk factors in a population at high risk for stroke. J Stroke and Cerebrovasc Dis. 2015;24(12):2860–5. 10.1016/j.jstrokecerebrovasdis.2015.08.022. [PubMed: 26411693]
32. Delhey L, Shoults C, Johnson K, Orloff M, Faramawi MF, Delongchamp R. The difference between hypertension determined by self-report versus examination in the adult population of the USA: Continuous NHANES 1999–2016. J Public Health (Oxf). 2021 Jun 7;43(2):316–24. 10.1093/pubmed/fdz132. [PubMed: 31781770]
33. Abraido-Lanza AF, Dohrenwend BP, Ng-Mak DS, Turner JB. The Latino mortality paradox: a test of the "salmon bias" and healthy migrant hypotheses. Am J Public Health. 1999;89(10):1543–8. 10.2105/ajph.89.10.1543. [PubMed: 10511837]
34. Nielsen SS, Krasnik A. Poorer self-perceived health among migrants and ethnic minorities versus the majority population in Europe: a systematic review. Int J Public Health. 2010;55(5):357–71. 10.1007/s00038-010-0145-4. [PubMed: 20437193]

Table 1

Selected characteristics by nativity status among

	US-born Arab Americans *(Unweighted n = 10,727; weighted n = 89,011)*			Foreign-born Arab Americans *(Unweighted n = 16,837; weighted n = 175,075)*		
	Cognitive disability		***p*-value**	**Cognitive disability**		***p*-value**
	No	**Yes**		**No**	**Yes**	
Mean age (± SE)	60.2 (0.13)	65.6 (0.82)	< 0.0001	59.1 (0.11)	69.2 (0.48)	< 0.0001
Female sex	52.4 (0.60)	52.9 (2.56)	0.8464	45.8 (0.50)	57.9 (1.79)	< 0.0001
Married, spouse present	61.3 (0.60)	31.9 (2.23)	< 0.0001	67.2 (0.48)	38.2 (1.73)	< 0.0001
Education			< 0.0001			< 0.0001
None/less than HS	4.4 (0.26)	16.0 (1.93)		19.7 (0.41)	50.9 (1.83)	
HS graduate	20.5 (0.51)	34.0 (2.49)		20.3 (0.42)	18.7 (1.50)	
Some college	28.3 (0.55)	25.8 (2.15)		18.8 (0.38)	14.3 (1.16)	
College degree or more	46.9 (0.60)	24.2 (2.11)		41.1 (0.48)	16.1 (1.26)	
Poverty level			< 0.0001			< 0.0001
Lowest tertile (≤ 231%)	20.5 (0.52)	53.7 (2.63)		43.2 (0.50)	60.6 (1.82)	
Middle tertile (232–500%)	29.3 (0.56)	27.4 (2.36)		27.0 (0.44)	25.0 (1.62)	
Highest tertile (≥ 500%)	50.1 (0.61)	18.8 (2.04)		29.8 (0.43)	14.3 (1.26)	
Limited English proficiency **	23.2 (1.72)	22.3 (4.48)	0.8647	52.2 (0.53)	81.5 (1.42)	
Not US citizen	—	—	—	76.2 (0.44)	75.0 (1.65)	0.4653
Mean years in US (± SE)	—	—	—	25.2 (0.15)	26.7 (0.66)	0.0251
Limited English proficiency **	—	—	—	52.5 (0.53)	81.5 (1.42)	< 0.0001
Immigrant arrival year	—	—	—			0.2247
Pre-1991	—	—	—	49.0 (0.50)	50.3 (1.83)	
1991–2000	—	—	—	23.1 (0.43)	20.0 (1.44)	
2001–2013	—	—	—	22.5 (0.42)	24.3 (1.64)	
2014–2018	—	—	—	5.4 (0.24)	5.3 (0.84)	

Arab American individuals ages 45 and older: American Community Survey, 2008–2018 (unweighted n = 27,564; weighted n = 264,086)

** Limited language proficiency includes adults who responded their ability to speak English was “well,” “not well,” or “not at all”

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Table 2

Age- and sex-adjusted prevalence of cognitive disability by nativity status and arrival cohort among Arab Americans ages 45 and older: American Community Survey, 2008–2018 (unweighted *n* = 27,564; weighted *n* = 264,086)

	Cognitive disability	
	Age- and sex-adjusted prevalence *(SE)*	***p*-value**
Arab Americans	6.5 (0.00)	< 0.0001
US-born	4.0 (0.00)	
Foreign-born	6.0 (0.00)	
Immigrant arrival year		< 0.0001
Pre-1991	4.6 (0.00)	
1991–2000	4.8 (0.00)	
2001–2013	4.8 (0.00)	
2014–2018	3.4 (0.00)	

Table 3

Crude and adjusted odds ratios and 95% CIs for having a cognitive disability by nativity status and arrival cohort

	Model 1 ***(crude)***	**Model 2**[a] ***(demographic)***	**Model 3**[b] ***(socioeconomic)***	**Model 4**[c] ***(acculturation)***
US-born Arab Americans (ref)	1.00	1.00	1.00	–
Foreign-born Arab Americans	1.32 (1.16, 1.50)	1.41 (1.24, 1.61)	0.96 (0.83, 1.12)	
Arrival cohort				
Foreign-born, < 1991 (ref)	1.00	1.00	1.00	1.00
Foreign-born, 1991–2000	0.69 (0.67, 0.71)	1.06 (1.03, 1.09)	1.01 (0.98, 1.03)	1.05 (1.00, 1.08)
Foreign-born, 2001–2013	0.71 (0.69, 0.73)	1.02 (0.99, 1.05)	0.93 (0.90, 0.96)	1.03 (0.98, 1.07)
Foreign-born, 2014–2018	0.57 (0.53, 0.61)	0.75 (0.69, 0.81)	0.71 (0.64, 0.75)	0.81 (0.73, 0.88)

[a]Model 2 demographic—adjusts for age and sex

[b]Model 3 socioeconomic—adjusts for model 2 + education, poverty level, marital status

[c]Model 4 acculturation—adjusts for model 3 + language, citizenship

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