ORIGINAL RESEARCH

Diabetes Monitoring in Foreign-Born and US-Born Latino Adults in US Community Health Centers

Roopradha Datta, MPH, Jennifer A. Lucas, PhD, Miguel Marino, PhD, Danielle M. Crookes, DrPH, Benjamin Aceves, PhD, David Ezekiel-Herrera, MS, Andrew Bazemore, and John D. Heintzman, MD, MPH

Introduction: **The Latino population is the largest ethnic group in the United States and has a higher prevalence of diabetes mellitus than non-Latino Whites. The objective of this article is to assess if glycohemoglobin (HbA1c) monitoring rates vary across Latino patients by subgroup and nativity compared with their non-Latino White counterparts.**

Methods: **Our sample included 43,593 adults (18 to 79 years) with Type-2 diabetes extracted from electronic health record (EHR) data from Community Health Centers (CHCs) across 16 US states, linked with neighborhood-level Latino subgroup data within the study period 2012 to 2020. The outcome was number of HbA1c monitoring tests per year. The main independent variable was self-reported ethnicity/nativity (eg, Mexican-born, US-born Latino, etc.) or for those with no EHR-recorded country of birth.**

Results: **Compared with non-Latino White people with diabetes, US-born Latinos with diabetes had an 11% higher rate of receiving HbA1c monitoring; no foreign-born Latinos had monitoring rates that differed significantly from non-Latino Whites. Latinos with no country of birth recorded and living in high percent Mexican neighborhood had 22% higher rates of receiving HbA1c monitoring. Those living in high percent Dominican, Guatemalan and Honduran neighborhoods also had greater rates of HbA1c monitoring compared with non-Latino White patients.**

Conclusions: **It could be beneficial for clinics to inquire about nativity and subgroup information of their Latino patients, so as to customize the treatment plan and better understand utilization patterns common in their communities. (J Am Board Fam Med 2024;37:1095–1102.)**

Keywords: **Community Health Centers, Electronic Health Records, Hb A1c, Hispanic or Latino, Minority Health, Type 2 Diabetes**

Introduction

Latinos represent about 19.1% of the US population, making them the largest ethnic group in the US.[1] Latinos have a high prevalence of diabetes, showing higher rates of diabetes in both adults and in children compared with non-Latino White people.[2] In addition, Latinos also present with more diabetic complications compared with their non-Latino White counterparts.[2] Nativity may play an important role in the health care that Latinos receive,[3] and is an oft-considered social determinant of health in Latino patients living in the US.[4–6] Previous research suggests that health outcomes vary by Latino subgroups as well,[7] thereby making it imperative to study both nativity and subgroups when assessing Latino outcomes in

This article was externally peer reviewed.
Submitted 5 March 2024; revised 30 May 2024; accepted 3 June 2024.

From the Department of Family Medicine, Oregon Health & Science University, Portland OR (RD, JAL, MM, DEH, JDH); Department of Health Sciences and the Department of Sociology and Anthropology, Northeastern University, Boston MA (DMC); College of Health and Human Services School of Public Health, San Diego State University, San Diego CA (BA); American Board of Family Medicine, Lexington, KY (AB); Center for Professionalism and Value in Health Care, Washington, DC (AB).

Funding: This work was funded by the NIH National Institute for Minority Health and Health Disparities (grant number R01MD014120 awarded to Dr. John Heintzman).
Conflict of interest: The authors have no conflicts of interest to declare.

Ethics statement: This study was approved by the Oregon Health & Science University Institutional Review Board (study number 21713).

Corresponding author: Roopradha Datta, MPH, Department of Family Medicine, Oregon Health & Science University, 3181 S.W. Sam Jackson Park Road, Mailcode: Family Medicine, Portland, OR 97239 (E-mail: dattaro@ohsu.edu).

health services research. In this study we focused on type 2 diabetes (more common among adults), which is the condition when the pancreas does not produce enough insulin.[8] For convenience, we will refer to 'type 2 diabetes', as 'diabetes' in the rest of the article. As per American Diabetes Association (ADA) guidelines, glycohemoglobin (HbA1c) levels should be measured twice a year in patients with diabetes who have had HbA1c recorded 7 or less, and at least 4 times in patients who have glucose fluctuations or those who have had a change in their diabetic treatment.[9]

Commonly used health services research data sources often do not have Latino background information to inform difference in HbA1c monitoring rates between Latino subgroups. To fill this gap in knowledge, the objective of this article is to assess if HbA1c monitoring rates (an essential feature of diabetes care) vary across people of varying Latino background (eg, Mexican ancestry, Dominican ancestry, etc.), compared with their non-Latino White counterparts. Our dataset is novel in that we use a multistate network of Community Health Centers (CHCs) to describe the extent to which country of birth is recorded in Electronic Health Records (EHRs) in Latinos, and to describe demographic features.[3] In addition to using patient-level Latino subgroup information, we used community subgroup information[7] that makes our dataset unique. We hypothesize that HbA1c monitoring rates will be higher in all Latino subgroups compared with their non-Latino White counterparts as seen in some research[7] and will differ by Latino subgroups, owing to prior research showing robust differences in health outcomes among Latino subgroups.[4,5,7,8]

Methods

This retrospective observational study used EHR data from the OCHIN network of Community Health Centers (CHCs) across the US. The data are novel in its capture of country of birth for a portion of the study sample. Data are collected in the routine course of clinic care in structured, preexisting fields in OCHIN Epic (EHR software), and not collected specifically for this study. In our study sample, for Latinos without country of birth information, we looked at their ethnic subgroup using neighborhood percentage. In this study we use nativity to mean whether a patient is US born or foreign-born Latinos. In this study we measure Latino background in 2 different ways - subgroup and nativity. We understand that subgroup and nativity, although both disaggregated, are 2 distinct entities. However, both are important health determinants in the Latino population.

Inclusion criteria was adult patients (18 to 79 years) with Type-2 diabetes with at least 1 visit to a study clinic from 1/1/2012 to 12/31/2020, and a geocoded address in the EHR (n = 43,593). This study included data from 16 US states (California, Colorado, Florida, Georgia, Indiana, Massachusetts, Minnesota, North Carolina, New Jersey, New Mexico, Ohio, Oregon, Texas, Utah, Washington, and Wisconsin). EHR data were linked with census-tract (ie, neighborhood-level) Latino subgroup data, which were obtained from the American Community Survey 2014 to 2018 estimates.

Outcome and Independent Variables

The primary outcome was the rate of HbA1c tests per year. The main independent variable was a combination of self-reported ethnicity (Latino or non-Latino White) and nativity for those who had country of birth recorded in the EHR. For those with no EHR-recorded country of birth, a proxy for nativity was created based on neighborhood composition from the American Community Survey (ACS) estimates for the maximum represented subgroup of the patients' residential neighborhood (eg, if the highest percentage in the tract was Mexican, the tract was assigned Mexican and so on). The ethnicity/nativity variable includes the groups with a sample size large enough for meaningful comparison (categories: US-born Latinos, Dominican-born, Guatemalan-born, Honduran-born, Mexican-born, Salvadoran born, other foreign-born Latino and neighborhood proxies for Dominican, Guatemalan, Honduran, Mexican, and Salvadoran, all compared with non-Latino Whites (see Table 1)). We use the terms Latino and non-Latino White because they are more often preferred among our study population; the actual ethnicity variable collected is Hispanic and non-Hispanic.

Covariates

We adjusted for patient-level characteristics including age in years at first visit (18 to 29, 30 to 39, 40 to 49, 50 to 59, 60 to 69, and 70 to 79), sex (male/female), number of ambulatory or telehealth clinic visits per year (<1, 1 to 3, 3.01 to 5, >5), insurance type (never insured, some private insurance, some

Table 1. Patient Characteristics (n = 43,593)

	Non-Latino White	Foreign-Born Latino	US-Born Latino	Latino with No Country of Birth Recorded
N	11,911	6,454	1,908	23,320
Ethnicity/Nativity group				
Non-Latino White	11,911 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)
US-born Latino	0 (0.0)	0 (0.0)	1,908 (100.0)	0 (0.0)
Dominican-born	0 (0.0)	485 (7.5)	0 (0.0)	0 (0.0)
Guatemalan-born	0 (0.0)	886 (13.7)	0 (0.0)	0 (0.0)
Honduran-born	0 (0.0)	198 (3.1)	0 (0.0)	0 (0.0)
Mexican-born	0 (0.0)	3,396 (52.6)	0 (0.0)	0 (0.0)
Salvadoran-born	0 (0.0)	1,225 (19.0)	0 (0.0)	0 (0.0)
Other foreign-born Latino	0 (0.0)	264 (4.1)	0 (0.0)	0 (0.0)
Neighborhood Dominican	0 (0.0)	0 (0.0)	0 (0.0)	1,860 (8.0)
Neighborhood Guatemalan	0 (0.0)	0 (0.0)	0 (0.0)	350 (1.5)
Neighborhood Honduran	0 (0.0)	0 (0.0)	0 (0.0)	90 (0.40
Neighborhood Mexican	0 (0.0)	0 (0.0)	0 (0.0)	20,562 (88.2)
Neighborhood Salvadoran	0 (0.0)	0 (0.0)	0 (0.0)	458 (2.0)
Spanish speaking (Yes)	0 (0.0)	6,107 (94.6)	791 (41.5)	17,918 (76.8)
Age category				
18 to 29	368 (3.1)	123 (1.9)	173 (9.1)	780 (3.3)
30 to 39	955 (8.0)	667 (10.3)	244 (12.8)	2,449 (10.5)
40 to 49	2,197 (18.4)	1,577 (24.4)	410 (21.5)	5,405 (23.2)
50 to 59	4,190 (35.2)	2,230 (34.6)	609 (31.9)	7,472 (32.0)
60 to 69	3,210 (26.9)	1,475 (22.9)	374 (19.6)	5,363 (23.0)
70 to 79	991 (8.3)	382 (5.9)	98 (5.1)	1,851 (7.9)
Male sex (Yes)	6,313 (53.0)	2,659 (41.2)	841 (44.1)	10,480 (44.9)
Visits per year (categorical)				
<1	1,904 (16.0)	765 (11.9)	279 (14.6)	4,119 (17.7)
1 to 3	3,736 (31.4)	1,669 (25.9)	730 (38.3)	7,346 (31.5)
3.01 to 5	2,633 (22.1)	1,551 (24.0)	390 (20.4)	4,868 (20.9)
>5	3,638 (30.5)	2,469 (38.3)	509 (26.7)	6,987 (30.0)
Insurance				
Never insured	789 (6.6)	510 (7.9)	40 (2.1)	4,216 (18.1)
Some private	1,168 (9.8)	296 (4.6)	127 (6.7)	1,697 (7.3)
Some public	8,418 (70.7)	4,568 (70.8)	1,427 (74.8)	14,945 (64.1)
Some private and public	1,536 (12.9)	1,080 (16.7)	314 (16.5)	2,462 (10.6)
Income as % of federal poverty level				
Always equal to or over 138	1,488 (12.5)	196 (3.0)	39 (2.0)	1,282 (5.5)
Always under 138	6,109 (51.3)	5,038 (78.1)	726 (38.1)	14,504 (62.2)
Above & below 138	1,860 (15.6)	725 (11.2)	80 (4.2)	2,433 (10.4)
Never documented	2,454 (20.6)	495 (7.7)	1,063 (55.7)	5,101 (21.9)
Overweight body mass index				
Never	668 (5.6)	377 (5.8)	94 (4.9)	1,313 (5.6)
Sometimes	1,406 (11.8)	879 (13.6)	213 (11.2)	3,107 (13.3)
Always	9,265 (77.8)	5,033 (78.0)	1,550 (81.2)	18,033 (77.3)
Never recorded	572 (4.8)	165 (2.6)	51 (2.7)	867 (3.7)
Ever had kidney test (Yes)	10,578 (88.8)	5,956 (92.3)	1,752 (91.8)	21,050 (90.3)
Ever had diabetes counseling (Yes)	41 (0.3)	42 (0.7)	24 (1.3)	113 (0.5)
Ever pregnant (Yes)	95 (0.8)	157 (2.4)	53 (2.8)	335 (1.4)

Continued

Table 1. Continued

	Non-Latino White	Foreign-Born Latino	US-Born Latino	Latino with No Country of Birth Recorded
HbA1c always under 7				
No	6,527 (54.8)	4,218 (65.4)	1,124 (58.9)	13,701 (58.8)
Yes	2,807 (23.6)	1,187 (18.4)	414 (21.7)	4,705 (20.2)
Never measured	2,577 (21.6)	1,049 (16.3)	370 (19.4)	4,914 (21.1)
Neighborhood social deprivation index score				
Low [1, 48)	3,755 (31.5)	369 (5.7)	160 (8.4)	2,177 (9.3)
Medium [48, 79)	3,941 (33.1)	1,085 (16.8)	506 (26.5)	5,379 (23.1)
High [79, 100]	4,215 (35.4)	5,000 (77.5)	1,242 (65.1)	15,764 (67.6)

public insurance, or a combination of private and public insurance), income as percent of the US federal poverty level (always ≥138%, above and below 138%, always <138%, or never documented), body mass index (never overweight/obese, sometimes overweight/obese, always overweight/obese, or never recorded), ever have had a kidney disease test (Yes/No), ever had diabetes mellitus counseling (Yes/No), HbA1c always under 7 to indicate glycemic control (Yes/No/Never measured), neighborhood social deprivation index score (low, medium, high categorized using Jenks natural breaks). For descriptive analyses, we also examined Spanish language speaking and pregnancy during the study period. Pregnancy was not included in regression models to avoid different clinical experiences from type 2 diabetes and gestational diabetes. To account for missing data, we included categories to indicate this when needed.

Statistical Analysis

We conducted descriptive analyses to examine characteristics of the sample by ethnicity/nativity groups and unadjusted rates of the outcome by group. We conducted negative binomial regression with robust standard errors clustering on primary clinic to model HbA1c monitoring rates as a function of ethnicity/nativity group adjusted for the above-listed covariates. We estimated adjusted rate ratios (aRRs) and their corresponding 95% CIs. All statistical tests were 2-sided, and type I error was set at 5%. We conducted all analyses using R and Stata software.

Results

The study population comprised 43,593 adults aged 18 to 79 years with diagnosed type 2 diabetes. Patient characteristics are shown in Table 1. Among the sample of patients with diabetes who self-identified as foreign-born Latinos, about 95% were Spanish speaking, 78% had income always under 138% of the Federal poverty level, 78% lived in highly socially deprived neighborhoods, and 8% were never insured, all which were greater than in US-born Latinos and non-Latino White patients (Table 1). Unadjusted rates of HbA1c monitoring are shown in Table 2.

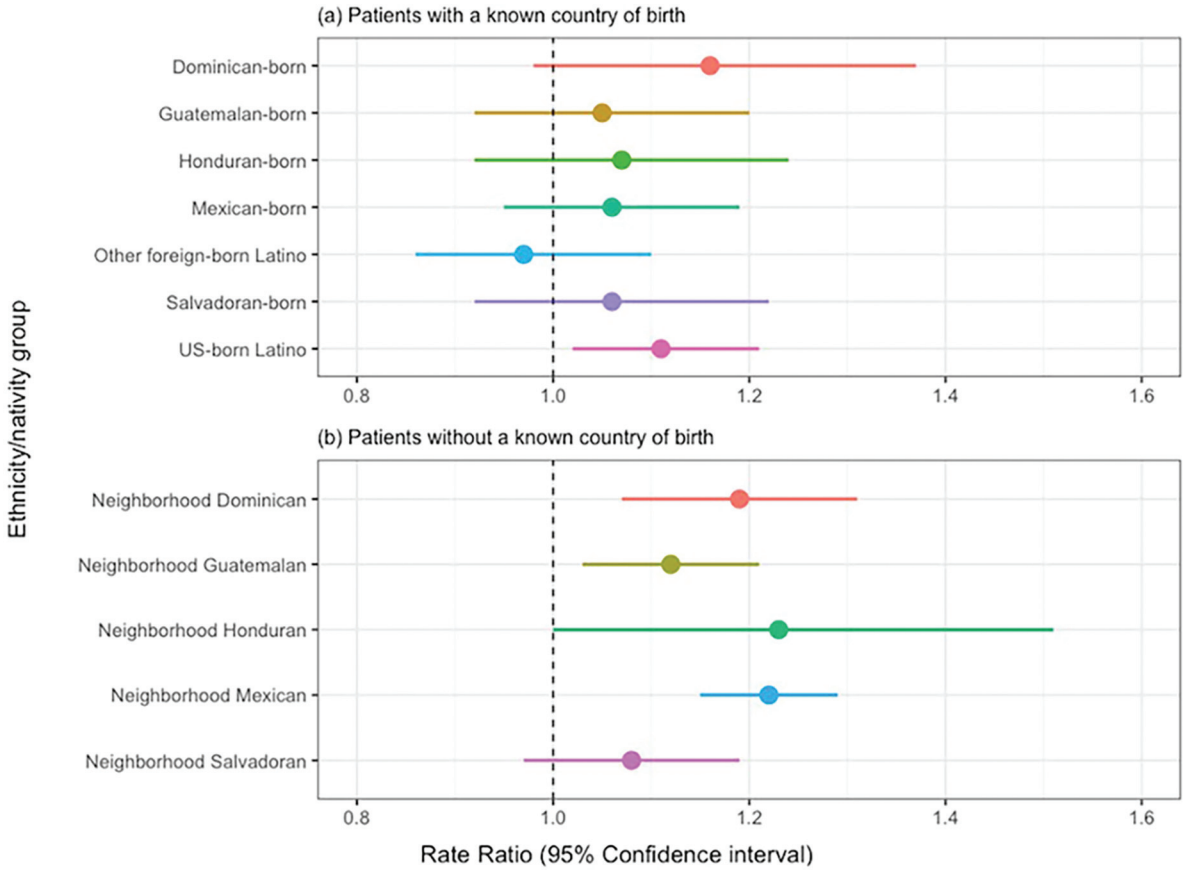
As seen in Figure 1a (and the Appendix), compared with non-Latino White people living with diabetes, US born Latinos with diabetes had an 11% higher rate of receiving HbA1c monitoring (aRR = 1.11, 95% CI = 1.02-1.21). Foreign-born Latinos' monitoring rates did not differ significantly from that of non-Latino White patients. In Figure 1b (and Appendix Table 1), we observed that HbA1c monitoring rates were 22% higher for Latinos with no country of birth recorded and

Table 2. Unadjusted Rates of HbA1c Monitoring by Ethnicity/Nativity Group

Ethnicity/Nativity Group	Rate (95% CI)
Non-Latino White	1.00 (0.99–1.01)
US-born Latino	1.00 (0.98–1.02)
Dominican-born	1.37 (1.32–1.43)
Guatemalan-born	1.35 (1.32–1.39)
Honduran-born	1.24 (1.17–1.32)
Mexican-born	1.31 (1.29–1.33)
Salvadoran-born	1.43 (1.40–1.46)
Other foreign-born Latino	1.17 (1.11–1.24)
Neighborhood Dominican	1.41 (1.38–1.44)
Neighborhood Guatemalan	1.07 (1.02–1.12)
Neighborhood Honduran	0.95 (0.85–1.07)
Neighborhood Mexican	1.16 (1.15–1.17)
Neighborhood Salvadoran	1.18 (1.13–1.23)

Abbreviation: CI, Class interval.

Figure 1. Adjusted rate ratios of HbA1c monitoring by ethnicity/nativity group compared with non-Latino White population. Negative binomial model adjusted for age at first visit, sex, insurance type, visits per year, body mass index, income as a percent of the federal poverty level, ever having a kidney disease test, ever having diabetes counseling, HbA1c always under 7, and neighborhood social deprivation index score; a, Patients with a known country of birth; b, Latino Patients without a known country of birth.



living in high percent Mexican neighborhood relative to non-Latino White patients (aRR = 1.22, 95% CI = 1.15-1.29). Those living in high percent Dominican neighborhoods had 19% higher rates (aRR = 1.19, 95% CI = 1.07-1.31), those living in high percent Guatemalan neighborhoods had 12% higher rates (aRR = 1.12, 95% CI = 1.03-1.21), and those living in high percent Honduran neighborhoods had 23% higher rates (aRR = 1.23, 95% CI = 1.00 to 1.51) compared with non-Latino White patients. No differences in monitoring rates were observed between Latinos with no recorded country of birth living in high percent Salvadorian neighborhoods.

Discussion

In this analysis, we used EHR data available from CHCs linked to publicly-available national neighborhood-level survey data to infer Latino nativity for health disparities research in primary care and health services research, based on the predicted algorithm as shown in the novel contribution by Marino et al. where they indicate a new approach to address more specific missing country of birth in some contexts.[10] Given, the challenges and complexity of using EHR data from a CHC setting,[3] we addressed Latino background in 2 different ways - subgroup and nativity.

There are several prominent themes that stood out in our findings. First, despite having potentially significant differences in socioeconomic status, income level, etc., the HbA1c monitoring rates were similar in the foreign-born Latino group compared with US-born, non-Latino White counterparts. As seen in previous research, low socioeconomic status is associated with high mortality in people due to diabetes,[11–13] which could be related to low monitoring rates.

Therefore, one might expect the aforementioned demographic differences like lower socioeconomic status to result in lower monitoring rates among foreign-born Latinos, but that was not the case. Previous research has shown that foreign born Latinos with low socioeconomic status have a barrier to access appropriate care, thereby leading to poor management of diabetes in this population, as compared with patients who are from a higher socioeconomic status.[14] In this case, despite higher socioeconomic barriers, the foreign-born Latino population accessed similar or more care than the non-Latino White population in our sample. This finding points to the importance of considering Latino background as an important social determinant by primary care physicians and health care delivery organizations: collecting this data may allow clinicians to more appropriately understand the utilization patterns of their patients and focus on areas where utilization may suffer most. Latinos often received more HbA1c monitoring in our study than US-born non-Latino White patients. Latino patients may stand out more within these CHCs because of clinicians' greater awareness of patients' potential barriers or risk factors (and a general high prevalence of diabetes and its complications in Latino patients), leading to more diagnostic tests as compared with non-Latino White individuals with diabetes. While this awareness could be generally helpful, the response to order more tests may not be associated with better control.[8]

Second, we found heterogeneity in HbA1c monitoring within Latinos by neighborhood-based subgroup. Latinos (with no country of birth recorded in EHR) living in high percent Dominican, Guatemalan, Honduran, and Mexican neighborhoods had greater rates of HbA1c monitoring compared with non-Latino White patients. Previous evidence has demonstrated heterogeneity among Latinos in terms of self-reported hypertension and diabetes by neighborhood composition and country of origin.[15] This study, in which we are using nativity based on neighborhood composition for the Latinos with no country of birth recorded in EHR, expands this evidence by showing higher specific utilization rates in certain subgroup neighborhoods, as seen in previous research as well.[10] It is unclear from our work whether or not this is associated with better outcomes; this is a ripe arena for future work. Despite this uncertainty, our findings highlight that data disaggregation is vital in understanding diabetes care in Latino populations.[3] Furthermore, it is important to point out that non-Latino White patients seem to be getting less frequent a1c monitoring compared with the other groups. In other research in other disease areas, this has been noted as well. Further work can explore the factors in this group that may reduce the utilization of care. However, our focus is on the possible strengths that CHCS and some Latino patients may manifest in delivering/obtaining appropriate HbA1c monitoring.[16]

Limitations

In our study, the country of birth information was present for a small subset of our total Latino population, which could produce greater variation in results. Our dataset did not have information on nativity or subgroup, and we used neighborhood percentage to assess these entities. In addition, we did not have neighborhood subgroup information for all possible Latino subgroups and for all other races and ethnicities (eg, Asian subgroups); therefore, we could not calculate a full neighborhood ethnicity percentage. However, in some of our other work neighborhood was a good predictor.[10] For our study population, we were unable to consider time in the US, or generation after immigration because this is not collected in the EHR. Further, we did not analyze local or state policies or environments that may affect clinic workflow and practice in the collection of country of birth because our data do not contain that information. CHCs are likely a unique environment in which patients feel safe reporting sensitive information,[17] and may not represent other clinical environments, however they serve a disproportionately high number of Latino patients[18] and are a useful setting in which to do this work. In addition, we are unable to make distinctions between island-born and US-mainland born Puerto Ricans because our dataset does not classify Puerto Rico separately from the US.

Conclusion

In this article we assessed if HbA1c monitoring rates varied across people of varying Latino background. We found that, despite having potentially significant differences in socioeconomic status, income level etc., the HbA1c monitoring rates did not differ significantly in the foreign-born Latino

groups compared with their non-Latino White counterparts. However, compared with non-Latino White patients, there were significant differences in HbA1c monitoring within Latinos by neighborhood subgroup, as well as for US-born Latinos. Therefore, it could be beneficial for clinics to inquire about nativity and subgroup information of their Latino patients, so as to customize the treatment plan and better understand utilization patterns common in their communities. In addition, CHCs, in contrast to other health care settings, serve to provide the health care for underserved communities and they promote health equity especially in protecting communities of color and special populations.

It was conducted with the Accelerating Data Value Across a National Community Health Center Network (ADVANCE) Clinical Research Network (CRN). ADVANCE is a CRN in PCORnet®, the National Patient Centered Outcomes Research Network. ADVANCE is led by OCHIN in partnership with Health Choice Network, Fenway Health, and Oregon Health & Science University. ADVANCE's participation in PCORnet® is funded through the Patient-Centered Outcomes Research Institute (PCORI), contract number RI-OCHIN-01-MC.

To see this article online, please go to: http://jabfm.org/content/37/6/1095.full.

References

1. United States Census Bureau - Hispanic Heritage Month 2023. 2023; Available at: https://www.census.gov/newsroom/facts-for-features/2023/hispanic-heritage-month.html.
2. Aguayo-Mazzucato C, Diaque P, Hernandez S, Rosas S, Kostic A, Caballero AE. Understanding the growing epidemic of type 2 diabetes in the Hispanic population living in the United States. Diabetes Metab Res Rev 2019;35:e3097.
3. Heintzman J, Dinh D, Lucas JA, et al. Answering calls for rigorous health equity research: a cross-sectional study leveraging electronic health records for data disaggregation in Latinos. Fam Med Community Health 2023;11.
4. Camacho-Rivera M, Kawachi I, Bennett GG, Subramanian SV. Revisiting the Hispanic health paradox: the relative contributions of nativity, country of origin, and race/ethnicity to childhood asthma. J Immigr Minor Health 2015;17:826–33.
5. Costas-Muñiz R, Jandorf L, Philip E, et al. Examining the impact of Latino nativity, migration, and acculturation factors on colonoscopy screening. J Community Health 2016;41:903–9.
6. Do DP, Frank R. The diverging impacts of segregation on obesity risk by nativity and neighbor-hood poverty among Hispanic Americans. J Racial Ethn Health Disparities 2020;7:1214–24.
7. Datta R, Lucas JA, Marino M, et al. Diabetes screening and monitoring among older Mexican-origin populations in the U.S. Diabetes Care 2022;45:1568–73.
8. Aceves B, Ezekiel-Herrera D, Marino M, et al. Disparities in HbA1c testing between aging US Latino and non-Latino white primary care patients. Prev Med Rep 2022;26:101739.
9. Centers for Disease Control and Prevention - Hispanic or Latino People and Type 2 Diabetes. 2022.
10. Marino M, Fankhauser K, Minnier J, et al. Disaggregating Latino nativity in equity research using electronic health records. Health Serv Res 2023;58:1119–30.
11. Tatulashvili S, Fagherazzi G, Dow C, Cohen R, Fosse S, Bihan H. Socioeconomic inequalities and type 2 diabetes complications: a systematic review. Diabetes Metab 2020;46:89–99.
12. Gnavi R, Petrelli A, Demaria M, Spadea T, Carta Q, Costa G. Mortality and educational level among diabetic and non-diabetic population in the Turin Longitudinal Study: a 9-year follow-up. Int J Epidemiol 2004;33:864–71.
13. Grundmann N, Mielck A, Siegel M, Maier W. Area deprivation and the prevalence of type 2 diabetes and obesity: analysis at the municipality level in Germany. BMC Public Health 2014;14:1264.
14. Burner E, Terp S, Lam CN, Neill E, Menchine M, Arora S. Access to care, nativity and disease management among Latinos with diabetes in a safety-net healthcare setting. AIMS Public Health 2019;6:488–501.
15. Rodriguez F, Hicks LS, López L. Association of acculturation and country of origin with self-reported hypertension and diabetes in a heterogeneous Hispanic population. BMC Public Health 2012;12:768.
16. Heintzman JD, Ezekiel-Herrera DN, Quiñones AR, et al. Disparities in colorectal cancer screening in latinos and non-Hispanic Whites. Am J Prev Med 2022;62:203–10.
17. López-Cevallos DF, Lee J, Donlan W. Fear of deportation is not associated with medical or dental care use among Mexican-origin farmworkers served by a federally-qualified health center–faith-based partnership: an exploratory study. J Immigr Minor Health 2014;16:706–11.
18. National Association of Community Health Centers. Community Health Center Chartbook. In: 2021.

Appendix

Appendix Table 1. Rate Ratios of HbA1c Screening

Ethnicity/Nativity Group	
Non-Latino white	Ref
US-born Latino	1.11 (1.02–1.21)
Dominican-born	1.16 (0.98–1.37)
Guatemalan-born	1.05 (0.92–1.20)
Honduran-born	1.07 (0.92–1.24)
Mexican-born	1.06 (0.95–1.19)
Salvadoran-born	1.06 (0.92–1.22)
Other foreign-born Latino	0.97 (0.86–1.10)
Neighborhood proxy Dominican	1.19 (1.07–1.31)
Neighborhood proxy Guatemalan	1.12 (1.03–1.21)
Neighborhood proxy Honduran	1.23 (1.00–1.51)
Neighborhood proxy Mexican	1.22 (1.15–1.29)
Neighborhood proxy Salvadoran	1.08 (0.97–1.19)

Note: Negative binomial model adjusted for age at first visit, sex, insurance type, visits per year, body mass index, income as a percent of the federal poverty level, ever having a kidney disease test, ever having diabetes counseling, HbA1c always under 7, and neighborhood social deprivation index score.