Disparities in Health Insurance Coverage and Access to Care by English Language Proficiency in the USA, 2006–2016

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BACKGROUND: In the USA, people with limited English proficiency (LEP) disproportionately experience gaps in health insurance coverage and access to care. The Patient Protection and Affordable Care Act (ACA) of 2010 included reforms that could improve these outcomes.

OBJECTIVE: To describe changes in insurance coverage and access to health care by English language proficiency over 2006–2016.

DESIGN: We used regression models to estimate changes in coverage and access after 2010 for adults with high vs. limited English proficiency, adjusting for socio-economic status, demographic characteristics, and health care needs. We used difference-in-differences models to assess adjusted changes in disparities by English proficiency after 2010. Supplemental analyses used nearest-neighbor propensity score matching to balance the characteristics of respondents.

PARTICIPANTS: Respondents aged 18–64 in the Medical Expenditure Panel Survey over 2006–2016, with high ($n = 174,214$) or limited ($n = 16,484$) English language proficiency.

MAIN MEASURES: Insurance coverage was a binary variable indicating any health insurance coverage during the past 12 months. Access to care was measured using binary variables indicating whether the respondent had a usual source of care and received necessary medical, dental, and preventive care.

KEY RESULTS: Gains in health insurance coverage after 2010 were significant for adults with high English proficiency (1.7 percentage points, $p < 0.001$) and adults with limited English proficiency (4.6 percentage points, $p = 0.007$); gains did not significantly vary by English proficiency. Adults with LEP showed larger improvements than adults with high English proficiency in having a usual source of care (5 percentage points, $p = 0.007$) and receiving needed medical care and dental care (1.4 percentage points, $p = 0.013$, and 2.8 percentage points, $p = 0.009$, respectively). Findings remained similar when matching was used to balance the measured characteristics of respondents with high vs. limited English proficiency.

CONCLUSIONS: Disparities in health care access by English proficiency narrowed after 2010, the year of passage of the ACA.

KEY WORDS: English proficiency; disparities; health policy; health insurance; access to care.

INTRODUCTION

In 2011, 8.8% of the US population (25.3 million people) had limited English proficiency (LEP), reporting that they speak a language other than English at home and they speak English less than "very well."[1] These figures are rapidly growing as the US population becomes increasingly diverse.[2] LEP has been widely documented as a barrier to health care in the USA. People with LEP experience difficulties in obtaining health insurance coverage,[3, 4] accessing health care services,[5–11] receiving good quality care with high patient satisfaction,[12–14] communicating with their health care providers,[15–19] using preventive health care,[7, 20–24], and achieving treatment adherence.[25–28] People with LEP also experience worse health outcomes than those with high English proficiency,[5, 7, 29] including undiagnosed or uncontrolled hypertension, poor glycemic control and asthma control,[28, 30, 31] unplanned emergency room (ER) visits,[32, 33] prolonged hospital length of stay,[34, 35] frequent hospital readmission,[36], and serious adverse effects.[13, 37, 38]

The Patient Protection and Affordable Care Act (ACA) of 2010 was designed to expand health insurance coverage to Americans who were previously uninsured, improve access to care, and advance health equity. It included numerous provisions relevant to coverage and access for people with LEP. For example, health programs and activities receiving federal financial assistance were now required to provide meaningful access to people with LEP, and insurers in counties with large non-English-speaking populations were required to provide translations of insurance documents.[39] Such requirements supplemented prior legislation such as the Civil Rights Act of 1965 and Executive Order 13166 of 2000, which prohibit

discrimination by national origin and set standards for providing meaningful health care access.[40] The ACA also provided funding to support in-person insurance assistance programs and funding for training in cultural competence.[41] Additionally, the ACA revisited the national Culturally and Linguistically Appropriate Service (CLAS) standards to enhance access to appropriate services regardless of English proficiency.[40, 42] These ACA provisions were implemented over time, with the earliest starting after the law's passage in 2010.[40]

Given that addressing barriers to care and promoting health equity were goals of the ACA, the impacts of the ACA on this population with particularly low health care access and poor health outcomes merits study. A recent study found that disparities in patient-provider communication by English language proficiency narrowed but persisted after 2010.[40] However, little is known about how health insurance coverage and access to health care changed among individuals with LEP after the ACA.

To address this gap, the objective of this study was to assess whether the ACA was associated with improvements in insurance coverage and access to care for adults with limited English proficiency and declines in disparities in coverage and access by English language proficiency. To achieve these objectives, we used 2006–2016 data from the nationally representative Medical Expenditure Panel Survey (MEPS). MEPS is available to participants in either English or Spanish and provides interpretation services to participants preferring other languages.

METHODS

Study Design

We tested two main hypotheses. First, we hypothesized that individuals with limited English proficiency would experience improvements in coverage and access to care after the ACA. To test this hypothesis, we used multivariable regression model to compare coverage and access for people with LEP before vs. after 2010, adjusting for potential confounders.

Second, we hypothesized that pre-existing disparities by English proficiency would decline after the ACA. To test this hypothesis, we used a multivariable difference-in-differences regression model to compare the changes in gaps in health insurance coverage and access between individuals with limited vs. high English proficiency (first difference) before vs. after 2010 (second difference), after adjustment for potential confounders. In a robustness check, we used nearest-neighbor propensity score matching to balance the limited vs. high English proficiency participants on demographic, socio-economic, and health-related characteristics.

Data and Study Population

We used data from the Medical Expenditure Panel Survey (MEPS), which provides nationally representative estimates for the US civilian noninstitutionalized population. Our study included data from the annual cross-sectional MEPS surveys over 2006 through 2016. Overall response rates over these years ranged from 46.0 to 59.3%.[43] The average annual response rates for the MEPS data full-year file were 57.8% in 2006–2009, compared with 51.4% in 2010–2016, matching trends in response rates over time for many other national surveys.[2] The study was approved by the University of Southern California Institutional Review Board.

The ACA was passed in 2010. While some provisions were implemented in later years, other provisions were implemented immediately. Accordingly, 2006–2009 was considered the pre-ACA period and 2010–2016 was considered the post-ACA period.

Our study focused on nonelderly (18–64 years) US-born adults and foreign-born adults who have lived in the country for more than 5 years. Following previous studies of the ACA, we selected this sample because the ACA's provisions were designed to benefit US citizens and lawful non-citizens and because people aged younger than 18 or older than 65 were less impacted by ACA coverage expansions.[44]

Study Variables

Our main predictor variable was limited English proficiency (LEP). We considered respondents to have LEP if they (a) reported that a language other than English was spoken in their home and (b) reported that they did not speak English well or that they were not comfortable speaking English. Our research strategy addresses changes in the MEPS questionnaire over time (see Appendix A). This strategy has been used by United States Census Bureau and the American Community Survey (ACS) to identify people with limited English-speaking ability.[45]

The outcomes of interest were measures of health insurance coverage and access to care. The health insurance coverage measure was a binary variable indicating whether the participant had any health insurance coverage in the past 12 months. Measures of access to care included binary variables that indicated whether the respondent had a usual source of health care and whether the respondent needed necessary care (medical, dental, or preventive care) but was unable to receive it. (Question text: "In the last 12 months, was [respondent] unable to obtain medical/dental care, tests, or treatments they or a doctor/dentist believed necessary?")

The covariates used in multivariable modeling included information on respondents' gender, age group (age 18–24, 25–34, 35–44, 45–54, and 55–64), race (non-Hispanic white, non-Hispanic black, non-Hispanic Asian, or Hispanic), marital status, educational level (less than high school degree, high school degree, college degree, or advanced degree), household income (income less than vs. above 138% federal poverty level, a cutoff relevant to eligibility for Medicaid insurance under the ACA), employment, region of residence in the USA (Northeast, Midwest, South and West), US-born citizenship,

self-reported health (good or excellent health, vs. fair or poor health), and reporting any diagnosed chronic conditions. Categorical variables with three or more categories were modeled using multiple binary variables.

Statistical Analysis

To compare the changes on the absolute scale in health insurance coverage and access to health care between the pre- and post-ACA periods, we estimated multivariable linear regression models separately for adults with high English proficiency and adults with limited English proficiency. These models adjusted for the respondent's gender, age group, race and ethnicity, marital status, educational levels, household income, employment, US-born citizenship, region of residence, self-reported health, and diagnosed chronic conditions as specified above.

To estimate whether disparities in coverage and access to care by English proficiency diminished after the ACA, we used a difference-in-differences model. The coefficient of interest in this model was an interaction term between an indicator of the post-ACA period (i.e., 2010 or later) and an indicator of limited English proficiency. Heteroscedasticity robust standard errors were clustered by individual's English proficiency.[46] Analyses incorporated used survey weights to account for the survey design of the MEPS. (Additional details are provided in Appendix A.)

A key assumption in differences-in-differences models is that, in the absence of the policy change, trends between the groups would have remained parallel. While the assumption is untestable, evidence of parallel trends prior to the policy change is an evidence of the plausibility of the assumption. In a supplemental analysis, we tested whether differences in trend were present prior to the ACA. These models included the same adjustment variables as the main analysis. We also plotted the raw data for adults with LEP vs. English-proficient adults to allow a visual assessment of parallel trends in these two groups prior to the ACA.

People with high vs. low English proficiency may differ in important characteristics other than English proficiency. In a robustness check, we matched respondents with high vs. limited English proficiency on propensity scores calculated using logit model of the same patient-level characteristics adjusted for in the main model (i.e., gender, age group, race and ethnicity, marital status, educational levels, household income, employment, US-born citizenship, region of residence, self-reported health, and diagnosed chronic conditions) using a nearest-neighbor matching procedure. The goal of using this matching method was to limit potential confounding by balancing the respondents with high vs. limited English proficiency on measured demographic factors, socio-economic status, and measures of self-reported health and diagnosed conditions. We assessed whether the propensity score matching had indeed resulted in balance on these factors by calculating the standardized difference between the groups on each of the covariates in the matched sample.[47, 48]

In supplemental analyses, we assessed whether changes in disparities by English proficiency after the ACA varied by region, by income level, and by time period. First, we ran models with the data stratified the data by region (South, West, Midwest, and Northwest) and by household income (below 138% federal poverty level, and above 138% federal poverty level). Second, we ran models with additional interaction terms to assess whether disparities by LEP were further reduced after implementation of ACA coverage expansions in 2014 (additional details are included in Appendix A). Finally, we examined whether the model findings were sensitive to model specification by repeating the analysis using logit models. We presented the logit regression model results in two ways, using odds ratios and using average marginal effects.[49]

RESULTS

Table 1 shows the characteristics of individuals with limited vs. high English proficiency, in the MEPS data from 2006 to 2009 (pre-ACA period) and from 2010 to 2016 (post-ACA period). The proportion rates of people with LEP in the US population, as indicated using survey-weighted data, were 3.8% in 2006–2009 and 4.2% in 2010–2016.[1] In the pre-ACA period, compared with English-proficient adults, adults with LEP were older, less educated, more likely to live in a low-income household, more likely to be married, and less likely to be employed. Adults with LEP were more likely than English-proficient adults to report fair or poor health status, but less likely to report having any chronic conditions, matching prior analyses suggesting people with LEP are more likely to be undiagnosed for prevalent conditions.[31, 50, 51]

Table 2 reports the main results. We found significant gaps in coverage and access to care by English proficiency prior to the passage of the ACA. For example, only 45.3% of respondents with limited English proficiency reported having usual source of care, compared with 73.8% of respondents with higher English proficiency. Significant improvements in these outcomes occurred after 2010, particularly among respondents with LEP. Insurance coverage increased by 4.6 percentage points ($p < 0.001$) after 2010 for respondents with LEP. Access to care also improved for respondents with LEP after 2010: the probability of foregoing any necessary health care declined by 3.5 percentage points ($p < 0.001$), of foregoing necessary medical, dental, and preventive care declined by 2.2, 2.4, and 0.8 percentage points, respectively ($p < 0.001$, $p < 0.001$, $p = 0.014$ respectively), and the probability of having a usual source of care increased by 5.5 percentage points ($p < 0.001$) after 2010. Respondents with high English proficiency experienced an increase in insurance coverage by 1.7 percentage points ($p = 0.007$) after 2010.

Reflecting these disproportionate gains in health care access among respondents with LEP, disparities in access to health care by English language proficiency significantly declined after 2010. Respondents with LEP showed larger increases

Table 1 Characteristics of Adults Aged 18–64 with Limited vs. High English Proficiency Between the Pre- and the Post-ACA Periods

Characteristics	Pre-ACA period (2006–2009)		Post-ACA period (2010–2016)	
	Adults with LEP ($n = 4200$)	English-proficient adults ($n = 51,031$)	Adults with LEP ($n = 12,284$)	English-proficient adults ($n = 123,183$)
	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
Age (years; mean)	41.9 (41.1, 42.7)	40.6 (40.3, 40.8)	43.7 (43.2, 44.2)	40.7 (40.5, 40.9)
Sex				
Female	51.4 (48.9, 54)	50.6 (50.1, 51.0)	52.1 (50.9, 53.3)	50.8 (50.4, 51.1)
Education				
< High school	65.9 (63.3, 68.5)	14.4 (13.8, 15.0)	62.5 (60.4, 64.7)	13.0 (12.4, 13.5)
High school	22.5 (20.6, 24.4)	30.6 (29.6, 31.6)	22.1 (20.6, 23.6)	25.8 (25.1, 26.4)
Some college	10.2 (8.5, 11.9)	44.0 (42.9, 45.0)	14.3 (12.9, 15.7)	50.2 (49.4, 50.9)
≥ College	1.4 (0.7, 2.0)	11.1 (10.4, 11.8)	1.1 (0.7, 1.4)	11.1 (10.5, 11.7)
Annual household income				
< 138% FPL	41.7 (37.4, 46.1)	16.2 (15.5, 16.9)	41.6 (38.8, 44.4)	17.8 (17.0, 18.6)
Marital status				
Married	63.8 (59.5, 68.1)	52.2 (51.2, 53.2)	60.4 (57.7, 63.1)	49.9 (48.9, 50.9)
Employment status				
Employed	62.6 (59.3, 65.8)	73.4 (72.7, 74.1)	65.4 (63.6, 67.2)	71.7 (71.0, 72.4)
Self-rated general health				
Fair or poor	19.5 (17.1, 21.9)	10.8 (10.4, 11.3)	19.9 (18.2, 21.5)	10.8 (10.4, 11.2)
Excellent, very good, or good	80.5 (78.1, 82.9)	89.2 (88.7, 89.6)	80.1 (78.5, 81.8)	89.2 (88.8, 89.6)
Any diagnosed chronic conditions	46.8 (42.9, 50.6)	59.1 (58.1, 60.0)	50.1 (47.6, 52.7)	59.4 (58.6, 60.2)
Region				
South	35.7 (27.4, 44.0)	36.4 (34.8, 37.9)	36.4 (29.8, 42.9)	37.3 (35.7, 38.9)
Northeast	13.6 (10.6, 16.6)	18.5 (17.2, 19.8)	15.2 (12.3, 18.1)	18.0 (16.7, 19.2)
West	44.1 (37.7, 50.5)	22.5 (21.2, 23.8)	40.6 (35.2, 46.0)	22.7 (21.5, 24.0)
Midwest	6.6 (4.8, 8.4)	22.7 (21.4, 23.9)	7.8 (6.9, 7.0)	22.0 (20.7, 23.3)

Data source: Medical Expenditure Panel Survey (MEPS) 2006–2016. n sample size, % weighted percentage, CI confidence interval

after 2010 in having a usual source of care (4.9 percentage points, $p = 0.007$). Respondents with LEP also showed larger declines after 2010 than respondents with high English proficiency in foregoing or any necessary care (3.2 percentage points, $p = 0.006$), including necessary medical care (1.4 percentage points, $p = 0.013$), or necessary dental care (2.8 percentage points, $p = 0.009$).

Our findings supported the plausibility of the parallel trends assumption underlying the difference-in-differences analysis. The unadjusted data provide visual confirmation (see Appendix B). A regression-based pre-trend check did not reject the null hypothesis of zero difference between the trends at the 5% level for any outcomes of interest. (See Appendix C.)

Propensity score matching did not substantially change the findings. Changes in disparities remained similar, except that the change in health insurance coverage became significant at the 0.05 level (3.4 percentage-point increases, $p = 0.023$), when propensity score matching was used to balance the sample. No standard differences exceeded the cutoff of 10%, suggesting the propensity score matching produced a well-balanced sample. (See Appendix D.)[47, 48]

Our findings were similar when data were analyzed by region and household income, or when alternate estimation methods were used. When the data were stratified by region, the findings matched the main findings in sign and significance for 16 of the 18 models. Findings in higher and lower income groups both matched the main findings in sign and significance, but the additional improvements in coverage and access were larger for

low-income households. (See Appendix E.) The findings were also qualitatively unchanged when we used a logit model rather than a linear model. (See Appendix F.)[49]

DISCUSSION

The population with limited English proficiency (LEP) is rapidly growing in the USA,[1, 2] and people with LEP have higher uninsured rates, lower access to care, and poorer health outcomes than people with high English proficiency.[3, 5, 7–10, 34] Previously, little was known about how recent changes to the health care system under the ACA were associated with changes in coverage and access for this under-served population. This study used data from the Medical Expenditure Panel Survey (MEPS) to document changes in health insurance coverage and access to care among adults with high vs. limited English proficiency before vs. after the ACA.

We found improved access to care among individuals with LEP after the ACA, including improvements access to necessary health care and having a usual source of care; we additionally documented significant reductions in disparities in these outcomes by English proficiency. Our analysis adjusted for a number of potential confounders, and our findings were robust to the use of matching to balance the high vs. limited English proficiency samples on demographic, socio-economic, and health-related variables. Supplemental analyses further supported the robustness of findings. These data add to the growing evidence that gaps in access to care for vulnerable

Table 2 Changes in Health Insurance Coverage and Access to Health Care for Adults Aged 18–64 after the ACA, by English Language Proficiency

| | LEP (n = 16,484) | | | Non-LEP (n = 174,214) | | | Difference-in-differences estimates | | | |
| | | | | | | | Standard difference-in-differences | | PSM difference-in-differences | |
Outcome	Before ACA (%)	After ACA (%)	Adjusted change after ACA (95% CI)	Before ACA (%)	After ACA (%)	Adjusted change after ACA (95% CI)	DID (95% CI)	p value	DID (95% CI)	p value
Has health insurance	42.4	50.4	4.6%*** (2.4%, 6.7%)	83.7	86.4	1.7%*** (0.4%, 2.9%)	3.7%* (2.9%, 4.3%)	0.060	3.4%** (1.8%, 4.8%)	0.023
Has usual source of care	45.3	53.1	5.5%*** (3.4%, 7.5%)	73.8	73.8	0.1%* (−0.1%, 2.9%)	4.9%*** (4.8%, 5.0%)	0.007	3.9%** (2.3%, 5.5%)	0.021
Forgoing any necessary care	10.3	7.1	−3.5%*** (−4.8%, −2.2%)	8.2	8.1	−0.2% (−1.0%, 0.6%)	−3.2%*** (−3.3%, −3.1%)	0.006	−3.5%*** (−3.7%, −3.3%)	0.003
Forgoing any necessary medical care	4.8	2.8	−2.2%*** (−3.1%, −1.3%)	3.4	3.2	−0.7%** (−1.2%, −0.1%)	−1.4%** (−1.5%, −1.4%)	0.013	−2.1%*** (−2.1%, −2.1%)	0.001
Forgoing any necessary dental care	7.5	5.2	−2.4%*** (−3.5%, −1.3%)	5.3	5.2	0.4% (−0.3%, 1.0%)	−2.8%*** (−2.9%, −2.7%)	0.009	−2.3%*** (−2.7%, −1.9%)	0.009
Forgoing any necessary preventive care	2.1	1.4	−0.8%** (−1.4%, −0.2%)	2.5	2.5	−0.1% (−0.4%, 0.3%)	−0.7%** (−0.8%, −0.7%)	0.016	−1.1%*** (−1.3%, −1.0%)	0.008

Data source: Medical Expenditure Panel Survey (MEPS) 2006–2016

% weighted percentage, CI confidence interval, DID difference-in-differences, PSM propensity score matching

Adjusted for the geographic, socio-economic, demographic, and health-related characteristics listed in the text

All analyses account for the MEPS sampling scheme using sample weights

*p < 0.10, **p < 0.05, ***p < 0.01

groups diminished after enactment of the ACA[52–55] and evidence that patient-provider communication gaps by LEP improved after enactment of the ACA.[40]

Our results speak to a larger point in health policy: while a large research literature has connected increases in health insurance coverage with increases in access to care, access to care can also be improved by methods other than provision of insurance coverage. For people with LEP, lack of available translation is a particularly salient barrier to care. Language ability is relevant to health care access not only at the point of care but also in the health care seeking process (e.g., navigating the complexities of the health care system to find an in-network provider, understanding cost sharing provisions, and seeking the appropriate appointments or referrals). A number of provisions of the ACA were relevant to people with LEP, underscoring the plausibility of our results. These included the revision of national Cultural and Linguistically Appropriate Service (CLAS) standards to boost health care access among people with LEP; requirements for insurance companies to provide translated documents in the languages of the local LEP community; and funding for health care provider training in cultural competence.[39, 41]

The changes in disparities which we measure capture not only the effects of ACA policies but also other concurrent changes that affect people differently by their English language proficiency. If these concurrent changes were relatively unfavorable to people with LEP, such as intensification of immigration enforcement, then our data would capture a lower bound of the effect of ACA policies on disparities in coverage and access to care. Nonetheless, the possibility of such concurrent changes limits our ability to infer the causes of the changes in national trends we observe.

This study had limitations. The ACA provisions relevant to people with LEP were implemented at various dates in 2010 and later, preventing our analysis from teasing out the effects of specific policies. Additionally, the questions about self-reported confidence in speaking English in MEPS changed slightly over our sample period, although the meaning of the question remained quite similar (asking how well participants spoke English, vs. whether they felt comfortable speaking English in general). We also categorized participants based on whether a language other than English was spoken in their home, a question which remained the same throughout the sample period. Finally, MEPS did not distinguish citizens, non-citizens, and undocumented immigrants. Even though we limited our sample to US-born citizens and foreign-born people who have lived in the U.S. for more than 5 years, we were unable to exclude undocumented immigrants from our analysis, who were not eligible for Medicaid or insurance plans through the marketplace. Nonetheless, our matched analysis was more successful in restricting the sample to people with limited vs. high English proficiency who were similar in demographic and socio-economic characteristics, and the findings from the matched and unmatched analyses were similar.

In summary, this study provides new evidence of recent improvements in health care access and reduction in disparities in health care access by English proficiency among US population and documents improvements in coverage for people with high and low English proficiency. It offers insights into the changes that occurred for this important population after the ACA.

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Compliance with Ethical Standards:

The study was approved by the University of Southern California Institutional Review Board.

Conflict of Interest: *The authors declare no conflicts of interest.*

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