

Changes in Language Services Use by US Pediatricians



WHAT'S KNOWN ON THIS SUBJECT: Language barriers adversely affect health care access, utilization, outcomes, and patient safety. Trained formal interpreters can improve care quality and safety, but many patients and families with limited English proficiency do not receive appropriate language services during health care encounters.



WHAT THIS STUDY ADDS: Despite continued growth of the US population with limited English proficiency, federal language use standards, and enhanced education about appropriate use of language services, there has been only modest improvement over time in pediatricians' use of language services.

abstract

BACKGROUND AND OBJECTIVES: Access to appropriate language services is critical for ensuring patient safety and reducing the impact of language barriers. This study compared language services use by US pediatricians in 2004 and 2010 and examined variation in use in 2010 by pediatrician, practice, and state characteristics.

METHODS: We used data from 2 national surveys of pediatricians (2004: $n = 698$; 2010: $n = 683$). Analysis was limited to postresidency pediatricians with patients with limited English proficiency (LEP). Pediatricians reported use of ≥ 1 communication methods with LEP patients: bilingual family member, staff, physician, formal interpreter (professional, telephone), and primary-language written materials. Bivariate analyses examined 2004 to 2010 changes in methods used, and 2010 use by characteristics of pediatricians (age, sex, ethnicity), practices (type, location, patient demographics), and states (LEP population, Latino population growth, Medicaid/Children's Health Insurance Program language services reimbursement). Multivariate logistic regression was performed to determine adjusted odds of use of each method.

RESULTS: Most pediatricians reported using family members to communicate with LEP patients and families, but there was a decrease from 2004 to 2010 (69.6%, 57.1%, $P < .01$). A higher percentage of pediatricians reported formal interpreter use (professional and/or telephone) in 2010 (55.8%) than in 2004 (49.7%, $P < .05$); the increase was primarily attributable to increased telephone interpreter use (28.2%, 37.8%, $P < .01$). Pediatricians in states with reimbursement had twice the odds of formal interpreter use versus those in nonreimbursing states (odds ratio 2.34; 95% confidence interval 1.24–4.40).

CONCLUSIONS: US pediatricians' use of appropriate language services has only modestly improved since 2004. Expanding language services reimbursement may increase formal interpreter use. *Pediatrics* 2013;132:e396–e406

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KEY WORDS

language barriers, interpreters, patient safety, health disparities, Hispanic health care

ABBREVIATIONS

AAP—American Academy of Pediatrics

CHIP—Children's Health Insurance Program

CLAS standards—National Standards for Culturally and Linguistically Appropriate Services

LEP—limited English proficiency

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Access to appropriate language services is critical for patient safety and for reducing the negative health care impact of language barriers for children and their caregivers with limited English proficiency (LEP). There are 25.2 million people in the United States who speak English less than “very well” and thus are classified as having LEP.¹ Children in LEP families are less likely to have health insurance, access to preventive health care, and optimal communication between parents and health care providers; they also have lower parental care satisfaction and are more likely to experience adverse hospital events.^{2–10} Improved communication, patient satisfaction, and health care outcomes, as well as fewer interpretation errors, occur when LEP patients have access to bilingual providers or trained professional interpreters.^{11–14} Use of ad hoc interpreters (family members, friends, or staff not trained in interpretation) can lead to miscommunication and errors that compromise health care quality and safety.^{11–14}

Based on Title VI of the Civil Rights Act, federal regulations mandate that health care organizations receiving federal funding (including Medicaid and Medicare) provide meaningful access to language services for LEP patients.¹⁵ The National Standards for Culturally and Linguistically Appropriate Services in Health Care (CLAS standards) issued by the Department of Health and Human Services provide guidance on Title VI compliance and include a recommendation for ensuring competence of those providing language services.¹⁶ Professional interpreters with formal evaluation of their language skills meet the recommendation to ensure linguistic competence. Language proficiency assessments of bilingual health care providers are uncommon, and defining standards for adequate proficiency has been

challenging.^{17,18} However, use of a health care provider, with adequate proficiency in the target language, is a preferred option for communicating with LEP patients. Despite federal regulations and potential loss of Joint Commission accreditation, most US hospitals do not meet CLAS standards.^{19,20} Similarly, a 2004 national survey of members of the American Academy of Pediatrics (AAP) found that nearly 70% of pediatricians reported using ad hoc interpreters.²¹

Pediatricians increasingly encounter LEP patients in their practices. Since 2004, the US LEP population increased by 3 million people, with rapid growth of LEP Latino populations in the Southeast and Midwest: states that were not traditional destinations for Latino immigrants.^{1,22} Advancing organizational cultural competence and ensuring patient safety requires providing appropriate language services.^{9,23,24} Additionally, meeting the language needs of LEP families is a core component of medical homes, and lack of appropriate language services is 1 reason for disparities in medical home access among children in LEP families.^{3,25,26} Barriers to providing appropriate language services include costs of services and limited reimbursement.^{27,28} An updated understanding of pediatrician language services provision will inform targeted policy changes. Accordingly, the aims of this study were to compare language services use by pediatricians over time, and to examine variation in language services use by pediatrician, practice, and state characteristics in 2010.

METHODS

Data Source

We used data from the 60th and 77th Periodic Surveys of Fellows, conducted by the AAP Division of Health Services Research. Survey respondents included

a random sample of US nonretired AAP members who completed a mailed questionnaire fielded April through October 2004 (#60) and June through November 2010 (#77). Initial and follow-up mailings (5 in 2004; 6 in 2010) yielded a sample of 1053 (58% response) in 2004 and 968 (60% response) in 2010. Participation levels were consistent with other Periodic Surveys.²¹ Respondents and nonrespondents in 2010 were comparable with regard to age, gender, and geographic distribution. Both surveys examined pediatricians' involvement in community child health activities and the range of child health services available at their practices. Pediatricians with LEP patients responded to the same questions regarding language services use in their practice in each survey (see Appendix). Study approval was obtained from the AAP and Johns Hopkins Bloomberg School of Public Health institutional review boards.

Study Sample

The 2010 study sample ($n = 683$ of 968) included postresidency general and subspecialty pediatricians with LEP patients. We excluded respondents who reported no direct patient care ($n = 63$), resident physicians ($n = 127$), AAP specialty fellows (certified by a board other than pediatrics; $n = 15$), and those pediatricians who did not provide care to LEP patients ($n = 80$). The same exclusion criteria were used for the 2004 comparison data.

Outcome Variables

Study outcomes were pediatrician report of use of ≥ 1 of the following methods of communication with LEP patients: bilingual family member, bilingual staff, bilingual physician (self or other), professional interpreter, telephone interpreter, and written materials in the primary language. Additionally, we created a variable for any formal

interpreter use, defined as a report of use of a professional interpreter, telephone interpreter, or both. Respondents were asked to report on primary languages spoken by LEP patients in their practices and communication methods used for each of these languages.

Independent Variables

Pediatrician and Practice Characteristics

Pediatrician characteristics included age, gender, and Latino ethnicity. We defined practice type as solo/2-physician practice, pediatric group practice (3–10 pediatricians), large pediatric group practice (>10 pediatricians, multispecialty group, or health maintenance organization), or hospital/clinic/medical school. Practice location categories included inner city, urban area (non–inner city), suburban, or rural. Using mean percentages as cut points, practices were dichotomized as having a high (>41%) or low (\leq 41%) percentage of publicly insured patients, a high (>22%) or low (\leq 22%) percentage of Latino patients, and a high (>6%) or low (\leq 6%) percentage of Asian patients.

State Characteristics

We used 5-year estimates (2005–2009) from the American Community Survey to determine state LEP status.²⁹ We dichotomized at the mean percentage to categorize high (>8.6%) or low (\leq 8.6%) LEP population, high (>5.7%) or low (\leq 5.7%) LEP among Spanish speakers, and high (>1.4%) or low (\leq 1.4%) LEP among speakers of Asian languages. Data from the 2000 and 2010 Censuses were used to determine percentage change in the Latino population by state.²² A priori, we classified the 10 states with the highest percentage change in the Latino population as high-growth states; 11 states were included in this category due to

a tie for percent change at the 10th position. State Medicaid/Children's Health Insurance Program (CHIP) reimbursement for interpretation was determined from a 2009 report by the National Health Law Program; no additional states newly provided reimbursement during the 2010 survey year (Mara Youdelman, Managing Attorney, National Health Law Program, personal communication, September 2011).³⁰

Statistical Analyses

We examined differences in pediatrician-reported percent LEP patients in practices by pediatrician and practice characteristics. To assess these differences, we used the Mann-Whitney-Wilcoxon (dichotomous variables) and Kruskal-Wallis tests (multilevel categorical variables) because reported percents were not normally distributed. Pearson's χ^2 test was used to analyze differences in communication method use by survey year, and pediatrician, practice, and state characteristics in 2010. In multivariate models, we estimated separate regression models for each communication method and used random effects logistic regression models to account for clustering of respondents by state. A priori, we elected to use the same model specification for each communication method, and we selected covariates based on public policy relevance. For the remaining variables, we planned to retain any that met criteria of initial α -to-enter of $<.15$ for at least 2 of the communication methods in regressions including all possible covariates, but none met these criteria. We excluded respondents from regression analyses if they were missing data for any of the pediatrician or practice characteristics ($n = 13$ of 683). All analyses were performed by using Stata version 11.0 (StataCorp, College Station, TX).

RESULTS

In the 2010 survey, there were 683 practicing, general and subspecialty pediatricians who reported contact with LEP patients. By state/District of Columbia, the number of sample respondents ranged from 0 to 65. Female pediatricians comprised 60% of the sample; mean age of sample pediatricians was 46.7 years (SD 10.5 years). Among pediatricians with LEP patients, the median reported percentage of LEP patients in the practice was 10.0% (mean: 16.2%), with one-quarter reporting >20% LEP patients in the practice. The most common languages reported for LEP patients were Spanish (92%), "Chinese" (13%), and Vietnamese (6%). Pediatricians estimated that 51% of their patients were non-Latino white, 22% were Latino, 19% were African American, and 6% were Asian/Pacific Islander.

Table 1 displays the medians of reported percentages of LEP patients by pediatrician and practice characteristics. Higher medians of reported percentages of LEP patients were found among pediatricians who were younger, female, Latino, and worked in a hospital/clinic/medical school and in urban areas. Practices categorized as having a high percentage of publicly insured patients had a higher median percentage of LEP patients than practices categorized as having a low percentage of publicly insured patients.

Table 2 compares pediatricians' LEP patient contact and reported method of communication with LEP patients between 2004 and 2010. There was an increase in the proportion of respondents reporting contact with LEP patients between 2004 and 2010 (83.5% vs 89.5%, $P < .01$). There was a significant decrease in reported use of bilingual physicians to communicate with LEP patients between 2004 (52.4%) and 2010 (44.5%, $P < .01$). Reported use of any formal interpreter increased

TABLE 1 Pediatrician-reported Percentage of Patients With LEP by Selected Pediatrician and Practice Characteristics, 2010 (*n* = 683)

Characteristic	Median % (range)	<i>P</i>
Pediatrician characteristics		
Age, y		
≤45 (<i>n</i> = 340)	10 (0.5–95)	<.01
>45 (<i>n</i> = 340)	5 (1–100)	
Gender		
Female (<i>n</i> = 411)	10 (0.5–100)	.03
Male (<i>n</i> = 271)	8 (1–95)	
Latino ethnicity		
No (<i>n</i> = 645)	9 (0.5–95)	<.01
Yes (<i>n</i> = 37)	20 (1–100)	
Practice characteristics		
Practice type		
Hospital/clinic/medical school (<i>n</i> = 273)	15 (1–100)	<.01
Solo/2-physician practice (<i>n</i> = 73)	5 (1–90)	
Pediatric group, 3–10 pediatricians (<i>n</i> = 212)	5 (0.5–90)	
Pediatric group, >10; multispecialty group, HMO (<i>n</i> = 122)	9 (1–70)	
Practice location		
Suburban (<i>n</i> = 278)	5 (0.5–80)	<.01
Inner city (<i>n</i> = 160)	20 (1–100)	
Urban area: non-inner city (<i>n</i> = 187)	10 (1–80)	
Rural (<i>n</i> = 55)	5 (1–60)	
Insurance status of patients		
Low public health insurance: ≤41% (<i>n</i> = 332)	5 (0.5–80)	<.01
High public health insurance: >41% (<i>n</i> = 281)	20 (1–100)	
Latino patients		
Low percentage in practice: ≤22% (<i>n</i> = 441)	5 (1–100)	<.01
High percentage in practice: >22% (<i>n</i> = 235)	30 (0.5–95)	
Asian patients		
Low percentage in practice: ≤6% (<i>n</i> = 480)	5 (0.5–95)	<.01
High percentage in practice: >6% (<i>n</i> = 195)	10 (1–100)	

HMO, health maintenance organization.

TABLE 2 Pediatricians' Reports of Caring for LEP Patients and Reported Method of Communication With LEP Patients, 2004 and 2010

Characteristic	2004 (<i>n</i> = 836)	2010 (<i>n</i> = 763)	<i>P</i>
Pediatricians with LEP patient contact, %	83.5	89.5	<.01
Communication method, ^a %	2004 (<i>n</i> = 698) ^b	2010 (<i>n</i> = 683) ^b	
Any formal interpreter	49.7	55.8	.02
Professional interpreter	40.1	43.2	.25
Telephone interpreter	28.2	37.8	<.01
Bilingual physician (self/other)	52.4	44.5	<.01
Bilingual staff	58.3	49.2	<.01
Bilingual family member	69.6	57.1	<.01
Written materials in primary language	35.2	34.6	.79

^a Respondents could report use of multiple communication methods.^b Sample restricted to pediatricians with LEP patient contact.

from 49.7% in 2004 to 55.8% in 2010 ($P < .05$), but among the 2 component methods (professional and telephone interpreters), the only significant increase was in telephone interpreter use. Reported use of a bilingual family member to communicate with LEP patients decreased from 69.6% in 2004 to 57.1% in 2010 ($P < .01$).

We examined use of communication methods by pediatrician and practice characteristics (Table 3). Eighty-four percent of Latino pediatricians reported use of bilingual physicians compared with 42% of non-Latino physicians ($P < .01$). Among pediatricians in practices with a high proportion of Latino patients, 63% reported use of bilingual

physicians compared with 35% in low Latino practices ($P < .01$). Use of any formal interpreter was highest among pediatricians in the hospital/clinic/medical school setting (81%) and lowest in solo/2-physician practices (27%, $P < .01$). Conversely, use of family members was highest among pediatricians in solo/2-physician practices (73%) and lowest in the hospital/clinic/medical school setting (44%, $P < .01$). Pediatricians in rural practices reported significantly lower use of formal interpreters than those in inner city practices (49% vs 76%, respectively) and significantly higher use of family members (71% vs 49%, respectively).

Table 4 displays the use of communication methods by state characteristics in 2010. Increased bilingual physician use was associated with practicing in a high LEP state, and formal interpreter use was associated with practicing in states with lower LEP populations. Medicaid/CHIP reimbursement for language services was also associated with increased formal interpreter use. There were no significant differences in use of family members by state characteristic, but more than half of pediatricians in every category reported use of family members.

Multivariate analyses (Table 5) demonstrated that Latino pediatricians and pediatricians in practices with a higher percentage of Latino patients had increased odds of bilingual physician use. Compared with pediatricians in the hospital/clinic/medical school setting, pediatricians in solo/2-physician practices and small group practices had only approximately one-tenth the odds of interpreter use and pediatricians in larger group practices had less than half the odds of any formal interpreter use. Additionally, pediatricians in inner-city practices had more than double the odds of any

TABLE 3 Method of Communication by Pediatrician and Practice Characteristics, 2010 (Percent Reporting Use)

Characteristic	Any Formal Interpreter	Professional Interpreter	Telephone Interpreter	Bilingual Physician	Bilingual Staff	Bilingual Family Member	Written Materials
Pediatrician characteristics							
Age, y							
≤45	58.8	44.7	40.9	49.4	49.7	51.8	34.4
>45	52.7	41.8	34.7	39.4*	48.5	62.4*	34.7
Gender							
Female	52.8	41.6	37.7	48.2	51.8	59.1	36.0
Male	60.5	45.8	38.0	38.8*	45.0	53.9	32.1
Latino ethnicity							
No	57.4	44.2	39.1	42.2	49.9	58.1	34.6
Yes	29.7*	27.0*	16.2*	83.8*	35.1	37.8*	32.4
Practice characteristics							
Setting							
Hospital/clinic/medical school	80.6	67.0	56.4	46.9	48.4	44.3	42.1
Solo/2-physician practice	27.4	20.6	11.0	53.4	53.4	72.6	39.7
Pediatric group, 3–10 pediatricians	31.6	18.4	21.7	42.5	50.0	64.6	26.4
Pediatric group, >10; multispecialty group, HMO	59.8*	46.7*	41.0*	37.7	47.5	63.1*	28.7*
Location							
Suburban	40.7	24.5	30.9	40.7	49.3	63.7	33.5
Inner city	75.6	65.0	51.9	55.0	53.8	48.8	40.6
Urban area (non–inner city)	63.1	54.0	40.6	42.3	48.7	50.3	32.1
Rural	49.1*	36.4*	23.6*	41.8*	38.2	70.9*	30.9
Insurance status of patients							
Low public insurance (≤41%)	42.2	28.3	31.0	41.0	45.5	63.9	29.5
High public insurance (>41%)	63.0*	53.7*	40.9*	50.2*	55.2*	52.0*	40.6*
Latino patients							
Low (≤22%)	56.9	43.5	36.7	34.9	38.6	57.8	29.3
High (>22%)	53.6	42.1	39.6	62.6*	69.4*	56.2	44.7*

HMO, health maintenance organization.

* $P < .05$.

formal interpreter use compared with pediatricians in suburban practices. Finally, pediatricians in Medicaid/CHIP reimbursement states had double the odds of those in nonreimbursing states of any formal interpreter use.

DISCUSSION

In 2010, as compared with 2004, more pediatricians reported contact with LEP patients, yet we found only modest improvement in pediatricians' use of appropriate language services. Most pediatricians reported using family members to communicate with LEP patients in both 2004 and 2010, although there was a decrease in their use in 2010. We also found a decrease in pediatrician-reported use of bilingual physicians in 2010. Notably a higher percentage of pediatricians reported using formal interpreters in

2010, but still only slightly more than half of pediatricians reported any formal interpreter use. Importantly, pediatricians in states with Medicaid/CHIP reimbursement had twice the odds of any formal interpreter use, compared with those in nonreimbursing states. Although the modest improvement in pediatricians' language services use is encouraging, there do not appear to be sufficient policies and programs in place to assist pediatricians in providing adequate language services in their practices.

A key policy implication of our work is that reimbursement for language services may be an important mechanism for enhancing access to appropriate language services for LEP patients and families. Yet achieving effective expansion of language services reimbursement programs remains

challenging. State interpreter reimbursement policies vary substantially in coverage of enrollees (eg, managed care versus fee for service) and specific language services (eg, in-person versus telephone interpretation).³⁰ There were insufficient sample sizes in our study to stratify by reimbursement policies to assess which policies might be more effective. Whereas children in LEP families are most often covered by Medicaid or CHIP, state policies do not apply to privately insured children.^{27,31} Reimbursement for language services by private insurance companies is not currently mandated, except in California, and few private insurance companies provide reimbursement.^{27,32} Whether additional states would enact similar mandates, or if there are mechanisms other than mandates, to encourage insurance companies to

TABLE 4 Method of Communication Used by Pediatricians in States With Varying Characteristics, 2010 (Percent Reporting Use)

State Characteristic	Any Formal Interpreter	Professional Interpreter	Telephone Interpreter	Bilingual Physician	Bilingual Staff	Bilingual Family Member	Written Materials
LEP population							
High ^a : >8.6% (<i>n</i> = 282)	42.2	29.1	34.0	56.4	70.6	59.9	36.2
Low: ≤8.6% (<i>n</i> = 401)	65.3 ^f	53.1 ^f	40.4	36.2 ^f	34.2 ^f	55.1	33.4
LEP among Spanish speakers							
High ^b : >5.7% (<i>n</i> = 274)	41.2	28.5	32.9	56.9	71.5	59.9	36.5
Low: ≤5.7% (<i>n</i> = 409)	65.5 ^f	53.1 ^f	41.1 ^f	36.2 ^f	34.2 ^f	55.3	33.3
LEP among Asian languages speakers							
High ^c : >1.4% (<i>n</i> = 219)	49.8	34.7	36.5	56.2	58.9	59.4	34.3
Low: ≤1.4% (<i>n</i> = 464)	58.6 ^f	47.2 ^f	38.4	39.0 ^f	44.6 ^f	56.0	34.7
Latino population growth by percent change							
High ^d : top 10 states (<i>n</i> = 126)	69.1	55.6	51.6	44.4	44.4	61.1	37.3
Low: remaining states (<i>n</i> = 557)	52.8 ^f	40.4 ^f	34.7 ^f	44.5	50.3	56.2	33.9
Medicaid/CHIP reimbursement							
Yes ^e (<i>n</i> = 87)	72.4	56.3	39.1	31.0	32.2	59.8	39.1
No (<i>n</i> = 596)	53.4 ^f	41.3 ^f	37.6	46.5 ^f	51.7 ^f	56.7	33.9

^a States include Arizona, California, Florida, Hawaii, Illinois, Nevada, New Jersey, New Mexico, New York, Rhode Island, and Texas.

^b States include Arizona, California, Florida, Illinois, Nevada, New Jersey, New Mexico, New York, and Texas.

^c States include Alaska, California, Hawaii, New York, Washington, Nevada, Maryland, Massachusetts, New Jersey, and Virginia.

^d States include Alabama, Arkansas, Delaware, Georgia, Kentucky, Maryland, Mississippi, North Carolina, South Carolina, South Dakota, and Tennessee.

^e States include Hawaii, Iowa, Idaho, Kansas, Maine, Minnesota, Montana, New Hampshire, Utah, Vermont, Virginia, Washington, Washington DC, and Wyoming.

^f *P* < .05.

provide language services reimbursement is not known.

We found important differences in language services use by practice and state characteristics, suggesting that multiple strategies may be needed to meet language needs in varied settings. Telephone interpreter use significantly increased between 2004 and 2010 and was associated with practicing in high Latino growth states. Telephone interpretation may be a practical necessity when the supply of in-person interpreters is low or when LEP patients or specific language groups are uncommon.^{33,34} Other remote interpretation methods, such as video or remote simultaneous medical interpreting, demonstrate promise in increasing interpreter use and patient satisfaction and may be an important way to increase interpreter use among pediatricians.^{35,36} To date, evaluation of use of these interpretation methods has been in large, urban settings; more research is needed on how well remote interpretation methods can address financial and resource barriers to

interpreter use in rural or small practices. There are also few examples of how practices or hospitals may collaborate to maximize interpreter availability and contain costs, which may be especially important for small or more rural practices.³⁷

Less than half of pediatricians in high-LEP states reported any formal interpreter use. Pediatricians in high LEP states may confront challenges in keeping up with demand for language services. Internet-based resources exist to assist health care providers with the logistics of providing language services, but pediatricians' use of these resources is unclear.³⁸ Limitations in system-level resources to support appropriate language services may contribute to the observed marginal improvement in pediatricians' language services use over time. Policies promoting appropriate language services use were rare in states with the greatest potential need. Of the high LEP states, only 1 (Hawaii) reimbursed for language services. Additionally, there were no Medicaid/CHIP language

services reimbursement programs in any of the high Latino growth states.

Even when interpreters are available, several studies have found that providers underuse these services.^{39–41} Teaching about appropriate use of language services has been incorporated into both undergraduate and postgraduate medical and other health care professional education, generally as part of cultural competency training.^{41–44} These curricula have been shown to increase knowledge of when and how to use a professional interpreter and the hazards of ad hoc interpreters.^{42–44} The long-term impact of these curricula on appropriate language services use has not been evaluated, and demonstrating a positive impact on patient outcomes is difficult.^{42,43,45} Another important component of improving communication with LEP patients is assessment of health care providers' foreign-language skills to ensure adequate proficiency for health care communication. Opportunities for self-assessment or formal assessment of providers'

TABLE 5 Adjusted Odds (95% Confidence Interval) of Language Services Communication Method Use by Pediatrician, Practice, and State Characteristics, 2010

Characteristic	Any Formal Interpreter	Professional Interpreter	Telephone Interpreter	Bilingual Physician	Bilingual Staff	Bilingual Family Member	Written Materials
Pediatrician characteristics							
Age, y							
≤45	0.85 (0.57–1.26)	1.14 (0.75–1.74)	0.86 (0.59–1.26)	Referent	1.19 (0.83–1.70)	1.57 (1.11–2.23) ^a	1.22 (0.85–1.75)
>45				0.81 (0.56–1.16)			
Gender							
Female				Referent			
Male	1.51 (1.01–2.24) ^a	1.07 (0.70–1.65)	1.03 (0.71–1.51)	0.75 (0.52–1.07)	0.81 (0.56–1.17)	0.72 (0.50–1.02)	0.82 (0.58–1.18)
Latino ethnicity							
No				Referent			
Yes	0.18 (0.07–0.45) ^a	0.28 (0.10–0.75) ^a	0.25 (0.10–0.67) ^a	6.17 (2.38–16.0) ^a	0.29 (0.13–0.65) ^a	0.40 (0.19–0.84) ^a	0.80 (0.38–1.69)
Practice characteristics							
Setting							
Hospital/clinic/medical school				Referent			
Solo/2-physician practice	0.14 (0.07–0.28) ^a	0.23 (0.11–0.47) ^a	0.11 (0.05–0.25) ^a	1.44 (0.76–2.69)	1.29 (0.69–2.43)	2.57 (1.37–4.81) ^a	0.92 (0.51–1.66)
Pediatric group, 3–10 pediatricians	0.13 (0.08–0.21) ^a	0.13 (0.08–0.23) ^a	0.21 (0.13–0.35) ^a	1.15 (0.73–1.84)	1.58 (0.98–2.53)	1.91 (1.23–2.96) ^a	0.55 (0.35–0.87)
Pediatric group, > 10;	0.40 (0.23–0.68) ^a	0.46 (0.26–0.81) ^a	0.64 (0.39–1.07)	0.91 (0.54–1.55)	1.42 (0.84–2.41)	2.01 (1.23–3.27) ^a	0.59 (0.36–0.99) ^a
Multispecialty group, HMO							
Location							
Suburban				Referent			
Inner city	2.39 (1.35–4.25) ^a	3.49 (1.97–6.20) ^a	1.42 (0.83–2.42)	1.48 (0.89–2.48)	1.03 (0.61–1.74)	0.96 (0.59–1.56)	0.83 (0.50–1.36)
Urban area (non-inner city)	1.48 (0.91–2.39)	2.58 (1.54–4.33) ^a	0.91 (0.57–1.47)	0.91 (0.58–1.44)	0.82 (0.53–1.30)	0.75 (0.49–1.15)	0.67 (0.43–1.05)
Rural	0.95 (0.47–1.91)	1.26 (0.59–2.71)	0.69 (0.35–1.49)	1.11 (0.57–2.17)	0.71 (0.36–1.39)	1.72 (0.87–3.39)	0.72 (0.37–1.40)
Publicly insured patients							
Low				Referent			
High	1.44 (0.91–2.27)	1.67 (1.04–2.70) ^a	0.87 (0.55–1.37)	0.98 (0.64–1.50)	1.38 (0.90–2.13)	0.70 (0.46–1.05)	1.21 (0.80–1.84)
Latino patients							
Low				Referent			
High	0.60 (0.37–0.97) ^a	0.66 (0.40–1.10)	0.91 (0.58–1.43)	2.34 (1.54–3.56) ^a	2.49 (1.64–3.77) ^a	1.26 (0.84–1.88)	1.82 (1.21–2.74) ^a
State characteristics							
LEP population							
Low				Referent			
High	0.59 (0.37–0.96) ^a	0.37 (0.16–0.85) ^a	1.41 (0.73–2.70)	1.60 (0.92–2.77)	5.09 (3.28–7.91) ^a	1.64 (1.08–2.51) ^a	1.10 (0.68–1.77)
Latino population growth							
Low				Referent			
High	1.64 (0.92–2.92)	1.28 (0.53–3.12)	2.52 (1.24–5.12) ^a	1.53 (0.83–2.82)	2.06 (1.25–3.37) ^a	2.04 (1.25–3.32) ^a	1.50 (0.89–2.53)
Medicaid/CHIP reimbursement							
No				Referent			
Yes	2.34 (1.24–4.40) ^a	1.44 (0.57–3.61)	1.43 (0.70–2.96)	0.80 (0.41–1.57)	1.21 (0.69–2.13)	1.69 (0.98–2.92)	1.86 (1.05–3.30) ^a

HMO, health maintenance organization.

^a $P < .05$ for all bolded values.

foreign-language skills appear limited but may decrease provider's use of their own language skills when they do not have adequate proficiency.^{17,41,46–48} Our finding of decreased use of bilingual physicians in 2010 might indicate that pediatricians are becoming more aware of the hazards of patient communication when they have low proficiency. This decrease could also suggest that the supply of bilingual pediatricians is not keeping pace with the demand for a multilingual pediatric workforce. One pediatric residency program has developed a novel program to improve Spanish-language health care communication skills, while maintaining care quality and safety.⁴⁹ Similar programs may be important for increasing the linguistic capacity of the pediatric workforce.

Certain study limitations should be noted. Our sample included only pediatricians who were AAP members. LEP patient contact and language services use among respondents may not be representative of all pediatricians or pediatric health care providers either at the national level or within each state. Second, we do not know the frequency, distribution, or

appropriateness of reported language services use by pediatricians. The survey did not assess how often a particular communication method was used in comparison with others, the non-English language proficiency of “bilingual physicians,” or whether bilingual staff were trained appropriately or were serving as ad hoc interpreters. Third, our findings likely represent primarily communication with Spanish-speaking patients, given pediatricians' reports of languages encountered in their practices. Although language services use among Spanish-speaking LEP patients is not optimal, it may be better than for other LEP patients. Hospitals have lower compliance with CLAS standards among languages encountered less frequently.¹⁹ Finally, we cannot assess the quality of interpreters used. Whether interpreters had sufficient training or followed standards issued by the National Council on Interpreting Health Care is not known.⁵⁰ Research on pediatricians' language services use that incorporates specific inquiry about physician/staff language proficiency assessment and language services training, interpreter training, and use of novel interpreting modalities,

such as video interpretation, would offer additional insight for improving language services.

CONCLUSIONS

Effective communication between families and pediatricians is essential to providing high-quality and safe medical care for children in LEP families, but pediatricians continue to rely on use of suboptimal communication methods, such as family members. We found only small improvements in pediatricians' language services use over a 6-year period. Health system and health policy changes likely will be critical to meaningful improvements in appropriate language services use. The association between Medicaid/CHIP language services reimbursement and formal interpreter use underscores the importance of moving beyond provider-level interventions to improve language services access. National third-party reimbursement for language services might contribute to improvement in pediatricians' use of language services and increase the quality and safety of health care for children in LEP families.

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APPENDIX 1: Survey Questions on Pediatricians' Language Services Use

1. About what percentage of your patients have limited English proficiency (LEP), ie, English is not their primary language and is not spoken "very well"?
2. (A) Please list the primary languages spoken by your LEP patients, and (B) indicate how you usually communicate with LEP patients:

Primary languages spoken	Bilingual physician (self or other)	Bilingual staff	Bilingual family member	Professional interpreters	Written materials in the primary language	Telephone interpreter services
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Source: American Academy of Pediatrics, Division of Health Services Research, Periodic Survey of Fellows No. 77, 2010.

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