

Language Disparities and Timely Care for Children in Managed Care Medicaid

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Timeliness of care has been cited by the Institute of Medicine as a key component of quality healthcare.¹ Delayed access to care is cause for concern because of its association with increased morbidity, longer hospital stays, increased costs, and increased emergency department (ED) use.²⁻⁶ Children from racial/ethnic minority families and those covered by Medicaid are at risk for suboptimal access to healthcare⁷⁻¹⁰ and may be at risk for less timely care as well.⁸ Patient-provider racial/ethnic and language concordance appears to mitigate disparities in quality of care for adults,¹¹⁻¹⁴ although less clearly for children.¹⁵⁻¹⁷

Language may play an important role in the existence of racial/ethnic disparities in access to timely care. In 2000, 18% of the US population over age 5 years spoke a language other than English at home, an increase over the previous 10 years.¹⁸ A number of studies have demonstrated the effect of language barriers on access to and use of healthcare. Children whose parents' primary language is not English are less likely to have received the recommended number of preventive care visits.¹⁹ Adults who are limited in English proficiency (LEP) use physician services and preventive care less often, are less likely to have a regular source of care, and use the ED more often as the primary source of care²⁰⁻²²; children with LEP parents are less likely to be brought in for needed care.²³ Lack of trained medical interpreters is common and is associated with decreased quality of care for adult populations.²⁴⁻²⁶ However, the relationship between race/ethnicity, language barriers, and delayed access to care for children has been less well elucidated. Prior studies of racial/ethnic disparities in timeliness of care for children have not adequately accounted for the confounding effects of language-related factors such as interpreter use and communication problems.^{20,21,27,28}

Thus, the objective of this study was to examine the association of race/ethnicity, parent's primary language at home, difficulty communicating with providers, and use of interpreters with report of receiving illness care and routine care as soon as wanted for children covered by Medicaid.

METHODS

Data Source

This was a cross-sectional study using data from the Consumer Assessment of Health Plans Survey (CAHPS), conducted by the Washington State Medical Assistance Administration (MAA) (now called the Health and Recovery Services Ad-

Objective: To examine the relationship of race/ethnicity, language, communication with providers, and interpreter use with timeliness of illness and routine care for children in managed care Medicaid.

Study Design: Cross-sectional study using data from the Consumer Assessment of Health Plans Survey, which was administered to parents of children less than 15 years of age in Washington State managed care Medicaid in 2000.

Methods: Predictors of interest were child's race/ethnicity, parent's primary language at home, difficulty communicating with the child's providers because of language, and need and use of interpreters. The primary outcomes were how often (always, usually, sometimes, or never) the child received illness and routine care as soon as wanted. Analyses used multivariate ordered logistic regression and model-based direct adjustment.

Results: A total of 5142 children were included. In adjusted analyses, children received illness and routine care significantly less often than wanted if the parent's primary language at home was not English; the parent ever had difficulty communicating with the provider; and the parent needed but did not always get an interpreter.

Conclusion: Language barriers were associated with decreased timeliness of care for children in managed care Medicaid.

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ministration) for children covered by the state's Medicaid program. CAHPS was developed and validated by the Agency for Healthcare Quality and Research in 1995 for use in benchmarking performance and collecting information on consumers' experiences of health services within different types of health plans. A version of CAHPS was designed specifically to assess children's experiences of healthcare.²⁹ The MAA administered a modified CAHPS 2.0H survey questionnaire to a sample of parents of children in managed care Medicaid between April and August 2000. Survey implementation used a mixed methodology, where an initial mail survey was supplemented with a phone interview for those not responding to the mailed survey. For parents of children whose enrollment data indicated Spanish as the primary language, both the English version and the official validated Spanish version of the CAHPS 2.0H were mailed and the parent could choose which to complete. Phone interviews also were available in Spanish.

Medicaid enrollment data were used to identify children meeting the following criteria: 14 years of age or younger; continuous enrollment in Medicaid from September 1999 through February 2000, with no more than a 1-month break; and English or Spanish listed as the primary language. One child per household was randomly selected as the reference child. Children between 3 and 48 months of age were not eligible if they had participated in a separate MAA survey on development that was conducted just prior to CAHPS. A total of 1050 eligible children were randomly selected from each of the 9 managed care plans participating in Washington State Medicaid during the study period, and surveys were sent to their parents. This study was approved by the Human Research Review Section of the Washington State Department of Social and Health Services.

Outcome Measures

The primary outcomes of the study were timeliness of both illness care and routine care. To measure timeliness of illness care, parents were first asked whether their child had an illness or injury that they believed needed immediate care from a doctor's office, clinic, or ED in the previous 6 months. Those who responded affirmatively were asked "in the last 6 months, when your child needed care right away for an illness or injury, how often did your child get care as soon as you wanted?" Choices for responses were never, sometimes, usually, or always. The validity of this measure of delayed care has been demonstrated in previous work.⁵ To measure timeliness of routine care, parents were first asked whether they had made any appointments in the last 6 months for their child with a doctor or other health provider for regular or routine healthcare. If they had, they were asked "in the last 6 months,

how often did your child get an appointment for regular or routine health care as soon as you wanted?" Choices for responses were never, sometimes, usually, or always.

Predictors

The primary predictors of interest were measures of race/ethnicity and language barriers. Parents were asked whether or not their child was Hispanic/Latino and were asked to indicate whether their child's race was 1 or more of the following: black/African American, Asian, native Hawaiian/other Pacific Islander, or American Indian/Alaska native. Based on these parental responses, we then categorized race/ethnicity as white, non-Hispanic; black, non-Hispanic; Hispanic; or other/more than 1 race. Parents were asked to identify the primary language they spoke at home; as only 3.9% of parents reported a language other than English or Spanish, we categorized this variable into English or not English. Parents were asked how often in the last 6 months they had a hard time speaking with or understanding their child's doctors or other health providers because they spoke different languages; this question was dichotomized into whether they ever (sometimes/usually/always) versus never had difficulty communicating with the provider because of language. Parents reported whether they needed an interpreter to help them speak with their child's doctors or other health providers in the past 6 months; if they did, they were asked how often they got an interpreter when they needed one. These 2 questions were combined into 1 variable measuring interpreter use, with categories for those who did not always (ie, never/sometimes/usually) get an interpreter when needed, always got an interpreter when needed, or did not need an interpreter.

Other predictors of interest included child's sex; health status as reported on a 5-point Likert scale; presence of a special healthcare need; age and highest education level of the person completing the survey (the child's mother for 86% of children, and the father for 10%); and whether the child had a regular healthcare provider. Child age was derived from the date of birth on the enrollment records. Identification of children with special healthcare needs was done by asking questions from the Children with Special Health Care Needs Screener, which is based on the federal Maternal and Child Health Bureau definition of Children with Special Health Care Needs.³⁰

Statistical Analysis

Bivariate analyses were done using the χ^2 test or Fisher exact test to assess the association between the predictor of interest and timeliness of care, categorized as always, usu-

ally, sometimes, or never getting care as soon as wanted. Multicollinearity of the key race/ethnicity and language predictor variables was tested using the Pearson correlation coefficient, and variables with *r* values less than 0.80 were included in the multivariate analyses. Data in the multivariate analyses were weighted to reflect the under-representation of children younger than age 48 months that occurred because of the exclusion of children who had participated in the earlier MAA survey on development. We used ordered logistic regression to determine the relationship between each predictor variable and whether the child always, usually, sometimes, or never received care as soon as the parent wanted. Ordered logistic regression maximizes statistical power and allows data from each distinct category of response to be analyzed as it was reported, rather than lumped together to create a binary outcome; this method has been used in other published literature assessing healthcare quality using CAHPS measures.³¹ Separate models were run for illness care and routine care. In addition to race/ethnicity and the language variables of interest, other variables in the model included child's age, sex, health status, presence of a special healthcare need, parental age and education, and having a regular provider.

To make the results of the ordered logistic regression more easily interpretable, we performed simulations to derive the adjusted probabilities of always, usually, sometimes, or never getting care as soon as wanted for race/ethnicity and language predictors. To do this, we used model-based direct adjustment, using the entire study sample as the standard population.³² An overall *P* value for categorical predictor variables with more than 2 categories was calculated using the multivariate Wald test. All analyses were done using Stata 8.0 software (Stata

■ **Table 1.** Characteristics of Children in Study Sample^a

Characteristic	Percentage		
	Total Sample (n = 5142)	Illness Care Sample ^b (n = 1973)	Routine Care Sample ^b (n = 2811)
Child age, y			
0-4	32.3	37.3	39.0
5-10	47.3	43.7	42.8
11-14	20.4	19.1	18.2
Male sex	51.6	51.9	51.3
Race/ethnicity			
White, non-Hispanic	62.0	68.1	62.5
Black, non-Hispanic	4.2	3.4	4.1
Hispanic	22.8	17.1	21.3
Other	11.0	11.4	12.0
Parent age, y			
<25	17.3	18.9	19.7
25-34	40.8	41.2	41.7
35-44	32.4	31.7	30.4
>44	9.5	8.2	8.2
Parental education ≥ high school	79.8	84.3	80.7
Parent's primary language			
English	82.9	89.9	84.4
Spanish	13.2	7.2	11.4
Other	3.9	2.9	4.2
Health status			
Excellent	44.0	38.3	40.9
Very good	33.1	35.7	34.8
Good	17.6	19.3	18.2
Fair/poor	5.2	6.7	6.2
Special healthcare need	23.5	31.0	28.8
Had a regular provider	79.6	85.1	84.9

^aBased on unweighted data. Some percentages may not add to exactly 100% due to rounding.
^bSubsample of children used in analyses of timeliness of care (ie, those who needed care in the past 6 months).

Corporation, College Station, TX). A *P* value of <.05 was considered significant for all analyses.

RESULTS

Characteristics of the Study Sample

Of the 9450 children sampled, 319 were ineligible because of death, language barriers, undeliverable surveys, not being a member of the intended managed care plan, being in the plan

■ **Table 2.** Bivariate Analyses of Predictors of Always Getting Care as Soon as Wanted^a

Predictor	Illness Care (n = 1384)		Routine Care (n = 1998)	
	%	<i>P</i> ^b	%	<i>P</i> ^b
Child age, y				
0-4	66.9		55.5	
5-10	71.8	.362	53.7	.651
11-14	67.0		54.1	
Sex				
Male	69.5	.602	52.1	.009
Female	70.7		57.6	
Race/ethnicity				
White, non-Hispanic	71.5		57.8	
Black, non-Hispanic	60.0	.018	50.5	<.001
Hispanic	60.9		48.5	
Other	66.8		48.0	
Parent age, y				
<25	68.5		53.9	
25-34	68.0	.437	54.5	.484
35-44	70.5		52.8	
>44	71.7		61.8	
Parental education				
≥High school	70.4	.011	55.3	.026
<High school	62.0		50.1	
Health status				
Excellent	77.9		60.9	
Very good	69.3	<.001	53.1	<.001
Good	59.3		47.7	
Fair/poor	46.9		40.0	
Special healthcare need				
No	70.3	.108	55.2	.210
Yes	66.9		53.1	
Had a regular provider				
Yes	71.5	<.001	57.3	<.001
No	57.8		41.1	
Parent's primary language				
English	72.3	<.001	57.8	<.001
Not English	42.5		37.8	
Problem communicating with provider because of language				
Never	73.5	<.001	58.5	<.001
Ever	42.1		38.5	
Interpreter use				
Did not need interpreter	70.4		56.0	
Always got when needed	57.1	<.001	43.3	<.001
Did not always get when needed	30.2		27.7	

^aBased on unweighted data.

^b*P* values are for the comparison of the predictor of interest and timeliness of care, categorized as always, usually, sometimes, or never getting care as soon as wanted. For simplicity, the table shows only the percentage who always got care as soon as it was wanted.

less than 6 months, or not being a Washington state resident. Of the 9131 eligible children, the survey response rate was 56.3%, which yielded a sample size of 5142 children. Characteristics of the study sample are presented in **Table 1**, as well as characteristics of children in the analyses of timeliness of illness care (those with an illness or injury that needed care in the previous 6 months) and timeliness of routine care (those whose parent made an appointment for routine care in the previous 6 months). Fourteen percent of parents reported that they had ever (ie, sometimes, usually, or always) had a hard time speaking with or understanding their child's provider because they spoke different languages. Six percent of parents reported that they needed an interpreter to speak with their child's provider in that past 6 months; of these, more than half (52.7%) reported that they were not always able to get an interpreter if needed.

Bivariate Analyses

Forty percent of children were reported to have had an illness or injury needing care in the past 6 months. Among these children, there were significant differences by race/ethnicity in parental report of getting care as soon as wanted, with 60.0% of black children and 60.9% of Hispanic children always getting illness care as soon as wanted compared with 71.5% of white children (*P* = .018) (**Table 2**). Among the 58% of children whose parents made them an appointment for routine care in the past 6 months, significant differences by race/ethnicity were also seen in report of getting care as soon as wanted.

Only 50.5% of black children and 48.5% of Hispanic children always got routine care as soon as the parent wanted, whereas 57.8% of white children did ($P < .001$). Children whose parents' primary language at home was not English were less likely to report always receiving illness care as soon as wanted compared with those whose parents' primary language at home was English (42.5% vs 72.3%, respectively, for illness care [$P < .001$]; 37.8% vs 57.8%, respectively, for routine care [$P < .001$]). Children of parents who reported ever having problems communicating with the child's provider because of language were less likely to always receive illness care and routine care as soon as wanted compared with children of parents who never had such communication problems (42.1% vs 73.5%, respectively, for illness care [$P < .001$]; 38.5% vs 58.5%, respectively, for routine care [$P < .001$]). The frequency of always getting illness and routine care as soon as wanted was lowest for children whose parents did not always get an interpreter when needed, somewhat higher for those whose parents always got an interpreter when needed, and highest for those who did not need an interpreter (30.2% vs 57.1% vs 70.4%, respectively, for illness care [$P < .001$]; 27.7% vs 43.3% vs 56.0%, respectively, for routine care [$P < .001$]).

Of parents who did not always get an interpreter when needed, 72.4% had ever had a hard time communicating with the child's provider because of language differences, compared with 35.6% of parents who always got an interpreter when needed and 11% of those who did not need an interpreter ($P < .001$).

Multivariate Analyses

In testing for multicollinearity among race/ethnicity and language-related variables, the largest Pearson correlation co-

efficient was $r = 0.63$ for the relationship between Hispanic race/ethnicity and having a parent whose primary language at home was not English; given the lack of correlation coefficients greater than or equal to 0.80, all variables were included in the multivariate models.

Results of the ordered logistic regression are presented separately for illness care and for preventive care (Table 3). The regressions show the relationship between the predictors and increasing frequency of getting care as soon as wanted for the child; a positive beta coefficient indicates more often getting care as soon as wanted. Compared with white children, there were no significant differences in frequency of receiving illness or routine care as soon as wanted for children of other race/ethnicities in these adjusted analyses.

Table 3. Ordered Logistic Regression of Increasing Frequency of Getting Care as Soon as Wanted

Predictor	Illness Care (n = 1380)		Routine Care (n = 1993)	
	β	P	β	P
Child age, y				
0-4	Reference		Reference	
5-10	0.92	.575	-0.10	.427
11-14	-0.17	.454	-0.27	.129
Male sex	0.01	.964	-0.21	.043
Race/ethnicity				
White, non-Hispanic	Reference		Reference	
Black, non-Hispanic	-0.31	.349	-0.02	.913
Hispanic	0.12	.657	-0.05	.846
Other	0.26	.253	-0.16	.320
Parent age, y				
<25	-0.15	.490	-0.15	.299
25-34	Reference		Reference	
35-44	-0.04	.817	0.13	.301
>44	-0.11	.706	0.07	.738
Parental education \geq high school	-0.03	.88	-0.04	.782
Health status				
Excellent	Reference		Reference	
Very good	-0.45	.008	-0.30	.017
Good	-0.60	.003	-0.44	.005
Fair/poor	-0.74	.017	-0.23	.316
Special healthcare need	-0.17	.316	-0.11	.416
Had a regular provider	0.48	.025	0.54	<.001
Parent's primary language not English	-0.89	.003	-0.67	.002
Problem communicating with provider because of language	-0.70	<.001	-0.42	.005
Interpreter use				
Did not need interpreter	Reference		Reference	
Always got when needed	0.95	.044	0.64	.027
Did not always get when needed	-0.55	.123	-0.36	.241

■ **Table 4.** Model-Based Direct Adjustment Simulating the Effects of Race/Ethnicity and Language Predictors on Probability of Getting Illness Care as Soon as Wanted^a

Predictor	Always ^b	Usually ^b	Sometimes ^b	Never ^b	P
Race/ethnicity					
White, non-Hispanic	0.70	0.20	0.07	0.03	.453
Black, non-Hispanic	0.64	0.23	0.09	0.03	
Hispanic	0.73	0.18	0.07	0.02	
Other	0.75	0.17	0.06	0.02	
Parent's primary language					
English	0.74	0.18	0.06	0.02	.002
Not English	0.55	0.28	0.13	0.05	
Problem communicating with provider because of language					
Never	0.73	0.19	0.11	0.04	.005
Ever	0.58	0.26	0.06	0.02	
Interpreter use					
Did not need interpreter	0.71	0.20	0.07	0.02	.006
Always got when needed	0.86	0.10	0.03	0.01	
Did not always get when needed	0.59	0.26	0.11	0.04	

^aControlling for the above variables, plus age, sex, health status, presence of special healthcare need, parental age and education, and having a regular provider.

^bRow probabilities may not add to 1.0 because of rounding.

Children had a significantly decreased frequency of getting illness or routine care as soon as wanted if the parent's primary language at home was not English or if the parent ever had a problem communicating with the child's provider because of language. Compared with children whose parents did not need an interpreter, children whose parents always got an interpreter when needed were reported to significantly more often receive illness and routine care as soon as wanted, while there was no significant difference for those whose parents did not always get an interpreter when needed.

Using model-based direct adjustment, the simulations in **Table 4** and **Table 5** provide an estimate of the size of the differences in adjusted probabilities of getting care as soon as wanted for the race/ethnicity and language variables. These adjusted probabilities can be considered to be the probability of each outcome that would have been observed for each predictor if subjects had the same distribution of covariates as did the study population as a whole. The adjusted probability of always getting illness care as soon as wanted was significantly and substantially different according to the other language variables, with an adjusted probability of 0.55 for children whose parents' primary language at home was not English compared with 0.74 for those whose parents' primary

language at home was English ($P = .002$); 0.58 for children whose parents ever had problems communicating with the child's provider because of language compared with 0.73 for those whose parents never had a problem ($P = .005$); and 0.59 for those whose parents needed but did not always get an interpreter compared with 0.71 for those whose parents did not need an interpreter and 0.86 for those whose parents always got an interpreter when needed (overall $P = .006$ by Wald test) (**Table 4**).

For getting routine care as soon as wanted, the adjusted probabilities followed patterns similar to those for illness care (**Table 5**). The adjusted probability of always getting routine care as soon as wanted was significantly and substantially different for each of the other language variables: 0.43 for children whose parents' primary language at home was not English compared with 0.60 for children whose parents' primary language at home was English ($P = .002$); 0.48 for children of parents who ever had difficulty communicating with their child's provider due to language compared with 0.58 for those who never had such a problem ($P = .005$); and 0.49 for children whose parents needed but did not always get an interpreter compared with 0.57 for those who did not need an interpreter and 0.71 for those who

Table 5. Model-Based Direct Adjustment Simulating the Effects of Race/Ethnicity and Language Predictors on Probability of Getting Routine Care as Soon as Wanted^a

Predictor	Always ^b	Usually ^b	Sometimes ^b	Never ^b	P
Race/ethnicity					
White, non-Hispanic	0.58	0.29	0.11	0.02	.793
Black, non-Hispanic	0.57	0.29	0.11	0.03	
Hispanic	0.58	0.29	0.11	0.03	
Other	0.54	0.31	0.12	0.03	
Parent's primary language					
English	0.60	0.28	0.10	0.02	.002
Not English	0.43	0.36	0.15	0.04	
Problem communicating with provider because of language					
Never	0.58	0.29	0.10	0.02	.005
Ever	0.48	0.34	0.15	0.04	
Interpreter use					
Did not need interpreter	0.57	0.29	0.11	0.03	.004
Always got when needed	0.71	0.21	0.076	0.01	
Did not always get when needed	0.49	0.33	0.14	0.04	

^aControlling for the above variables, plus age, sex, health status, presence of special healthcare need, parental age and education, and having a regular provider.
^bRow probabilities may not add to 1.0 because of rounding.

always got an interpreter when needed (overall $P = .004$ by Wald test).

DISCUSSION

This study found that children covered by Medicaid less often received timely illness and routine care if their parents' primary language at home was not English or their parent had problems communicating with the child's providers because of language. However, always getting an interpreter when needed was associated with more often getting timely care. Racial/ethnic disparities in receiving timely care did not persist after controlling for language barriers and other covariates. Although other studies have found that some racial/ethnic disparities in timeliness of care persist despite controlling for parental interview language,²⁸ these studies did not control for other language-related barriers (eg, interpreter use, communication problems) that could confound the relationship between language, race/ethnicity, and receipt of timely care.

In this study, we found separate significant effects of parent's primary language at home, report of difficulty understanding providers, and interpreter need and use. Having a primary

language that is not English often has been used as a measure of LEP, although 55% of the US population that speak a language other than English at home report speaking English "very well."¹⁸ Primary spoken language also has been used as a marker of acculturation^{33,34} and may reflect acculturation more than parental LEP in this study, where we also controlled for ability to communicate with providers. In this respect, our results are consistent with studies that show that cultural differences are important barriers to accessing healthcare for children.²⁷ Parents whose primary language is not English may have spent less time in the United States or be less likely to be citizens, and may be linguistically or culturally isolated or have decreased understanding of healthcare resources.^{35,36} Although CAHPS has been validated in different racial/ethnic groups, there also may be cultural differences in parental expectations of care that explain these findings.

Although not directly measured in this survey, parental LEP is suggested by parents' report of problems communicating with providers because of language and may be associated with less timely care because of difficulties with communicating with office staff, understanding phone advice systems, and making appointments. However, parental LEP and communication problems would be less of a barrier to accessing timely care if providers,

staff, information systems, and instructional materials used the parent's language. We do not have data on the race/ethnicity or languages of the providers for children in this study, but other studies suggest that parents with language-concordant providers report better quality of care.^{13,14,17,37} This effect is less clear for concordance by race/ethnicity. Although studies in adult populations suggest that racial/ethnic patient-provider concordance is associated with higher-quality care,^{11,12} this has not been demonstrated in pediatric populations.^{15,16} The lack of Spanish-speaking staff has been reported by Latino parents as a barrier to obtaining healthcare for their children.³⁸ Lack of multilingual phone systems for making appointments and obtaining information also may create barriers for minority parents to contact providers.^{39,40} Clinics with bilingual personnel may be viewed with greater trust by undocumented parents, who might otherwise avoid seeking care for their children because of fears of deportation.

We found that even among parents who always got an interpreter when needed, 36% experienced problems understanding their provider because of language, and the association of communication problems and delayed care persisted after adjusting for interpreter need and use. Better-quality interpretation services may be needed.²⁵ It is interesting to note that our adjusted analyses found that parents who always got an interpreter when needed reported timely care significantly more often than parents not needing an interpreter, reversing findings noted in bivariate analyses. Being able to always get an interpreter when needed may be a marker for a clinic's level of resources or cultural sensitivity, which could in turn promote better access to timely care. In our study, 6% of parents reported need for an interpreter in the past 6 months, but access to adequate interpreter services may be an even bigger issue in more diverse populations, where the prevalence of need for interpreters has been found to be 9 to 21%.^{17,41}

The association of inconsistent availability of interpreter services and less timely care is cause for concern, given that reimbursement for interpreter services is uncommon among Medicaid programs and private insurers.⁴² Washington has been among the minority of states that opt to pay for interpreter services for Medicaid enrollees. At the time of the study, interpreter services were reimbursed by the state through contracts with interpreter agencies outside of the managed care plans.⁴³ Such coverage was threatened with elimination in 2002,⁴⁴ and then restructured in 2004 to attempt to cut costs by lowering reimbursement rates for interpreters and requiring providers to arrange for interpreters through state-contracted language interpretation brokers.⁴⁵ The effect of these policy changes on access to care is unclear. Further research is needed to evaluate how timeliness of care and other quality measures are affected by these and other policies related to interpreter services, such as contractual requirements for man-

aged care plans to provide interpreter services or the federal requirement that healthcare providers receiving federal funds take steps to ensure meaningful access for LEP individuals.⁴⁶ Additional research also is needed to examine the clinical impact and cost-effectiveness of policies to improve interpreter services and reduce language barriers.

Decreased parental satisfaction may be another explanation for the association between language barriers and less timely care. Language barriers have been associated with decreased patient satisfaction,^{21,41} which may cause parents to avoid seeking care for their children. Conversely, parents with language barriers may have difficulty obtaining timely appointments, which may cause dissatisfaction. The interplay between race/ethnicity, primary language, acculturation, communication, interpreter use, and satisfaction as they affect timeliness of care is complex and merits further examination.

Limitations

Our findings must be interpreted in light of several limitations. Like other observational studies, this study was not able to control for bias due to unmeasured confounders such as income, parental employment status, transportation availability, immigration status, natality, or length of residence in the United States. Our population of children receiving Medicaid was likely to be more homogeneous with respect to factors such as income and parental employment than the general population, which may attenuate the confounding effects of these unmeasured factors; only children in families with incomes under 200% of the federal poverty level were eligible for Medicaid managed care in Washington State during the study period. We were able to control for parental education, an important proxy for unmeasured factors such as income and employment. However, the lack of a significant association between education and timeliness in adjusted models was unexpected, although not inconsistent with some studies.⁴⁷⁻⁴⁹ The lack of significant association in our study may be because of the relatively small number of subjects in our sample with less than a high school education. The lack of a large significant association between lower education and less timely care at least suggests that there was no substantial confounding from unmeasured factors for which education may be a proxy (eg, income, employment).

Our study considered the parent's primary language to be that which he/she spoke at home, but this primary language may not be the language used in the healthcare setting. Parental LEP may be a better measure of language barriers that affect access to care than the primary language spoken at home,²³ but our survey was unable to measure this important construct. Because the survey was only available in English and Spanish, it included only a small percentage of parents

whose primary language at home was neither English nor Spanish. As a result, our findings may not be generalizable to families who speak other languages and may underestimate the barriers faced by parents who speak less common languages. Also, our results may not be generalizable to other regions of the country with different ethnic, cultural, and linguistic groups.

CAHPS does not include information about the illnesses or routine care to which the parents refer, so it is not possible to know the degree to which this care was truly needed. Although our measure of perceived delay is subjective, the validity of this and other measures of reported delay have been demonstrated.^{5,50}

The survey response rate of 56% is a limitation. However, our response rate is reasonable compared with other published studies in Medicaid populations, where the response rate can range from 40% to 50%.^{49,51-53} If nonrespondents were more likely to have limited education and literacy, then our results may underestimate the risk for untimely access due to language barriers. The education level of our study sample does appear high, with about 80% of respondents having a high school or greater education. However, this level is comparable to that of the general population of parents of low-income children in Washington State, of whom 78% have a high school or greater education based on 2006 data from the Annual Social and Economic Supplement of the Current Population Survey.⁵⁴

CONCLUSIONS

In spite of these limitations, some meaningful conclusions can be drawn from our findings. These data suggest that language barriers are associated with parental report of delayed access to illness and routine care for children in managed care Medicaid. Controlling for language barriers removed the racial/ethnic disparities in timeliness of care that were seen in bivariate analyses. Our results suggest that policies to address language barriers for the families of pediatric patients may positively impact the timeliness of care received. Reducing language barriers and improving timeliness of care may require increasing the quality and availability of medical interpreters; providing bilingual clinicians, staff, information systems, and instructional materials; and developing programs to provide more culturally appropriate care. Further research is necessary to evaluate the impact of interventions such as these on timeliness and quality of care, as well as to study whether such interventions lead to improvements in health outcomes and are cost-effective.

Take-away Points

This research suggests that language barriers are associated with delayed access to illness and routine care for children in managed care Medicaid.

- Children received timely care less often if their parents' primary language was not English or their parent reported language problems in communicating with providers. However, having access to interpreters was associated with getting timely care more often.
- Racial/ethnic disparities in timeliness of care did not persist after controlling for language barriers.
- Providers, health plans, and policymakers should consider steps to address language barriers in order to reduce disparities in the timeliness of children's healthcare.

Providers, healthcare systems, managed care plans, and policymakers should identify effective steps to address language barriers that can ameliorate disparities in the timeliness of children's healthcare and promote children's health.

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REFERENCES

1. **Institute of Medicine.** *Crossing the Quality Chasm: a New Health System for the 21st Century.* Washington, DC: National Academy Press; 2001.
2. **O'Toole SJ, Karamanoukian HL, Allen JE, et al.** Insurance-related differences in the presentation of pediatric appendicitis. *J Pediatr Surg.* 1996;31(8):1032-1034.
3. **Weissman JS, Stern R, Fielding SL, Epstein AM.** Delayed access to health care: risk factors, reasons, and consequences. *Ann Intern Med.* 1991;114(4):325-331.
4. **Brousseau D, Bergholte J, Gorelick M.** The effect of prior interactions with a primary care provider on nonurgent pediatrics emergency department use. *Arch Pediatr Adolesc Med.* 2004;158(2):78-82.
5. **Galbraith AA, Semura J, McAninch-Dake B, Anderson N, Christakis DA.** Emergency department use and perceived delay in accessing illness care among children with Medicaid. *Ambul Pediatr.* 2004;4(6):509-513.
6. **Smink DS, Fishman SJ, Kleinman K, Finkelstein JA.** Effects of race, insurance status, and hospital volume on perforated appendicitis in children. *Pediatrics.* 2005;115(4):920-925.

7. Flores G, Bauchner H, Feinstein AR, Nguyen US. The impact of ethnicity, family income, and parental education on children's health and use of health services. *Am J Public Health*. 1999;89(7):1066-1071.
8. Agency for Healthcare Research and Quality. *Statistical Brief 3: Children's Health Care Quality, Fall 2000*. May 8, 2002. http://www.meps.ahrq.gov/mepsweb/data_files/publications/st3/stat03.pdf. Accessed April 15, 2008.
9. Newacheck PW, Pearl M, Hughes DC, Halfon N. The role of Medicaid in ensuring children's access to care. *JAMA*. 1998;280(20):1789-1793.
10. St Peter RF, Newacheck PW, Halfon N. Access to care for poor children. Separate and unequal? *JAMA*. 1992;267(20):2760-2764.
11. Saha S, Komaromy M, Koepsell TD, Bindman AB. Patient-physician racial concordance and the perceived quality and use of health care. *Arch Intern Med*. 1999;159(9):997-1004.
12. LaVeist TA, Nuru-Jeter A, Jones KE. The association of doctor-patient race concordance with health services utilization. *J Public Health Policy*. 2003;24(3-4):312-323.
13. Perez-Stable EJ, Napoles-Springer A, Miramontes JM. The effects of ethnicity and language on medical outcomes of patients with hypertension or diabetes. *Med Care*. 1997;35(12):1212-1219.
14. Baker D, Hayes R, Fortier J. Interpreter use and satisfaction with interpersonal aspects of care for Spanish-speaking patients. *Med Care*. 1998;36(10):1461-1470.
15. Stevens GD, Shi L, Cooper LA. Patient-provider racial and ethnic concordance and parent reports of the primary care experiences of children. *Ann Fam Med*. 2003;1(2):105-112.
16. Stevens GD, Mistry R, Zuckerman B, Halfon N. The parent-provider relationship: does race/ethnicity concordance or discordance influence parent reports of the receipt of high quality basic pediatric preventive services? *J Urban Health*. 2005;82(4):560-574.
17. Hampers LC, McNulty JE. Professional interpreters and bilingual physicians in a pediatric emergency department: effect on resource utilization. *Arch Pediatr Adolesc Med*. 2002;156(11):1108-1113.
18. Shin H, Bruno R. **Language Use and English-Speaking Ability**. *Census 2000 Brief*. October 2003. <http://www.census.gov/prod/2003pubs/c2kbr-29.pdf>. Accessed May 1, 2006.
19. Cohen AL, Christakis DA. Primary language of parent is associated with disparities in pediatric preventive care. *J Pediatr*. 2006;148(2):254-258.
20. Weech-Maldonado R, Morales LS, Elliott M, Spritzer K, Marshall G, Hays RD. Race/ethnicity, language, and patients' assessments of care in Medicaid managed care. *Health Serv Res*. 2003;38(3):789-808.
21. Kirkman-Liff B, Mondragon D. Language of interview: relevance for research of southwest Hispanics. *Am J Public Health*. 1991;81(11):1399-1404.
22. Carrasquillo O, Orav E, Brennan T, Burstin H. Impact of language barriers on patient satisfaction in an emergency department. *J Gen Intern Med*. 1999;14(2):82-87.
23. Flores G, Abreu M, Tomany-Korman SC. Limited English proficiency, primary language at home, and disparities in children's health care: how language barriers are measured matters. *Public Health Rep*. 2005;120(4):418-430.
24. Woloshin S, Bickell N, Schwartz L, Gany F, Welch H. Language barriers in medicine in the United States. *JAMA*. 1995;273(9):724-728.
25. Flores G. The impact of medical interpreter services on the quality of health care: a systematic review. *Med Care Res Rev*. 2005;62(3):255-299.
26. Baker D, Parker R, Williams M, Coates W, Pitkin K. Use and effectiveness of interpreters in an emergency department. *JAMA*. 1996;275(10):783-788.
27. Flores G, Abreu M, Olivar MA, Kastner B. Access barriers to health care for Latino children. *Arch Pediatr Adolesc Med*. 1998;152(11):1119-1125.
28. Brousseau DC, Hoffmann RG, Yauck J, Nattinger AB, Flores G. Disparities for Latino children in the timely receipt of medical care. *Ambul Pediatr*. 2005;5(6):319-325.
29. Homer CJ, Fowler F, Gallagher P, et al. The Consumer Assessment of Health Plan Study (CAHPS) survey of children's health care. *Jt Comm J Qual Improv*. 1999;25(7):369-377.
30. Bethell CD, Read D, Stein RE, Blumberg SJ, Wells N, Newacheck PW. Identifying children with special health care needs: development and evaluation of a short screening instrument. *Ambul Pediatr*. 2002;2(1):38-48.
31. Christakis DA, Wright JA, Zimmerman FJ, Bassett AL, Connell FA. Continuity of care is associated with high-quality care by parental report. *Pediatrics*. 2002;109(4):e54.
32. Greenland S. Estimating standardized parameters from generalized linear models. *Stat Med*. 1991;10(7):1069-1074.
33. Adam MB, McGuire JK, Walsh M, Basta J, LeCroy C. Acculturation as a predictor of the onset of sexual intercourse among Hispanic and white teens. *Arch Pediatr Adolesc Med*. 2005;159(3):261-265.
34. Zlot AI, Jackson DJ, Korenbrot C. Association of acculturation with cesarean section among Latinas. *Matern Child Health J*. 2005;9(1):11-20.
35. Huang ZJ, Yu SM, Ledsky R. Health status and health service access and use among children in U.S. immigrant families. *Am J Public Health*. 2006;96(4):634-640.
36. Yu SM, Huang ZJ, Schwalberg RH, Kogan MD. Parental awareness of health and community resources among immigrant families. *Matern Child Health J*. 2005;9(1):27-34.
37. Manson A. Language concordance as a determinant of patient compliance and emergency room use in patients with asthma. *Med Care*. 1988;26(12):1119-1128.
38. Zambrana RE, Eii K, Dorrington C, Wachsman L, Hodge D. The relationship between psychosocial status of immigrant Latino mothers and use of emergency pediatric services. *Health Soc Work*. 1994;19(2):93-102.
39. Flores G, Olson L, Tomany-Korman SC. Racial and ethnic disparities in early childhood health and health care. *Pediatrics*. 2005;115(2):e183-e193.
40. Flores G. Culture, ethnicity, and linguistic issues in pediatric care: urgent priorities and unanswered questions. *Ambul Pediatr*. 2004;4(4):276-282.
41. Mosen DM, Carlson MJ, Morales LS, Hanes PP. Satisfaction with provider communication among Spanish-speaking Medicaid enrollees. *Ambul Pediatr*. 2004;4(6):500-504.
42. Youdelman M, Perkins J. *Providing Language Interpretation Services in Health Care Settings: Examples from the Field*. May 2002. http://www.cmwf.org/usr_doc/youdelman_languageinterp_541.pdf. Accessed May 3, 2006.
43. Song KM. State overhauling system of Medicaid interpreters. *Seattle Times*. January 20, 2004.
44. Black G. Medicaid interpreter services facing budget ax. *Seattle Post-Intelligencer*. February 11, 2002:B1.
45. Song KM. Medicaid program slashes costs of providing interpreters. *Seattle Times*. May 9, 2005.
46. Chen AH, Youdelman MK, Brooks J. The legal framework for language access in healthcare settings: Title VI and beyond. *J Gen Intern Med*. 2007;22(suppl 2):362-367.
47. Feinberg E, Swartz K, Zaslavsky A, Gardner J, Walker DK. Family income and the impact of a children's health insurance program on reported need for health services and unmet health need. *Pediatrics*. 2002;109(2):E29.
48. Stevens GD, Seid M, Mistry R, Halfon N. Disparities in primary care for vulnerable children: the influence of multiple risk factors. *Health Serv Res*. 2006;41(2):507-531.
49. Kim M, Zaslavsky AM, Cleary PD. Adjusting Pediatric Consumer Assessment of Health Plans Study (CAHPS) scores to ensure fair comparison of health plan performances. *Med Care*. 2005;43(1):44-52.
50. Hackett T, Cassem N, Raker JW. Patient delay in cancer. *N Engl J Med*. 1973;289(1):14-20.
51. Weech-Maldonado R, Morales LS, Spritzer K, Elliott M, Hays RD. Racial and ethnic differences in parents' assessments of pediatric care in Medicaid managed care. *Health Serv Res*. 2001;36(3):575-594.
52. Sisk JE, Gorman SA, Reisinger AL, Glied SA, DuMouchel WH, Hynes MM. Evaluation of Medicaid managed care. Satisfaction, access, and use. *JAMA*. 1996;276(1):50-55.
53. Venus PJ, Rector TS, Shah MM. Insights into problems obtaining care believed necessary as measured by the Medicaid Consumer Assessment of Health Plans Survey (CAHPS). *Am J Manag Care*. 2003;9(12):797-803.
54. National Center for Children in Poverty. Washington: Demographics of low-income children. http://www.nccp.org/profiles/WA_profile_6.html. Accessed January 22, 2008. ■