

Crossing the Border for Health Care: Access and Primary Care Characteristics for Young Children of Latino Farm Workers Along the US-Mexico Border

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Objectives.—To examine prevalence and correlates of cross-border health care for children of Latino farm workers in counties near the US-Mexico border and to compare access and primary care in the United States and Mexico.

Methods.—Two hundred ninety-seven parents at Head Start centers in San Diego and Imperial counties were surveyed regarding percentage of health care received in Mexico and the United States, access, and primary care characteristics.

Results.—More than half of all health care was reported as received in Mexico. Reasons for Mexican use revolved around cost, accessibility, and perceptions of effectiveness. Parents of insured children reported slightly more US care, yet even this group reported approximately half of health care in Mexico. Insurance status was related to having a regular source of care, while uninsured children reporting most care in Mexico were less likely than uninsured children in the United States to have had a routine health care visit. Primary care characteristics were related to insurance status and source of care. Uninsured children reporting most care in Mexico fared better in some aspects of primary care than uninsured children reporting most care in the United States and as well as children with insurance receiving care in the United States or Mexico.

Conclusions.—Children of farm workers living along the US-Mexico border, almost irrespective of insurance status, receive a large proportion of care in Mexico. Especially for uninsured children, parent reports of Mexican care characteristics compare favorably with that received in the United States. Mexican health care might be a buffer against vulnerability to poor health outcomes for these children.

KEY WORDS: access; farm workers; Latino; primary care characteristics; vulnerable populations

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Research continues to demonstrate disparities in health and health care across groups of children defined by sociodemographic variables.¹ Eliminating these disparities is a major priority of the US public health strategy.² Socioeconomic status (SES), for example, is linked to child health,^{3–6} and Starfield⁷ has characterized this relationship as follows: “Poor children are more likely to become ill, and when they do become ill they get sicker and die at higher rates than do nonpoor children.” Minority children are more likely to be poor,⁸ and income and race affect access to care,^{9–11} satisfaction with care,¹² care quality,^{13–16} and health outcomes, including health status,^{17–19} hospitalizations for preventable illnesses,^{20–22} low birthweight deliveries,²³ and mortality.^{13,24} Poor and minority children are less likely to have health insurance,^{9,25,26} and the effect of minority status on health

outcomes persists even after controlling for insurance status.^{26,27}

Access to care and provision of high-quality primary care is a cornerstone of efforts to improve health outcomes, control health care spending, and reduce these health care disparities.^{28–30} Starfield has postulated four cardinal domains of primary care—first contact care, longitudinality, comprehensiveness, and coordination—and three related domains, including family centeredness, community orientation, and cultural competence. However, barriers to care can compromise access to care as well as various aspects of primary care and thus are a key factor in health disparities.^{31,32} Financial barriers, such as cost and lack of health insurance, affect access to adult³³ and pediatric care.^{34,35} Cultural and linguistic barriers can affect quality of care.^{12,36} For example, limited English proficiency is related to reduced use of physician services,³⁷ negatively impacts the patient-physician encounter,^{38,39} and affects process measures in pediatric emergency department visits.⁴⁰

One population especially vulnerable to poor health outcomes is children of farm workers, especially migrant farm workers.⁴¹ These children may live in families that are highly transient and may face substandard living conditions.⁴² They are likely to experience high rates of physical,⁴³ mental,^{44,45} and oral health problems.^{46,47} And they face multiple financial, cultural, and linguistic barriers to quality health care.^{36,43,48–50}

Unlike most farm workers and their families living

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throughout the Western United States and in certain areas of the Midwest, farm workers living near the US-Mexico border have some degree of access to health care in both the United States and Mexico. Previous research⁵¹ has documented cross-border health care use by adults in south Los Angeles County, which is approximately 140 miles from the US-Mexico border. For these respondents, costs of care and lack of health insurance were strongly related to cross-border health care use. In addition to factors such as cost and insurance that compel families to seek care in Mexico, there may be aspects of Mexican care that attract families to seek Mexican care. Spanish speakers, for example, do not face the language barriers in Mexico that have been documented for non-English speakers in the United States.⁵¹ As well, Mexican health care providers' cultural attitudes and understandings may be more similar to those of parents than are providers in the United States.⁵¹ Thus, Mexican health care might be an attractive alternative, especially for those families who are less acculturated to the US mainstream or more on the margins of US society.

By examining these families' use of health care on both sides of the border—specifically the prevalence of cross-border care, the correlates of seeking cross-border care, and how families' experiences of care compare between the United States and Mexico—we may learn more about the health care of children of Latino farm workers in general and, by extension, other poor and minority children. This knowledge may, in turn, improve understanding of ways to overcome barriers to care faced by vulnerable children in the United States. However, no data exist that address these questions. Accordingly, we examined cross-border health care use, access to care, and primary care characteristics for young Latino children near the US-Mexico border by surveying parents at Head Start centers dedicated to or primarily serving migrant farm workers in San Diego and Imperial counties.

We addressed three questions. First, what is the prevalence of cross-border health care use in this sample? Given documented financial, cultural, and linguistic barriers to care faced by poor Latino families in the United States,^{36,43,48–50} we hypothesized that at least some of the families in the sample would report using health care in Mexico.⁵¹ Second, what are the sociodemographic and health correlates of seeking care in Mexico? We hypothesized that sociodemographic characteristics denoting relative disadvantage and marginalization would be associated with greater reported use of Mexican health care. Specifically, we hypothesized that reports of Mexican care would be more prevalent in families without health insurance,⁵¹ who were more recent arrivals to San Diego or Imperial County, who traveled to follow work at least 1 month per year, who had less education, and who were poorer. As there is some literature^{52–55} to suggest that Mexican nationals cross into the United States to receive care, perhaps for more complicated health conditions, we hypothesized that the converse might be true and that children with a chronic health condition would be less likely to use health care in Mexico. Third, how do parents' re-

ports of access to care and primary care characteristics compare for those receiving care in the United States versus in Mexico? We hypothesized that insurance status and source of care would have an interactive effect on parents' reports of access to care and primary care experiences^{12,36} such that parents of children who both lacked insurance and who received most care in the United States would report worse access and primary care characteristics, especially those aspects of primary care having to do with comprehensiveness and coordination, family centeredness, and communication.^{38,39}

METHODS

Subjects

Eligibility criteria for participation in this study included having a preschool-age child in the family and both parents (or in the case of a single parent family, the respondent) reporting agricultural, unskilled labor, or semi-skilled labor occupations. A total of 297 parents of children were enrolled in the study.

In Imperial County, subjects were recruited from Head Start centers dedicated to farm worker families. Eligibility criteria for enrollment in these Head Start programs include the following: 1) parents must have received at least 50% of their income in the last 12 months from agriculture-related work, 2) they must have moved within the last 3 years in search of employment, and (3) they must have moved with their family from one area to another in search of employment. Of the 362 preschoolers in these programs, 244 parents (67.4%) were approached for recruitment, and of these, 242 (99%) agreed to participate. Recruitment occurred primarily when parents were picking up or dropping off children from the centers or from the school bus stops. In addition, staff contacted parents and referred them to the interviewers, and interviewed parents referred other parents who also had children in the same preschools.

In San Diego County, subjects were recruited from Head Start centers primarily serving farm worker families and from a community site. For the Head Start sites, a sampling frame of all agricultural workers who currently had children enrolled in the Head Start programs listed a total of 105 potential respondents. Of these, 73 were contacted for recruitment, and 100% of those contacted consented to participate. In order to potentially reach the undocumented population of farm workers in northern San Diego County, we reserved a space at a local swap meet frequented by the Latino population, particularly undocumented farm workers. A total of 36 participants was recruited from this site. The refusal rate at this site is estimated to be at around 15%. Many potential respondents were turned away due to their ineligibility for study participation (ie, not having a preschool-age child).

Measures

Proportion of Care Received in the United States

Parents were asked to report on the proportion of care their child received in the United States in the following

way: They were presented with a circle and told to imagine it as a whole cake. They were then asked to draw a “slice” of cake to show how much of their child’s health care they received in the United States. The percentage of care received in the United States was derived from measuring the number of degrees encompassed by the “slice” and converting that to a percentage of the area of the circle. Parents were also asked to report on the reasons for seeking care in Mexico, using open-ended questions. Responses were transcribed verbatim.

Insurance Status

Parents were asked to report on their child’s current health-insurance status in the United States. This yielded a dichotomous insurance variable.

Chronic Health Condition Status

Parents were asked to report on the presence of a chronic health condition. They were read the following statement: “A chronic health condition is 1) a physical or mental health condition 2) that has lasted or is expected to last at least 6 months and 3) interferes with your child’s activities.” They then responded with “yes” or “no” to the question “In the past 6 months, has your child had a chronic health condition?” Parents were asked to identify the name of the chronic health condition. Parents who answered “yes” or who gave the name of a chronic health condition were coded as having a child with a chronic health condition. This methodology for identifying pediatric chronic health conditions has been previously validated.⁵⁶

Access

Health care access was measured by parent responses regarding whether there was a particular person who they considered their child’s personal physician⁵⁷ (a structural indicator of potential access), whether their child had had a health care visit in the past 12 months for regular or routine care⁵⁷ (an indicator of utilization for preventive care), and whether there had been any time in the past 12 months when they felt their child should have gotten health care but did not⁵⁸ (an indicator of foregone or missed care).

Primary Care Characteristics: Parents’ Perceptions of Primary Care (P3C)

Parents’ perceptions of primary care quality were measured via the Parent’s Perceptions of Primary Care measure (P3C), a brief, practical, reliable, and valid parent report of their experiences with their children’s primary care.⁵⁹ The P3C is based on the Institute of Medicine (IOM) definition of primary care.⁶⁰ Using this definition as a criterion, the P3C was designed to measure 6 components of care that, when present, constitute high-quality primary care. High scores reflect care conforming to this a priori definition. Thus, the P3C measures perceptions of quality based on parent reports of their experiences rather than on ratings of satisfaction with those experiences. The P3C was designed to measure parents’ perceptions of the

quality of primary care received rather than the quality of a particular provider of primary care so that care received by children without a regular provider could also be described in relation to the IOM definition. This is important, given the high rate of uninsured children²⁵ and children without a regular source of care^{61,62} or who receive primary health care at emergency rooms or community clinics where they might not see a consistent provider.

The components of primary care included in the P3C are those on which parents are thought able to report. The 6 components of primary care measured by the P3C, corresponding to 6 subscales, are defined as follows. *Longitudinal continuity* is defined as the parent’s report of the length of time they have been bringing their children to a regular place or physician.^{29,63} *Access* is defined as the parent’s report of timely and convenient accessibility to care,⁶³ different from the structural and utilization indicators of access above. *Communication* is defined as the parent’s report of how well the physician listens and explains during their interactions.⁶⁴ *Contextual knowledge* is defined as the parent’s report that the physician knows his or her values and preferences about medical care issues, clearly understands his or her child’s health needs, and knows the child’s medical history.²⁹ *Comprehensiveness* is defined as the parent’s report of the extent to which the care received covers acute and chronic problems and preventive services.^{63,64} *Coordination of care* is defined as the parent’s report of their physician’s knowledge of other visits and visits to specialists as well as the follow-up of problems through subsequent visits or phone calls.²⁹

Results of the parent-reported P3C may be used by multiple stakeholders to assess parents’ perceptions of primary care quality for groups of children. As such, it is designed to be used to monitor population health services, to assess health-plan quality, to drive performance-improvement initiatives, or to evaluate the efficacy or effectiveness of interventions designed to improve primary care quality.

The 23-item P3C yields scores on a 0–100 scale for the total scale as well as for subscales measuring continuity, access, contextual knowledge, communication, comprehensiveness, and coordination. The P3C does not specify a recall period in order to make it easier to respond to for parents of children who have changed primary care providers or locations. All items are at or below an 8th-grade reading level.

The P3C was developed in English and translated to Spanish, Vietnamese, and Tagalog. Translation was accomplished using forward-backward translation striving for conceptual, as opposed to syntactical, equivalence and consistent language level.^{65–69} The final English-language and translated versions of the P3C were reconciled by bilingual lay people familiar with the purpose of the survey.

The P3C has been shown to be feasible, reliable (high internal consistency), and valid.⁵⁹ Feasibility was documented by demonstrating a low percentage of missing values overall, for parents completing the P3C in a language other than English, and for parents without a high school

diploma. Internal consistency (Cronbach coefficient alpha) of the P3C total scale and subscales has been documented as acceptable for group comparisons. Validity was previously demonstrated via the known-groups method by showing that P3C scores for the total scale and each of the subscales were higher for children with health insurance versus those without, with a regular physician versus those without, and whose parents completed the P3C in English versus another language. Validity of the subscales was further demonstrated via factor analysis showing that the P3C items were consistent with the a priori hypothesized subscale structure. Additional evidence for validity was shown by demonstrating that, consistent with previous work⁷⁰ showing a relationship between primary care characteristics and health outcomes, the P3C is related to health-related quality of life as measured by the Pediatric Quality of Life Inventory (PedsQL⁵⁶).

Procedures

Bilingual research assistants (three in Imperial County, two in San Diego County) were trained during a half-day session on research conduct and ethics, survey administration, and data reporting. Research assistants approached potential subjects at Head Start sites. After informed consent was obtained, the research assistant administered the survey verbally. The interview was conducted in Spanish in 96% of cases. This research protocol was approved by the human subjects protection committees at Children's Hospital and Health Center, San Diego; California State University, San Marcos; and San Diego State University.

Statistical Analysis

We examined prevalence of cross-border care via descriptive statistics to examine the percentage of care received in the United States. Correlates of cross-border care were examined via independent samples *t* tests to assess the relationship of sociodemographic variables and chronic health condition status on percentage of care reported in the United States. In order to compare care characteristics in the United States and Mexico, we split the sample into two groups—those reporting receiving more than 50% and those reporting receiving 50% or less of their health care in the United States. We then examined the effect of source of care and health insurance status on indicators of access and primary care characteristics using logistic regression and classification plots for categorical variables, an ANOVA for the P3C total scale, and a multivariate ANOVA to explore the P3C subscales.

RESULTS

Sample Descriptives

The parents (87.2% mothers) reported on behalf of 297 children (52.5% boys). One hundred and nine (36.7%) of the subjects were accrued in San Diego County and 188 in Imperial County. Parents reported the presence of a chronic health condition in 32 cases (10.8%). Most (88%) households were reported as two-parent (married or cohabitating), with more than two thirds (69.5%) of mothers

Table 1. Sociodemographic and Health Status Descriptives for Sample

	Percentage Yes
Health insurance	69.7
5 or fewer years in current location	30.5
Travel to follow work	42.4
Mother graduated high school	19.3
Family income >\$20 000 per year	24.9
Child has chronic health condition	10.8

married and 18.2% living with someone. Most mothers listed housewife (63.1%) or unskilled labor (farm worker, laborer, or housekeeper; 34.6%) as occupations. Fathers' occupations were listed as farm workers or laborers in 70.3% of cases, with an additional 8.4% listed as some form of unskilled laborer. About 8 in 10 parents (80.7% of mothers and 82.5% of fathers) did not graduate from high school, and three quarters (74.9%) of families had an annual income of \$20 000 or less. Families reported that at least 1 member traveled to follow work at least 1 month per year in 42.4% of cases; however, almost all families (93.4%) considered the county of the interview to be their permanent home base. Key sociodemographic and health status variables are summarized in Table 1.

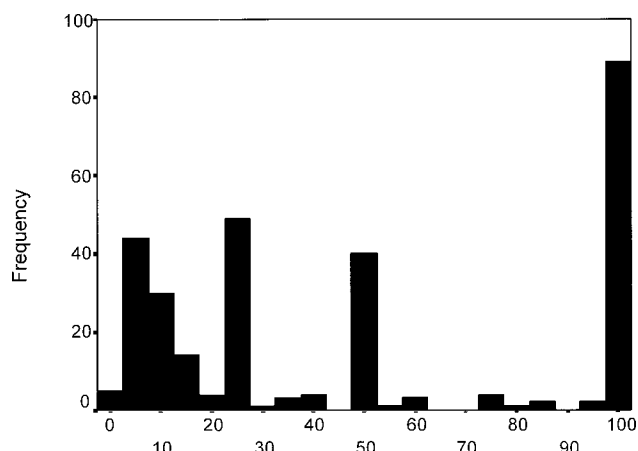
Use of Health Care in Mexico

On average, parents reported that less than half (47.8%) of care was received in the United States (*SD* = 38.44). Almost half of the children (49.3%) were reported to receive one quarter or less of their care in the United States. Splitting the sample based on where most care was reported resulted in 136 children (45.8%) reporting more than 50% of their care in the United States (mean = 85.1%, *SD* = 22.0) and 160 children reporting 50% or more of their care in Mexico (mean = 83.8%, *SD* = 11.7). A histogram showing the proportion of care received in the United States is shown in the Figure.

The most frequent reasons for using Mexican physicians (*n* = 81) included health insurance status (*n* = 25), ease of use and accessibility (*n* = 10), cost of medical care in the United States (*n* = 7), inability to be seen on the weekend in the United States (*n* = 6), liking Mexican medical care better (*n* = 6), and because the child became ill while in Mexico (*n* = 4). The most frequent reasons for using Mexican pharmacies (*n* = 82) included the prescription being from a Mexican physician (*n* = 30), cost (*n* = 18), perceptions regarding the relative effectiveness of Mexican medicines (*n* = 9), availability of medicines (*n* = 6), and lack of coverage for prescription medicines (*n* = 6).

Variables Associated With Reporting Mexican Care

We performed independent samples *t* tests to assess the relationship of sociodemographic and health status variables on percentage of care reported in the United States. These results are shown in Table 2. There was a trend toward significance of the effect of insurance status on



Respondents' reports of percentage of care received in the United States.

percentage of care received in the United States, with parents of insured children reporting a slightly higher percentage of care received in the United States. However, even children with health insurance were reported to receive about half of their health care in Mexico. Families in which at least 1 member traveled to follow work reported a lower percentage of care in the United States, as did families with an income greater than \$20 000 per year. There was no effect of length of residence at current location, maternal education, or chronic health condition status on percentage of care reported in the United States. Treating proportion of care received in the United States as a dichotomous variable, as below, and using chi-square tests of association yielded similar results (analyses not shown).

Access to Care in the United States and Mexico

Table 3 presents the results of the logistic regression equations predicting having a regular physician, having had routine health care in the past year, and not experiencing foregone health care by health insurance status (reference category: insured) and source of care (reference category: United States). There was a main effect for insurance status on the presence of a regular source of care such that children with health insurance were more than 2.5 times as likely to have a regular source of care (odds

ratio [OR] = 2.68; 95% confidence interval [CI]: 1.21–5.95). There was an interaction between insurance status and source of care for having had a routine health visit in the past year (OR = 3.64; 95% CI: 1.19–11.13) such that uninsured children who received most of their care in Mexico were less likely than uninsured children who received most of their care in the United States to have had a routine health care visit. There were no effects of insurance status or source of care on incidents of foregone health care.

Primary Care Characteristics in the United States and Mexico

To examine the effects of source of care (United States or Mexico) and insurance status (insured or uninsured) on care characteristics, we performed a 2×2 ANOVA on the P3C total score. The means and standard deviations of the P3C total score for the four groups are shown in Table 4. There were main effects for both insurance status ($F(3, 292) = 7.18, P = .008$) and source of care ($F(3, 292) = 4.88, P = .03$) such that insured children had higher P3C scores than uninsured children and children receiving most of their care in Mexico had higher P3C scores than children receiving most of their care in the United States. There was a trend toward a significant interaction ($F(3, 292) = 2.94, P = .09$) such that uninsured children who received most of their care in the United States had worse P3C total scores than uninsured children receiving most of their care in Mexico or than insured children receiving care either in the United States or Mexico. No main effects or interactions were found for chronic health condition status.

To further examine aspects of primary care characteristics that might be related to insurance status, source of care, or a combination of the two, we performed a 2×2 multivariate ANOVA (MANOVA) on the P3C subscales. These results are displayed in Table 5. The overall MANOVA showed a significant main effect for both insurance status ($F(6, 286) = 2.81, P = .011$) and source of care ($F(6, 286) = 2.47, P = .024$). Univariate tests revealed both main effects and interactions between insurance status and source of care. As expected, insurance status was related to both the continuity and access subscales such that parents of insured children reported a longer relation-

Table 2. Factors Associated With Use of Care in Mexico; Means (Standard Deviations) of Proportion of US Care

	Yes	No	Difference	<i>t</i> Test	Significance
Child has health insurance	50.39 (38.42)	41.90 (38.03)	8.49	1.75	(.08)
5 years of fewer in current location	43.57 (38.83)	49.61 (38.15)	6.04	1.24	NS
Travel to follow work	36.71 (33.77)	56.03 (40.02)	19.32	4.33	.0001
Mother graduated high school	46.78 (38.44)	47.99 (38.53)	1.20	0.21	NS
Family income >\$20 000 per year	38.07 (36.77)	51.05 (38.45)	12.98	2.54	.01
Child has chronic health condition	50.61 (35.63)	47.50 (38.81)	3.11	0.43	NS

Table 3. Odds Ratios (OR) and 95% Confidence Intervals for Logistic Regression Predicting Indicators of Access Via Insurance Status and Source of Care

Access Indicator	Insurance Status (Insured) OR (95% CI)	Source of Care (US) OR (95% CI)	Insurance \times Source OR (95% CI)
Regular source of care	2.68 (1.21–5.95)	1.17 (0.63–2.17)	1.16 (0.40–3.30)
Routine care in past year	0.94 (0.39–2.25)	0.10 (0.53–1.85)	3.64 (1.19–11.13)
No foregone care	0.48 (0.16–1.47)	1.66 (0.57–4.86)	1.19 (0.23–6.30)

ship to a regular provider or place of care and better accessibility than did parents of uninsured children. Access was also affected by source of care, with parents of children receiving most care in Mexico reporting better accessibility than those receiving most care in the United States. Also consistent with expectations, there were interactions between insurance status and source of care for accumulated knowledge (trend toward significance), communication, and comprehensiveness. For these subscales, uninsured children receiving most care in the United States scored lower than uninsured children receiving most care in Mexico, whose scores were more similar to those of insured children. A main effect for source of care only was found for the coordination subscale such that children who received most of their care in Mexico were reported as having primary care that was more coordinated than those receiving most of their care in the United States.

DISCUSSION

This study examined use of care in Mexico, access to care, and primary care characteristics for young children of Latino farm workers in two counties on the US-Mexico border. The study's setting—two border counties—allowed us to explore families' access to an alternate health care system and the roles that insurance status and source of care have on access to care and primary care characteristics for these vulnerable children.

Given documented financial, cultural, and linguistic barriers to care faced by poor Latino families, we expected to find evidence of cross-border health care utilization. In fact, more than half of the health care reported to be received by this sample was in Mexico, and about

half of this sample reported receiving three quarters or more of their health care in Mexico.

We examined the correlates of parent-reported cross-border health care utilization. Uninsured children were slightly more likely to receive care in Mexico. Surprisingly, however, about half of all insured children received the majority of their care in Mexico, as reported by parents. Families who traveled to follow work and those earning more than \$20 000 per year reported more care in Mexico. Children with chronic health conditions were as likely to receive care in Mexico as the United States as reported by their parents. There were no differences based on time since arrival or mother's education.

We also compared access to care and primary care characteristics based on insurance status and preferred site of care. Parents of children with health insurance were more likely to report a regular source of care—a structural indicator of potential access to care. Health insurance and site of care had an interactive association with having had a routine health care visit in the past year. For uninsured children, parents who reported most of their children's care in Mexico were less likely than those reporting most care in the United States to have had a routine health care visit—an indicator of utilization for preventive care. This finding suggests that families with uninsured children crossing the border for care may be using the health system primarily for sick care.

In terms of primary care characteristics, an interesting pattern emerged. Children with insurance and children reporting more care in Mexico had higher P3C scores. When examining the P3C subscales, some aspects of primary care showed an interaction between insurance status and source of care such that parents of uninsured children

Table 4. Effect of Insurance Status and Source of Care on P3C Total Scores: Means (Standard Deviations), ANOVA *F* Tests, and Significance Level

Source of Care	Main Effect						Interaction	
	Mean Score Insurance Status		Insurance Status		Source of Care		Insurance \times Source	
	Yes	No	<i>F</i> Test	<i>P</i> Value	<i>F</i> Test	<i>P</i> Value	<i>F</i> Test	<i>P</i> Value
United States	n = 100 68.65 (19.71)	n = 36 56.21 (22.99)	7.18	.008	4.88	.03	2.94	(.09)
Mexico	n = 107 70.05 (22.79)	n = 53 67.32 (23.88)						

Table 5. Mean Scores (Standard Deviations) for P3C Subscales by Insurance Status and Source of Care, and Univariate ANOVA *F* Test and Significance of Main Effects and Interactions*

P3C Subscale	Source of Care	Mean Score		Main Effect				Interaction	
		Insurance Status		Insurance Status		Source of Care		Insurance × Source	
		Yes	No	<i>F</i> Test	<i>P</i> Value	<i>F</i> Test	<i>P</i> Value	<i>F</i> Test	<i>P</i> Value
Continuity	United States	60.20 (22.47)	47.78 (24.51)	12.01	0.001	0.30	NS	0.14	NS
	Mexico	60.75 (23.61)	50.75 (32.45)						
Access	United States	63.87 (25.42)	55.56 (28.42)	4.51	0.04	4.91	.03	0.08	NS
	Mexico	70.52 (26.49)	64.19 (28.96)						
Accumulated Knowledge	United States	74.70 (27.72)	56.11 (32.07)	7.96	0.005	1.16	NS	3.27	(.07)
	Mexico	71.77 (32.09)	67.70 (35.00)						
Communication	United States	84.94 (23.44)	71.00 (31.87)	4.94	.03	3.17	(.08)	4.15	.04
	Mexico	84.10 (25.23)	83.49 (24.70)						
Comprehensiveness	United States	64.94 (31.22)	51.91 (30.58)	0.83	NS	0.06	NS	5.53	.02
	Mexico	56.51 (30.09)	62.26 (33.03)						
Coordination	United States	57.49 (34.37)	50.73 (37.54)	1.22	NS	9.75	.002	0.13	NS
	Mexico	70.19 (35.94)	66.79 (37.14)						

**F* test has degrees of freedom (3291); NS = not significant at $P < .10$.

reporting most care in the United States had scores lower than parents of uninsured children reporting care in Mexico or than parents of insured children reporting care in either the United States or Mexico. The P3C subscales affected by this interaction—accumulated knowledge, communication, and comprehensiveness—are those in the P3C denoting patient- or family-centered care.

There are limitations to these findings. This was a sample of convenience, and it is not known how well these families represent farm workers as a whole. Parents who have enrolled their child in a Head Start program, for example, may be systematically different from those who could not or did not. Although we asked respondents to indicate whether they currently had health insurance, we did not ask whether the insurance covered health care in Mexico. There are some health plans that cover care on both sides of the border—such data are missing from this study. As well, it is impossible to judge, from these data, the clinical quality of the services received either in the United States or Mexico. Further research is required to examine and compare technical competence, adherence to evidence-based guidelines, and clinical outcomes on both sides of the border. Our survey did not include several potentially important sociodemographic variables, such as parents' and children's country of birth, years of residence in the United States, acculturation, or a sensitive measure of English-language proficiency, which may explain some of these findings. Further research is needed to examine the contribution of these variables to cross-border utili-

zation. We had not anticipated the prevalence of Mexican health care use and so did not ask why parents sought care in the United States. Thus, we are unable to compare the reasons for seeking care in Mexico with the reasons for seeking care in the United States.

Nevertheless, these findings have implications for health care providers, policy makers, and researchers. Many vulnerable families with access to Mexican health care “vote with their feet” by crossing the border for care. Seeking care in Mexico may be a way for these families to overcome financial and cultural/linguistic barriers to care, as evidenced by the reasons given for seeking Mexican health care—lower cost, greater accessibility, liking Mexican care better. Moreover, families who are able to overcome these barriers report better primary care experiences than those faced with these barriers. Thus, Mexican health care might serve as a buffer against vulnerability to poor health outcomes for these children.

However, Mexican health care is not an option to Latino and other poor and immigrant communities farther from the border. Policy makers and providers must address questions posed by these findings. What characteristics of Mexican health care make it so appealing for these families? Which of those aspects of Mexican health care can or should be incorporated into the US health care system? Can the US system be modified to better serve the needs of vulnerable families such as these?

Evidence exists that underground attempts to serve the needs of this population are ongoing. Recent charges

brought against individuals representing themselves as licensed physicians who illegally dispensed pharmaceuticals in Latino immigrant communities in Los Angeles County highlight this issue.^{71,72} Despite their illegality, these kinds of underground clinics may represent the best chance for marginalized groups such as these to receive health care. The response to these clinics by the Los Angeles Department of Health was to crack down on enforcement and to increase fines. Viewed through the lens of these findings, however, an alternative response might be to seek ways to incorporate, regulate, and promulgate these clinics, thus increasing capacity to provide care to marginalized vulnerable populations. The California State Task Force on Culturally and Linguistically Competent Physicians and Dentists, created in 2000 to develop recommendations for making health care more accessible to immigrant and minority communities, has considered a pilot program, for example, that would allow doctors and dentists licensed in Mexico and the Caribbean to practice in nonprofit health centers.⁷³ Recently, a bill was passed in the California State Assembly (AB 0145) that would alter California's medical licensing requirements to allow limited numbers of doctors and dentists from Mexico to practice at nonprofit health clinics. The present findings speak to such policy options.

Not only do families seeking care in Mexico vote with their feet, they vote with their wallets, paying out of pocket for health care, even when insured in the United States. This phenomenon raises broader questions regarding the economics of the health care marketplace. Researchers and policy makers have begun to examine consumers' understanding and use of health care quality indicators when making purchasing and treatment decisions.⁷⁴⁻⁷⁸ The findings in this study echo other data showing that US consumers are willing to spend out of pocket on complementary and alternative medicine⁷⁹ and suggest that consumers do, in fact, make decisions about where to seek care and are, in fact, willing to pay a premium for care they find desirable. Does this support a business case for quality—that consumers and purchasers will pay more for higher quality care? The IOM has recently defined 6 dimensions of health care quality: care should be safe, effective, efficient, timely, equitable, and patient centered.⁸⁰ Patient centered means, in part, that care is customized to the individual's preferences and needs and is communicated in language the patient understands. Given this multifaceted definition of health care quality, these data might suggest that consumers are able to understand and are willing to pay for higher quality care. Researchers, providers, and policy makers must better understand what care characteristics consumers seek in order to modify the health care system to provide care responsive to those needs.

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REFERENCES

1. Institute of Medicine Committee on Understanding and Eliminating Racial and Ethnic Disparities in Health Care. *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*. Washington, DC: National Academy Press; 2002.
2. U.S. Department of Health and Human Services. *Healthy People 2010* (conference edition, in 2 volumes). Washington, DC; 2000.
3. Feinstein JS. The relationship between socioeconomic status and health: a review of the literature. *Milbank Q*. 1993;71:279–322.
4. Pappas G, Queen S, Hadden W, Fisher G. The increasing disparity in mortality between socioeconomic groups in the United States, 1960 and 1986. *N Engl J Med*. 1993;329:103–109.
5. Pappas G, Hadden WC, Kozak LJ, Fisher GF. Potentially avoidable hospitalizations: inequalities in rates between US socioeconomic groups. *Am J Public Health*. 1997;87:811–816.
6. Gould JB, Davey B, LeRoy S. Socioeconomic differentials and neonatal mortality: racial comparison of California singletons. *Pediatrics*. 1989;83:181–186.
7. Starfield B. Effects of poverty on health status. *Bull NY Acad Med*. 1992;68:17–24.
8. Institute on Race and Poverty. *Race and Poverty: Our Private Obsession, Our Public Sin*. Minneapolis, Minn: Institute on Race and Poverty; 1995.
9. Brown R, Wyn R, Yu H, et al. Access to health insurance and health care for Mexican American children in immigrant families. In: Suarez-Orozco M, ed. *Crossings: Mexican Immigration in Interdisciplinary Perspectives*. Cambridge, Mass: Harvard University Press; 1998:227–247.
10. Newacheck PW, Stoddard JJ, Hughes DC, Pearl M. Health insurance and access to primary care for children. *N Engl J Med*. 1998;338:513–519.
11. Newacheck PW, Hughes DC, Hung YY, et al. The unmet health needs of America's children. *Pediatrics*. 2000;105:989–997.
12. Wood DL, Corey C, Freeman HE, Shapiro MF. Are poor families satisfied with the medical care their children receive? *Pediatrics*. 1992;90:66–70.
13. Gittelsohn AM, Halpern J, Sanchez RL. Income, race, and surgery in Maryland. *Am J Public Health*. 1991;81:1435–1441.
14. Stewart AL, Napoles-Springer A, Perez-Stable EJ. Interpersonal processes of care in diverse populations. *Milbank Q*. 1999;77:305–339.
15. Ronsaville DS, Hakim RB. Well child care in the United States: racial differences in compliance with guidelines. *Am J Public Health*. 2000;90:1436–1443.
16. Zambrana RE, Dorrington C. Economic and social vulnerability of Latino children and families by subgroup: implications for child welfare. *Child Welfare*. 1998;77:5–27.
17. 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;89:1066–1071.
18. Weinick RM, Weigers ME, Cohen JW. Children's health insurance, access to care, and health status: new findings. *Health Aff (Millwood)*. 1998;17:127–136.
19. Mayberry RM, Mili F, Ofili E. Racial and ethnic differences in access to medical care. *Med Care Res Rev*. 2000;57:108–145.
20. Goodman DC, Stukel TA, Chang CH. Trends in pediatric asthma hospitalization rates: regional and socioeconomic differences. *Pediatrics*. 1998;101:208–213.
21. Kaestner R, Racine A, Joyce T. Did recent expansions in Medicaid narrow socioeconomic differences in hospitalization rates of infants? *Med Care*. 2000;38:195–206.
22. Chabra A, Chavez GF, Taylor D. Hospital use by pediatric patients: implications for change. *Am J Prev Med*. 1997;13:30–37.
23. Gould JB, LeRoy S. Socioeconomic status and low birth weight: a racial comparison. *Pediatrics*. 1988;82:896–904.
24. Howard G, Anderson RT, Russell G, et al. Race, socioeconomic status, and cause-specific mortality. *Ann Epidemiol*. 2000;10:214–223.
25. US Department of Commerce. *Census Brief: Children Without*

- Health Insurance. Washington, DC: US Department of Commerce, Bureau of the Census; 1998.
26. Kaiser Family Foundation. *Access to Care: Is Health Insurance Enough?* Washington, DC: The Henry J. Kaiser Family Foundation; 1995.
 27. Lieu TA, Newacheck PW, McManus MA. Race, ethnicity, and access to ambulatory care among US adolescents. *Am J Public Health.* 1993;83:960–965.
 28. Starfield B. Public health and primary care: a framework for proposed linkages. *Am J Public Health.* 1996;86:1365–1369.
 29. Starfield B. *Primary Care: Balancing Health Needs, Services, and Technology.* New York: Oxford University Press; 1998.
 30. Starfield B, Simpson L. Primary care as part of US health services reform. *JAMA.* 1993;269:3136–3139.
 31. Shi L. Experience of primary care by racial and ethnic groups in the United States. *Med Care.* 1999;37:1068–1077.
 32. Phillips KA, Mayer ML, Aday LA. Barriers to care among racial/ethnic groups under managed care. *Health Aff (Millwood).* 2000;19:65–75.
 33. Nelson DE, Thompson BL, Bland SD, Robinson R. Trends in perceived cost as a barrier to medical care, 1991–1996. *Am J Public Health.* 1999;89:1410–1413.
 34. Tierney WM, Harris LE, Gaskins DL, et al. Restricting Medicaid payments for transportation: effects on inner-city patients' health care. *Am J Med Sci.* 2000;319:326–333.
 35. Bates AS, Wolinsky FD. Personal, financial, and structural barriers to immunization in socioeconomically disadvantaged urban children. *Pediatrics.* 1998;101:591–596.
 36. Flores G, Fuentes-Afflick E, Barbot O, et al. The health of Latino children: urgent priorities, unanswered questions, and a research agenda. *JAMA.* 2002;288:82–90.
 37. Derose KP, Baker DW. Limited English proficiency and Latinos' use of physician services. *Med Care Res Rev.* 2000;57:76–91.
 38. Rivadeneyra R, Elderkin-Thompson V, Silver RC, Waitzkin H. Patient centeredness in medical encounters requiring an interpreter. *Am J Med.* 2000;108:470–474.
 39. Baker DW, Hayes R, Fortier JP. Interpreter use and satisfaction with interpersonal aspects of care for Spanish-speaking patients. *Med Care.* 1998;36:1461–1470.
 40. Hampers LC, Cha S, Gutglass DJ, et al. Language barriers and resource utilization in a pediatric emergency department. *Pediatrics.* 1999;103:1253–1256.
 41. Slesinger DP, Christenson BA, Cautley E. Health and mortality of migrant farm children. *Soc Sci Med.* 1986;23:65–74.
 42. Eshleman MJ, Davidhizar R. Life in migrant camps for children—a hazard to health. *J Cultural Diversity.* 1997;4:13–17.
 43. Slesinger DP. Health status and needs of migrant farm workers in the United States: a literature review. *J Rural Health.* 1992; 8:227–234.
 44. Kupersmidt JB, Martin SL. Mental health problems of children of migrant and seasonal farm workers: a pilot study. *J Am Acad Child Adolesc Psychiatry.* 1997;36:224–232.
 45. Martin SL, Kupersmidt JB, Harter KS. Children of farm laborers: utilization of services for mental health problems. *Community Ment Health J.* 1996;32:327–340.
 46. Woolfolk M, Hamard M, Bagramian RA, Sgan-Cohen H. Oral health of children of migrant farm workers in northwest Michigan. *J Public Health Dent.* 1984;44:101–105.
 47. Nurko C, Aponte-Merced L, Bradley EL, Fox L. Dental caries prevalence and dental health care of Mexican-American workers' children. *ASDC J Dent Child.* 1998;65:65–72.
 48. Flores G, Abreu M, Olivares MA, Kastner B. Access barriers to health care for Latino children. *Arch Pediatr Adolesc Med.* 1998;152:1119–1125.
 49. Mueller KJ, Patil K, Boilesen E. The role of uninsurance and race in healthcare utilization by rural minorities. *Health Serv Res.* 1998;33:597–610.
 50. Gwyther ME, Jenkins M. Migrant farmworker children: health status, barriers to care, and nursing innovations in health care delivery. *J Pediatr Health Care.* 1998;12:60–66.
 51. Macias EP, Morales LS. Crossing the border for health care. *J Health Care Poor Underserved.* 2001;12:77–87.
 52. Jasis-Silber M, Guendelman S. Bi-national utilization of health services in the Mexico-United States border: the case of the population of Tijuana. *Salud Publica Mex.* 1991;33:463–474.
 53. Steinwachs DM, Stuart ME, Scholle S, et al. A comparison of ambulatory Medicaid claims to medical records: a reliability assessment. *Am J Med Qual.* 1998;13:63–69.
 54. Guendelman S. Health care users residing on the Mexican border. What factors determine choice of the U.S. or Mexican health system? *Med Care.* 1991;29:419–429.
 55. Guendelman S, Jasis M. Giving birth across the border: the San Diego-Tijuana connection. *Soc Sci Med.* 1992;34:419–425.
 56. Varni JW, Seid M, Kurtin PS. PedsQL 4.0™: reliability and validity of the Pediatric Quality of Life Inventory™ version 4.0 generic core scales in healthy and patient populations. *Med Care.* 2001;39:800–812.
 57. Agency for Healthcare Research and Quality. CAHPS® 2.0 Questionnaires. 1998. Available at: <http://www.ahrq.gov/qual/cahps/cahpques.htm>. Accessed March 6, 2003.
 58. Ford CA, Bearman PS, Moody J. Foregone health care among adolescents. *JAMA.* 1999;282:2227–2234.
 59. Seid M, Varni J, Olson-Bermudez L, et al. Parent's Perceptions of Primary Care measure (P3C): measuring parents' experiences of pediatric primary care quality. *Pediatrics.* 2001;108:264–270.
 60. Donaldson M, Yordy K, Lohr K, Vanselow N, eds. Institute of Medicine. Primary care: America's health in a new era. Washington, DC: National Academy Press; 1996.
 61. Halfon N, Newacheck PW, Wood DL, St Peter RF. Routine emergency department use for sick care by children in the United States. *Pediatrics.* 1996;98:28–34.
 62. Wood DL, Hayward RA, Corey CR, et al. Access to medical care for children and adolescents in the United States. *Pediatrics.* 1990;86:666–673.
 63. Bindman AB, Grumbach K, Osmond D, et al. Primary care and receipt of preventive services. *J Gen Intern Med.* 1996;11:269–276.
 64. Flocke SA. Measuring attributes of primary care: development of a new instrument. *J Fam Pract.* 1997;45:64–74.
 65. Canales S, Ganz PA, Coscarelli CA. Translation and validation of a quality of life instrument for Hispanic American cancer patients: methodological considerations. *Qual Life Res.* 1995;4: 3–11.
 66. Hendricson WD, Russell IJ, Prihoda TJ, et al. An approach to developing a valid Spanish language translation of a health-status questionnaire. *Med Care.* 1989;27:959–966.
 67. Herdman M, Fox-Rushby J, Badia X. Equivalence and the translation and adaptation of health-related quality of life questionnaires. *Qual Life Res.* 1997;6:237–247.
 68. Keller SD, Ware JE Jr, Gandek B, et al. Testing the equivalence of translations of widely used response choice labels: results from the IQOLA Project. International Quality of Life Assessment. *J Clin Epidemiol.* 1998;51:933–944.
 69. Ware JE, Keller SD, Grandek B, et al. Evaluating translations of health status questionnaires: methods from the IQOLA Project. *Int J Technol Assess Health Care.* 1995;11:525–551.
 70. Casanova C, Starfield B. Hospitalizations of children and access to primary care: a cross-national comparison. *Int J Health Serv.* 1995;25:283–294.
 71. US Department of Justice. 2000. Release 00-217. Available at: <http://www.usdoj.gov/usao/cac/pr/pr2000/217.htm>. Accessed March 6, 2003.
 72. US Department of Justice. 2001. Release 01-047. Available at: <http://www.usdoj.gov/usao/cac/pr/pr2001/047.html>. Accessed March 6, 2003.
 73. Canto M. Task force reviewing immigrant health care. *Orange County Register.* Santa Ana, Calif; 2002.
 74. Schultz J, Thiede CK, Feldman R, Christianson J. Do employees use report cards to assess health care provider systems? *Health Serv Res.* 2001;36:509–530.

75. Harris-Kojetin LD, McCormack LA, Jael EF, et al. Creating more effective health plan quality reports for consumers: lessons from a synthesis of qualitative testing. *Health Serv Res.* 2001; 36:447–476.
76. Farley DO, Short PF, Elliott MN, et al. Effects of CAHPS health plan performance information on plan choices by New Jersey Medicaid beneficiaries. *Health Serv Res.* 2002;37:985–1007.
77. Farley DO, Elliott MN, Short PF, et al. Effect of CAHPS performance information on health plan choices by Iowa Medicaid beneficiaries. *Med Care Res Rev.* 2002;59:319–336.
78. Spranca M, Kanouse DE, Elliott M, et al. Do consumer reports of health plan quality affect health plan selection? *Health Serv Res.* 2000;35:933–947.
79. Eisenberg DM, Davis RB, Ettner SL, et al. Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey. *JAMA.* 1998;280:1569–1575.
80. Institute of Medicine Committee on Quality Health Care in America. *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington, DC: National Academy Press; 2001.