POPULATIONS AT RISK

Effect of Language Barriers on Follow-up Appointments After an Emergency Department Visit

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OBJECTIVE: **To determine whether patients who encountered language barriers during an emergency department visit were less likely to be referred for a follow-up appointment and less likely to complete a recommended appointment.**

DESIGN: **Cohort study.**

SETTING: **Public hospital emergency department.**

PARTICIPANTS: **English- and Spanish-speaking patients (*N* = 714) presenting with nonemergent medical problems.**

MEASUREMENTS AND MAIN RESULTS: **Patients were interviewed to determine sociodemographic information, health status, whether an interpreter was used, and whether an interpreter should have been used. The dependent variables were referral for a follow-up appointment after the emergency department visit and appointment compliance, as determined by chart review and the hospital information system. The proportion of patients who received a follow-up appointment was 83% for those without language barriers, 75% for those who communicated through an interpreter, and 76% for those who said an interpreter should have been used but was not (*P* = .05). In multivariate analysis, the adjusted odds ratio for not receiving a follow-up appointment was 1.92 (95% confidence interval [CI], 1.11 to 3.33) for patients who had an interpreter and 1.79 (95% CI, 1.00 to 3.23) for patients who said an interpreter should have been used (compared with patients without language barriers). Appointment compliance rates were similar for patients who communicated through an interpreter, those who said an interpreter should have been used but was not, and those without language barriers (60%, 54%, and 64%, respectively; *P* = .78).**

CONCLUSIONS: **Language barriers may decrease the likelihood that a patient is given a follow-up appointment after an emergency department visit. However, patients who experienced language barriers were equally likely to comply with follow-up appointments.**

KEY WORDS: **communication barriers; language; ethnic groups; patient acceptance of health care; referral and consultation.**
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Research has shown that Latinos average fewer physician visits per year than other ethnic groups.[1,2] Many factors may contribute to Latinos' lower use of physician services, including lower rates of health insurance coverage,[3] lower levels of income and education,[3,4] and limited English proficiency.[5–7] One study found that Latinos with limited English proficiency reported fewer visits than native English-speaking patients,[8] while an analysis of the 1987 National Medical Expenditure Survey found that insurance was the predominant determinant of the number of physician visits and inability to speak English was not a significant predictor of physician visits.[9]

Patients with limited English proficiency may also utilize health care less because of dissatisfaction with the health care they have received in the past. Baker et al. found that Latino patients who communicated through an interpreter or who did not have an interpreter when they thought one was necessary were less satisfied with the patient-provider relationship.[10] Similarly, Carrasquillo et al. reported that emergency department patients who said that English was not their first language were less satisfied overall and reported more communication problems.[11] There may also be differences in how physicians care for Latino patients, and this may affect their satisfaction and future health care use. Todd et al. reported that Hispanics with isolated long-bone fractures were twice as likely as non-Hispanic whites to receive no pain medication in an emergency department.[12]

Latinos with limited English proficiency may also be less likely to receive follow-up appointments after an initial physician visit because of discrimination, communication barriers leading to misdiagnosis or lack of awareness of a problem, or even physician frustration over difficulty communicating. To our knowledge, no study has investigated the effects of limited English proficiency or communicating through an interpreter on physician referral patterns. Finally, Latinos with limited English proficiency might be less likely to comply with referral appointments because of dissatisfaction, or poor understanding of the reason for the referral, or simply because they are unaware that they are supposed to have a follow-up appointment. Manson found that asthmatic patients receiving extended follow-up care in

an ambulatory care setting from a language-discordant physician were more likely to miss office appointments than were patients with a language-concordant physician.[13] To further examine these issues, we conducted this study to determine the association between language barriers and (1) rates of referral for a follow-up appointment after an emergency department visit, (2) patients' knowledge that an appointment had been scheduled, and (3) actual compliance with scheduled follow-up appointments.

METHODS

Study Entry and Intake Interview

This study was conducted at Harbor–UCLA Medical Center, a 500-bed public hospital in Torrance, Calif, operated by the Los Angeles County Department of Health Services. The study design and contact forms were approved by the Human Investigations Committee. Approximately 40% of patients presenting for care at the hospital speak Spanish as their native language. Many of the staff are fluent in Spanish, and physicians and nurses call for interpreters based on their own subjective assessment of the patient's English proficiency and their own Spanish proficiency; patients are not routinely asked whether they need or would like to have an interpreter.

Patients were enrolled during a 6-month period from November 1993 through April 1994 as part of a larger study addressing the impact of language and literacy barriers on patients' health care. Patients presenting to the emergency department with nonurgent medical problems between the hours of 7:00 AM and 11:00 PM were eligible. Exclusion criteria included age less than 18 years, unintelligible speech, overt psychiatric illness, lack of cooperation, being too ill to complete the interview, and presentation for a follow-up visit.

Patients were recruited after being triaged, while waiting to see a doctor. To diminish selection bias, eligible patients were enrolled sequentially from the medical charts of those waiting to be seen; if a patient was called and did not answer, the next patient on the list was called. Patients were first asked by trained bilingual research assistants what language they felt most comfortable speaking. After obtaining informed consent, a face-to-face interview was conducted to obtain demographic information, self-reported health, and anticipated satisfaction with the visit. At the end of the interview, patient reading ability was determined in the native language (English or Spanish) using the Test of Functional Health Literacy in Adults, which measures patients' ability to read and understand health-related materials.[14] Patients whose vision was worse than 20/200 were not given the reading test and were excluded from the remainder of the study.

Follow-up Interview

Approximately 1 week after their presentation to the emergency department, patients who completed both the intake interview and their emergency department visit were contacted by telephone by a bilingual research assistant. Those who left the emergency department without being seen by a physician, were hospitalized, or were triaged to another site for care were excluded from follow-up. The follow-up interviews for this project were designed to randomly sample one third of English-speaking patients with adequate functional health literacy and to sample all Spanish-speaking patients and all English-speaking patients with limited reading ability. If a patient did not have a telephone, if the telephone number was incorrect or disconnected, or if the patient could not be contacted after 3 attempts, 2 research assistants went to the patient's address and attempted to perform a face-to-face interview.

Native Spanish-speaking patients were asked whether an interpreter was used and whether they thought an interpreter should have been used if one was not used. If an interpreter was used, we asked who the interpreter was (i.e., family member, friend, doctor, nurse, other hospital employee, or hospital interpreter). Native Spanish-speaking patients were also asked to rate how well they spoke English using response options ranging from "excellent" to "not at all." To determine patients' knowledge of follow-up visits, all patients were asked, "Are you supposed to come back for another visit to see the doctor here or somewhere else?" If the answer was "yes," respondents were asked, "Where are you supposed to have a follow-up appointment?" Responses were coded verbatim.

Study Outcomes

Physicians' and nurses' notes from the emergency department visit on the day of study entry were abstracted by 2 investigators who recorded whether a follow-up appointment was recommended to the patient, the site for the appointment (e.g., gastroenterology clinic), and whether or not a specific date was given for the appointment. Patients who are not given appointment dates at the time of discharge either receive notification in the mail of their appointment date or must call the clinic to schedule a time to be seen. Up to 3 follow-up appointments were abstracted. Any disagreements in coding between the 2 abstractors were resolved by discussion.

Patients' verbatim responses to the follow-up interviews were abstracted also to determine whether or not the patient knew that a follow-up appointment had been recommended by the examining physician. For each appointment scheduled, it was determined whether or not the patient knew that an appointment had been scheduled, and knew the location of the appointment (e.g., "kidney doctor," "general medicine clinic," or "emergency room"). If a patient was given an appointment with a private doctor outside of the Harbor–UCLA system ($n = 49$), there was no attempt to code whether the patient could identify the appointment because there often was not enough information in the chart to confirm the accuracy of patients' reports.

Previous studies have shown that appointment compliance varies according to whether a patient was given a specific follow-up appointment or given a telephone number to call and schedule an appointment.[15] At the study site, emergency department personnel could schedule specific dates for some follow-up appointments, but not for others. Therefore, follow-up appointments were classified into 4 categories: (1) emergency department follow-up (all patients were given a specific date for follow-up), (2) specialty clinic with a specific appointment date, (3) specialty clinic without an appointment date (patients were given the number of the clinic and told to schedule the first available appointment), and (4) primary care clinic (all patients were given the number of the clinic and told to schedule the first available appointment).

Appointment compliance within clinics at Harbor–UCLA Medical Center was tracked using the hospital information system. If an initial appointment was missed but another appointment was scheduled and completed within 1 month of the original appointment date, credit was given for a completed appointment. To determine the sensitivity of this system for appointment compliance, 60 charts of patients who had an appointment scheduled but did *not* have a visit recorded in the hospital information system (i.e., apparent appointment noncompliance) had their charts reviewed. A total of 5 patients (8%) had appointments documented in the chart but not in the hospital information system. All of the false-negative results for appointment compliance were for emergency department follow-up visits; therefore, charts were reviewed for all cases of apparent noncompliance (based on the hospital information system) if their follow-up appointment was in the emergency department.

Study Groups

On the basis of patients' native language and responses to the 2 questions about interpreters in the follow-up interview, we created 3 groups. Group 1 (language concordant) consisted of native English-speaking whites, blacks, and Latinos; and native Spanish-speaking Latinos who said they communicated with their provider (either in English or in Spanish) without the aid of an interpreter and did not think an interpreter was needed. Group 2 (interpreter used) consisted of native Spanish-speaking Latinos who communicated with their provider in Spanish through an interpreter. The hospital interpreter was used for only 12% of patients; the remainder used family members or hospital staff as ad hoc interpreters. Group 3 (interpreter needed, not used) consisted of native Spanish-speaking Latinos who said an interpreter was not used but thought an interpreter *should* have been used.

Covariates

Several variables from the baseline interview were identified as possible confounding variables for the rela-

tion between study group and outcomes: age, gender, socioeconomic status, reading ability, health insurance, and regular source of care. Because previous studies at this institution found that many patients refuse to provide income information, we used 3 indicators of material deprivation as economic indicators: car ownership, receipt of financial assistance to buy food (e.g., food stamps), and telephone ownership. Moreover, we hypothesized that the nature of the presenting medical problems would be the strongest predictor of physicians' recommendation for a follow-up appointment and actual appointment compliance. Therefore, physicians' discharge diagnoses (up to 3) were abstracted from the emergency department chart and classified into 5 categories: (1) new, specific diagnosis (e.g., urinary tract infection, gastroesophageal reflux, or fracture); (2) descriptive diagnosis (e.g., low back pain, or upper respiratory tract infection); (3) old, specific diagnosis (e.g., exacerbation of Crohn's disease or asthma), (4) no diagnosis established (e.g., chest pain of unclear etiology), and (5) no chief complaint (e.g., administrative reason for visit such as the patient needed a return-to-work slip or a physical examination prior to entry into a detoxification program). The proportions of patients within these 5 categories were similar for the 3 study groups. Individual diagnostic codes could not be used because there were too few patients within any given diagnostic code.

Data Analysis

All analyses were performed using STATA version 5.0 (Stata Corp, College Station, Tex). The associations between patient characteristics (including study group) and study outcomes were determined using χ^2 tests. A total of 16% of patients had more than 1 follow-up appointment scheduled; for this study, only the first appointment listed on the discharge sheet was used to analyze patients' awareness of follow-up appointments and their compliance with follow-up appointments. Logistic regression was used to determine the independent association between study group and outcomes after adjustment for covariates. Covariates were included in final logistic regression models if their *P* value was .10 or less. A *P* value of .05 or less (2-tailed test) was used to determine final statistical significance.

RESULTS

A total of 1,997 patients were asked to be interviewed while waiting to be seen in the emergency department, and 1,680 (84.1%) agreed to participate and completed the intake interview. Of these, 534 (31.7%) either left the emergency department without being seen by a physician or were hospitalized, 12 (0.7%) were triaged from the emergency department to another site of care, and 298 (17.7%) English-speaking patients with adequate functional health literacy were not randomly selected for follow-up interview. This left 836 patients eligible for the follow-up interview,

and 727 (87.0%) were contacted and completed the interview. The median number of days elapsed between the emergency department visit and the interview was 7, and 90% of patients were interviewed within 11 days. A total of 94% were contacted by telephone, and 6% had face-to-face interviews. Thirteen patients whose race was not black, white, or Latino were excluded, leaving 714 patients for this analysis.

A total of 491 (68.8%) of the 714 patients were classified as language concordant (group 1); 122 (17.1%) said an interpreter was used (group 2); and 101 (14.1%) said an interpreter should have been used but was not (group 3). Of the language-concordant patients, 50.9% spoke English and 49.1% spoke Spanish. Patients' demographics, socioeconomic status, and diagnosis type are presented in Table 1 according to study group. Patients who experienced language barriers ("interpreter used" and "interpreter needed but not used") were more likely to be female, had less education, were less likely to own a car, and were more likely to report their regular overall health as poor. There were no differences in the final discharge diagnosis type across the 3 groups.

Follow-up Appointments

A total of 579 (81%) of the 714 patients had one or more follow-up appointments recommended at the time of discharge from the emergency department. Of those given referrals, 29% were told to follow-up in the emergency department follow-up clinic, 11% were referred to a subspecialty clinic and given a specific appointment date, 34% were referred to a subspecialty clinic on a "first available"

Table 1. Patient Characteristics According to Study Groups

Characteristic	Language Concordant ($n = 491$)	Interpreter Used ($n = 122$)	Interpreter Needed, Not Used ($n = 101$)
Age, %			
18–30 y	33	29	38
31–45 y	36	34	43
46–60 y	24	23	14
>60 y	8	14	6
Gender, %*			
Male	39	29	32
Female	61	71	68
Race, %			
Black	26	0	0
White	12	0	0
Latino	62	100	100
Years of school, %†			
≤6	24	70	61
7–11	31	19	25
12	26	4	6
Some college	14	6	6
College graduate	5	1	2
Car owner, %			
Yes	43	29	43
No	57	71	57
Health insurance, %			
Yes	34	23	32
No	66	77	68
Regular health, %			
Excellent	6	1	2
Very good	7	1	2
Good	25	23	22
Fair	37	38	40
Poor	25	37	34
Diagnosis type, %			
New, specific diagnosis	49	50	46
Descriptive diagnosis	10	15	17
Old, specific diagnosis	12	8	10
No diagnosis established	24	27	27
No chief complaint/unclassified	4	0	0

P < .05 across groups.
†P < .01 across groups.

Table 2. Proportion of Patients Discharged from the Emergency Department Without a Follow-up Appointment, According to Selected Patient Characteristics

Characteristic	*n*	%	*P* Value
Study group			.05
Language concordant	209	17	
Interpreter used	122	24	
Interpreter needed, not used	101	25	
Age, %			.20
18–30 y	233	23	
31–45 y	258	16	
46–60 y	157	17	
>60 y	63	21	
Gender			.26
Male	261	21	
Female	453	18	
Race			.98
Black	126	19	
White	61	18	
Latino	527	19	
Car Owner			.07
Yes	289	22	
No	425	27	
Health insurance			.01
Yes	226	25	
No	488	16	
Regular health			.003
Excellent	34	41	
Very good	36	24	
Good	174	21	
Fair	270	19	
Poor	200	13	
Diagnosis type			.001
New, specific diagnosis	348	16	
Descriptive diagnosis	84	50	
Old, specific diagnosis	78	24	
No diagnosis established	179	8	
No chief complaint/unclassified	25	35	

Table 3. Adjusted Odds Ratios for Being Discharged from the Emergency Department Without a Follow-up Appointment*

Characteristic	Adjusted Odds Ratio (95% Confidence Interval)	*P* Value
Study group		.03
Language concordant	Ref	
Interpreter used	1.92 (1.11 to 3.33)	
Interpreter needed, not used	1.79 (1.00 to 3.23)	
Age		.006
18–30 y	Ref	
31–45 y	0.52 (0.31 to 0.86)	
46–60 y	0.69 (0.40 to 1.22)	
>60 y	0.79 (0.38 to 1.67)	
Insured		.003
No	Ref	
Yes	1.92 (1.23 to 2.94)	
Self-reported regular health		<.001
Poor–very good	Ref	
Excellent	4.54 (2.00 to 10.00)	
Diagnosis type		<.001
New, specific diagnosis	Ref	
Descriptive diagnosis	5.56 (3.13 to 9.09)	
Old, specific diagnosis	0.85 (0.41 to 1.75)	
No diagnosis established	0.48 (0.26 to 0.89)	
No chief complaint/unclassified	3.45 (1.25 to 9.00)	

Adjusted odds ratios are based on logistic regression with all variables listed included in a simultaneous equation model.

basis, and 26% were referred to the primary care clinic on a "first available" basis. In bivariate analysis (Table 2), 17% of patients in the language-concordant group were discharged without a follow-up appointment, compared with 25% for those who communicated through an interpreter and 24% for those who said an interpreter was needed but not used (*P* = .05). Among patients who were given an appointment, there was no difference between the study groups in the number or type of follow-up appointments given. In bivariate analysis the variable with the strongest association with receiving a follow-up appointment was the discharge diagnosis category (Table 2; *P* < .001). Better self-reported health, having health insurance, and not owning a car were all negatively associated with receiving a referral (*P* = .003, *P* = .01, and *P* = .07, respectively). Race, gender, age, language, education, usual source of care, examiner gender, and patient satisfaction were not associated with receiving a referral appointment.

After adjusting for self-reported regular health, insurance status, discharge diagnosis category, and age, patients who communicated through an interpreter were more likely to be discharged without a follow-up appointment than patients with language-concordant physicians (odds ratio [OR], 1.92; 95% confidence interval [CI], 1.11 to 3.33; Table 3). Those who said an interpreter was needed but not used were also more likely to be discharged without a follow-up appointment (OR, 1.79; 95% CI, 1.00 to 3.23). As shown in Table 3, the type of discharge diagnosis was strongly associated with the likelihood of not receiving a follow-up appointment (*P* < .001). Because the discharge diagnosis category was an important predictor of being given a follow-up appointment, we also conducted stratified analyses by discharge diagnosis category. For all discharge diagnosis categories, patients who experienced language barriers (interpreter used or interpreter needed but not used) were less likely than those with a language-concordant physician to have been given a follow-up appointment (data not shown).

Knowledge of Follow-up Appointments

Of the 579 patients who were given follow-up appointments, 49 were told to follow-up with a physician

outside the Harbor–UCLA Medical Center and were excluded from the analysis of knowledge of and compliance with follow-up appointments. At the follow-up interview, 78% of patients identified that they had been given a follow-up appointment. There was no association between study group and knowledge of follow-up appointments. For the 3 study groups, the proportion who correctly identified that they had been given a follow-up appointment was 77%, 78%, and 81%, respectively ($P = .79$). The only variable strongly associated with appointment knowledge was the type of appointment; 89% of patients given follow-up appointments in the emergency department, 86% of those given a specific appointment date in a subspecialty clinic, 75% of those given the "next available" date in a subspecialty clinic, and 60% of those given "next available" appointments in a primary care clinic identified that they had a follow-up appointment ($P < .001$). The lack of relation between study group and awareness of a follow-up appointment was confirmed in multivariate analysis with adjustment for appointment type, diagnosis type, age, gender, and years of school completed.

Appointment Compliance

Of the 530 patients given follow-up appointments within the Harbor–UCLA system, 520 (98%) had appointments entered into the hospital information system that could be used to track compliance. A total of 60% of patients completed their appointment within 1 month of the original appointment date. Study group was not associated with appointment compliance. The proportion of patients who completed their follow-up appointment were 60%, 54%, and 64%, for the 3 groups, respectively (Table 4; $P = .40$). Awareness of appointment at the follow-up interview, appointment type, self-reported understanding of diagnosis, and education were all associated with appointment compliance. Multivariate analysis confirmed that study group was unassociated with appointment compliance after adjustment for awareness of appointment at the follow-up interview, appointment type, self-reported understanding of diagnosis, and education (Table 5). Awareness of their appointment at the time of the follow-up interview ($P < .001$), appointment type ($P < .001$), self-reported poor understanding of their medical condition ($P < .001$), and a college degree ($P < .008$) were all positively associated with appointment compliance in the multivariate analysis.

DISCUSSION

Spanish-speaking patients who communicated through an interpreter and who did not have an interpreter when they thought one was necessary were significantly less likely to be given a referral for a follow-up appointment after an emergency department visit. The lower rate of referral for a follow-up appointment for these groups was consistent for all discharge diagnosis categories: new, specific diagnosis (e.g., cholelithiasis); descriptive diagnosis (e.g., low back pain); exacerbation of a previous medical problem (e.g., asthma); and even for those patients for whom a clear cause of their symptom was not identified by the examining physician (e.g., abdominal pain of unknown cause).

Previous studies have shown that Hispanic patients are treated differently from other patients. Todd et al. found that Hispanic patients with isolated long-bone fractures were twice as likely to not receive any pain medication at the time of their emergency department presentation.[11] These differences in analgesic practice were not explained by differences in physicians' assessments of patients' pain; physicians assessed the severity of pain for Hispanics to be similar to that for non-Hispanic whites.[16] Similarly, Cleeland et al. reported that Hispanic patients with cancer were less likely to have adequate analgesia and reported less pain relief than whites.[17] Our results are consistent with these studies and suggest that language barriers may account for much of this variation. We found no difference in care patterns between whites and native English-speaking Latinos or Latinos who spoke Spanish and said they communicated adequately with their physician without the aid of an interpreter.

There are several possible explanations for why patients who experienced language barriers were less likely to be given a referral for follow-up appointments. Physicians may have had less understanding of the full nature of patients' problems due to communication problems. Similarly, it is possible that when physicians are faced with language barriers, they are more likely to forget to refer the patient for follow-up because they are struggling with the other details of the care plan. A physician may also need to call an interpreter back to explain follow-up appointments, and this could act as a psychological barrier for physicians to give referrals to patients with limited English proficiency.

The lower referral rate for patients who experienced language barriers could also partly result from some physicians having the perception that Spanish-speaking patients will be less likely to successfully complete their follow-up appointment owing to poverty, low educational attainment, lack of a telephone in the home, or lack of health insurance. As a consequence, they may think that arranging a follow-up appointment is futile. This study does not support such a belief. There was no difference in appointment compliance according to race or ethnicity, language, or interpreter use. Finally, it is possible that the lower referral rate for these groups was due to more overt bias against Spanish-speaking patients. The study was conducted a few months prior to passage of Proposition 187 in California,[18] which requires publicly funded health care facilities to deny care to illegal immigrants and to report them to government officials. Although this study was conducted prior to passage of Proposition 187, the attitudes that allowed its passage were clearly dominant in the community at the time this study was conducted. These

Table 4. **Proportion of Patients Who Completed a Recommended Follow-up Appointment According to Selected Patient Characteristics**

Characteristic	n	%	P Value
Study group			.40
Language concordant	369	60	
Interpreter used	87	54	
Interpreter needed, not used	64	64	
Age			.87
18–30 y	157	62	
31–45 y	193	58	
46–60 y	120	60	
>60 y	48	56	
Gender			.21
Male	190	63	
Female	330	58	
Race			.77
Black	93	58	
White	45	64	
Latino	382	59	
School years			.08
≤ 6	200	59	
7–11	139	60	
12	96	56	
Some college	65	58	
College graduate	20	90	
Car owner			.03
Yes	207	65	
No	313	56	
Insurance			.52
Yes	148	57	
No	372	60	
Regular health			.83
Excellent	19	68	
Very good	29	66	
Good	126	60	
Fair	190	57	
Poor	156	60	
Diagnosis type			.007
New, specific diagnosis	257	61	
Descriptive diagnosis	34	53	
Old, specific diagnosis	65	75	
No diagnosis established	154	53	
No chief complaint, unclassified	10	30	
Referral appointment type			<.001
Emergency department with specific date	167	74	
Specialty clinic with specific date	65	85	
Specialty clinic without specific date	170	54	
Primary care clinic without specific date	118	33	
Self-reported understanding of diagnosis			.11
Excellent	95	54	
Very good	89	61	
Good	136	64	
Fair	129	53	
Poor	61	70	
Aware of appointment at follow-up interview			<.001
Yes	409	70	
No	116	24	

Table 5. Patient Characteristics Associated with Successfully Completing a Follow-up Appointment in Multivariate Analysis

Characteristic	Adjusted Odds Ratio (95 % Confidence Interval)	P Value
Study group		.81
Language concordant	Ref	
Interpreter used	0.85 (0.48 to 1.50)	
Interpreter needed, not used	1.07 (0.56 to 2.04)	
College graduate		.008
No	Ref	
Yes	18.6 (2.13 to 162)	
Referral appointment type		<.001
Emergency department with specific date	Ref	
Specialty clinic with specific date	2.23 (1.00 to 4.98)	
Specialty clinic without specific date	0.48 (0.29 to 0.79)	
Primary care clinic without specific date	0.22 (0.13 to 0.39)	
Self-reported understanding of diagnosis		<.001
Excellent	Ref	
Very good	1.24 (0.63 to 2.43)	
Good	1.48 (0.79 to 2.76)	
Fair	1.21 (0.64 to 2.31)	
Poor	2.02 (0.93 to 4.41)	
Remembered appointment after 1 wk		<.001
No	Ref	
Yes	6.14 (3.61 to 10.4)	

attitudes could have affected physicians' decision to arrange follow-up care. We did not obtain information regarding patients' citizenship because of the sensitive nature of this topic and our desire to follow patients over time. Therefore, our study could not determine whether citizenship affected referral rates for follow-up appointments.

It is also possible that the lower rate of referral for follow-up care was due to patient behaviors. When faced with communication problems, patients may be less willing to question physicians about the need for follow-up care or insist that such an appointment be arranged. However, the lower referral rate for patients who experienced language barriers was present even for patients who had a new diagnosis established and for those who were discharged from the emergency department without a definitive explanation of their symptoms. In these situations, referrals for follow-up appointments are routine, as shown by the high rate of referral for follow-up appointments in this study. Thus, it seems unlikely that patient attitudes and behaviors explain our findings.

In light of the communication problems faced by patients who had an interpreter and those who did not have an interpreter when they thought one was necessary, it is surprising that there was no difference in the knowledge of follow-up appointments at the time of the second interview. There are several possible explanations for this. First, all patients are given discharge instruction by a nurse who is fluent in Spanish. Thus, although there may have been large communication barriers between physicians and patients in these groups, the discharge instructions should have been communicated clearly to patients in their own language. In addition, family members who are bilingual may serve as translators for discharge instructions. These factors may have counteracted the language barriers that were present during the medical examination.

It was also somewhat surprising that there was no difference in compliance with follow-up appointments. Our results differ from those of a previous study by Manson, who studied a group of patients with asthma and found that Spanish-speaking patients who did not have a language-concordant physician had lower compliance rates with follow-up appointments. However, there are important differences between that patient population and ours. Emergency department patients may have new symptoms that highly motivate them to complete their follow-up appointment. Moreover, patients discharged from the emergency department will be seeing a different physician than the one that cared for them in the emergency department. So, although patients may have been dissatisfied with the care they received in the emergency department, this may not affect their compliance with follow-up appointments at other care sites with different physicians.

There are several important limitations to this study. Only 12% of the patients who had an interpreter used the hospital interpreter, and the remainder used "ad hoc" interpreters such as family or hospital staff. Because the number of patients with a professional interpreter was too small to analyze separately, our findings cannot be generalized to settings that rely predominantly on professional interpreters. Although our multivariate analyses adjusted for demographics, insurance, socioeconomic status, self-reported overall health, and discharge diagnosis category, there may have been other unmeasured confounding variables. We did not determine physicians' attitudes towards Spanish-speaking patients or their awareness of cross-cultural issues. Our methods may not have adequately adjusted for differences in the types of medical problems precipitating an emergency department visit for Spanish-speaking and English-speaking patients. Although we adjusted for whether patients had a regular source of care and the type of regular source of care, it is still possible that the study groups had different continuity provider relationships that could affect referral rates and appointment compliance. We also do not know whether patients who did not receive referrals for follow-up appointments had worse health outcomes. In addition, this study was conducted at a single site, so we do not know the generalizability of our findings to other sites. Because we enrolled patients with nonurgent medical problems, our findings also may not be generalizable to more severely ill patients.

Despite these limitations, our findings add to a growing body of literature suggesting that Latino patients are treated differently that non-Latino whites[11,14,15] and raise questions about whether this could be attributable directly to language barriers. Further studies are necessary to determine whether Latino patients with limited English proficiency are less likely to receive other types of medical care; whether care patterns differ because of communication barriers, lack of cultural awareness, or patient behaviors; and whether these differences can be reduced through programs that increase the availability of properly trained interpreters and teach physicians how to handle cultural and linguistic barriers to care.

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