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## The Influence of Patient–Provider Language Concordance in Cancer Care: Results of the Hispanic Outcomes by Language Approach (HOLA) Randomized Trial

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### Abstract

**Purpose:** Delivering linguistically competent care is critical to serving patients who have limited English proficiency (LEP) and represents a key national strategy to help reduce health disparities. Current acceptable standards of communication with patients who have LEP include providers communicating through professional interpretive services or bilingual providers speaking the patients' preferred language directly. This randomized clinical trial tests the effect of patient-provider language concordance on patient satisfaction.

**Methods and Materials:** Eighty-three adult Spanish-speaking patients with cancer were randomly assigned to receive care from either (1) 1 of 2 bilingual physicians speaking to the patient directly in Spanish or (2) the same physicians speaking English and using a professional interpreter service. Validated questionnaires were administered to assess patient-reported satisfaction with both provider communication and overall care. Transcripts of initial consultations were analyzed for content variations.

**Results:** Compared with patients receiving care through professional interpretive services, patients cared for in direct Spanish reported significantly improved general satisfaction, technical quality of care (mean composite score [MCS], 4.41 vs 4.06;  $P = .005$ ), care team interpersonal manner (MCS, 4.37 vs 3.88;  $P = .004$ ), communication (MCS, 4.50 vs 4.25;  $P = .018$ ), and time

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spent with patient, (MCS, 4.30 vs 3.92;  $P = .028$ ). Specific to physician communication, patients rated direct-Spanish care more highly in perceived opportunity to disclose concerns (MCS 4.91 vs 4.62;  $P = .001$ ), physician empathy (MCS, 4.94 vs 4.59;  $P < .001$ ), confidence in physician abilities (MCS, 4.84 vs 4.51;  $P = .001$ ), and general satisfaction with their physician (MCS, 4.88 vs 4.59;  $P < .001$ ). Analyzing the content of consultation encounters revealed differences between study arms, with the direct-Spanish arm having more physician speech related to patient history verification (mean number of utterances, 13 vs 9;  $P = .01$ ) and partnering activities (mean utterances, 16 vs 5;  $P < .001$ ). Additionally, patients in the direct-Spanish arm were more likely to initiate unprompted speech (mean utterances, 11 vs 3;  $P < .001$ ) and asked their providers more questions (mean utterances, 11 vs 4;  $P = .007$ ).

**Conclusions:** This study shows improved patient-reported satisfaction among patients with cancer who had LEP and were cared for in direct Spanish compared with interpreter-based communication. Further research into interventions to mitigate the patient-provider language barrier is necessary to optimize care for this population.

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## Introduction

Within the US, the growing racial/ethnic minority population is anticipated to account for more than half of the total population by 2060.<sup>1</sup> An estimated 25 million people currently living in the US speak English either “not well” or “not at all.”<sup>2</sup> The Department of Health and Human Services has created standards to ensure delivery of linguistically competent care to patients who have limited English proficiency (LEP), a right protected by Title VI of the Civil Rights Act of 1964 that prohibits discrimination based on national origin.<sup>3</sup>

Limited English proficiency has been associated with a variety of negative health outcomes, including decreased adherence to treatment and follow-up, poor understanding of illness, low confidence in providers, and decreased satisfaction with care.<sup>4,5</sup> Existing research supports improvements in such outcomes when professional interpretive services are used.<sup>6</sup> Additional nonrandomized research shows improved health outcomes when care is delivered by bilingual providers in a direct, language-concordant manner.<sup>7,8</sup> These findings are compelling, yet there is no clear understanding of the differences in communication through interpretive services compared with communication with direct language-concordant care. Understanding the potential communication barriers between patients and providers could help devise strategies to optimize care of patients with cancer who have LEP. To help address this question, this study prospectively evaluated the effect on patient satisfaction of providing care directly in Spanish compared with providing care through interpretive services among Spanish-speaking cancer patients in a randomized trial.

## Methods

### Patient enrollment and study setting

We recruited patients for this study in a community radiation oncology clinic in Chula Vista, CA, a city south of San Diego in which 58% of the residents identify as Hispanic or Latino.<sup>9</sup> Between October 12, 2017, and August 30, 2018, new patients referred to the clinic for consideration of radiation therapy were screened by clinic administrators

for preferred language at the time of scheduling. Eligible patients for this study included all patients who indicated a Spanish language preference, were at least 18 years old, and were not incarcerated. These patients were clinically triaged to be seen for routine cancer care by 2 participating bilingual physicians. Patients were contacted by a study coordinator and consented to participate in the study via telephone before the first clinic visit or in person immediately before the initial consult. This trial was approved by the University of California, San Diego Institutional Review Board (Protocol 2 in the Supplement).

### Trial design

Patients were randomly assigned 1:1 using a blocked randomization approach with randomly selected block sizes. Patients were randomized to receive care in 1 of 2 study arms. The *interpretive services* arm included a physician speaking English to patients through a professional interpreter-based service. This arm used video-based interpreters (MARTTI, Language Access Network, Columbus, Ohio) preferentially, or telephone interpreters (CyraCom Inc, Tucson, Arizona) when the video services were unavailable. The *direct-Spanish* arm included the same physicians speaking Spanish directly to the patient. Physicians were informed of randomization immediately before the initial consultation encounter and then conducted routine clinical care from the initial consultation to the end of treatment adhering to the designated communication method. Health care providers in the study consisted of 2 bilingual radiation oncology physicians. The physicians' and study coordinators' Spanish proficiency was certified by a third-party Spanish language assessment administered by CyraCom Inc, aligned with institutional standards for bilingual clinicians to conduct patient care in a non-English language. After enrollment and before randomization, we assessed the health literacy of study participants using a health literacy examination (Newest Vital Sign, Pfizer, New York, New York) validated in English and Spanish.<sup>10</sup>

### Study outcomes

The study outcomes of patient satisfaction were assessed with 2 standardized questionnaires: (1) the Patient Satisfaction Questionnaire (PSQ) Short Form to measure general satisfaction in overall care and (2) the Interview Satisfaction Questionnaire (ISQ) Short, 12-Item Version to measure satisfaction with provider communication.<sup>11,12</sup> We administered surveys at 3 time points including immediately at the conclusion of the initial physician consultation, during the last week of radiation treatment, and during the first postradiation follow-up clinic visit, typically 1 to 3 months after completing the course of radiation.

The primary endpoint was prespecified as the general satisfaction composite score from the PSQ survey conducted immediately after the initial consultation. We chose general satisfaction after the initial consultation as the primary endpoint because we believe the detailed risk-benefit discussions occurring during this consultation represent a critical communication point in oncologic care. Secondary endpoints included each subcomponent domain of both the PSQ and ISQ surveys.

For the final 43 enrolled patients, we obtained audio recordings of the initial consultation to enable analysis of communication content. These audio recordings were translated,

transcribed, and coded by bilingual study staff using MAXQDA software (VERBI GmbH, Berlin, Germany). Coding the consultation transcripts identified “utterances” which were defined as the smallest unit of speech reflecting a complete thought or phrase, ranging from a single word to a sentence. Utterances were categorized into different themes following the Roter Interaction Analysis System, which represents a well-validated coding system for characterizing verbal exchanges between patients and physicians.<sup>13,14</sup> Transcripts were coded by 2 coders after verifying intercoder reliability using a kappa coefficient of 0.84 when concurrently coding 5 transcripts.

### Statistical analysis and sample size

We evaluated the differences in baseline characteristics between study arms using Wilcoxon rank-sum tests for continuous variables and Fisher exact tests for categorical variables. Similarly, when comparing outcomes between study arms, we used Wilcoxon rank-sum tests for ordinal (Likert scale) data and Fisher exact tests for categorical endpoints. For our sample size calculation, we assumed a null hypothesis of no difference in general satisfaction between study arms, with an alternate hypothesis of a 6% increase in mean composite satisfaction score with language-concordant care. A sample size of 56 patients would give 80% power to detect a 6% increase in satisfaction score with an  $\alpha$  value of 0.05. We increased our sample size by 50% to account for patient withdrawal and incomplete surveys at later time points. All analyses were performed using SAS, version 9.4, and R, version 3.5.1, with  $P$  values  $< .05$  considered statistically significant.

## Results

Of the 102 patients approached about the study, 83 (81.4%) agreed to participate, enrolled in the study, and were randomly assigned. This included 40 patients in the interpretive services arm and 43 in the direct-Spanish arm. All randomly assigned patients received their intended treatment, and all were included in the primary analysis (Fig. 1). No statistically significant differences in baseline characteristics were identified between the 2 study arms (Table 1). Of the 40 patients assigned to the interpretive services arm, 25 (62.5%) received care with professional video interpreters and 15 (37.5%) with professional telephone interpreters.

The primary endpoint of the composite general satisfaction score from the survey conducted immediately after the initial consultation was higher for the direct-Spanish arm compared with the interpretive services arm (mean composite scores of 4.45 vs 4.09, respectively;  $P = .007$ ) (Fig. 2A). Patients in the direct-Spanish arm reported top ratings (5 out of 5) with composite general satisfaction more frequently than the interpretive services arm (63% vs 25%;  $P = .001$ ) (Fig. 2B).

From surveys with the initial consultation, several secondary endpoints were also higher in the direct-Spanish arm, including patient satisfaction with technical quality (4.41 vs 4.06;  $P = .005$ ), interpersonal manner (4.37 vs 3.88;  $P = .004$ ), communication (4.50 vs 4.25;  $P = .018$ ), and patient perception of time spent (4.30 vs 3.92;  $P = .028$ ) (Fig. 2A). Similarly, when considering patients' perception of their physician, the direct-Spanish arm had higher scores in all domains, including patient perception of opportunity to disclose concerns (4.91 vs 4.62;  $P = .001$ ), physician empathy (4.94 vs 4.59;  $P < .001$ ), confidence

in physician abilities (4.84 vs 4.51;  $P = .001$ ), and general satisfaction with their physician (4.88 vs 4.59;  $P < .001$ ) (Fig. 3A). The patients in the direct-Spanish arm reported top ratings (5 out of 5) more frequently in all satisfaction domains compared with patients in the interpreter services arm (Fig. 2B and 3B), with a solitary exception of a nonsignificant trend toward improvement with financial aspects of care. The effect of direct Spanish communication on the composite general satisfaction score did not vary by individual patient characteristics including patient age, gender, health literacy, performance status, treatment intent, or whether the patient was unaccompanied during the visit (all interaction  $P$  values  $> .05$ ) (Table 2).

When evaluating patient satisfaction during the last week of radiation and the first posttreatment follow-up clinic visit after radiation, we found no statistically significant differences between the direct-Spanish arm and the interpreter services arm in any domain of either patient satisfaction with overall patient care or physician communication (Table E1).

When considering the content of the initial patient consultation, we found no significant differences in consultation length between study arms, with the average consultation of the interpreter-services arm lasting 33 minutes compared with the direct-Spanish arm lasting 37 minutes ( $P = .33$ ). We did find significant differences in speech content between study arms (Table 3). Specifically, when considering physician speech, the direct-Spanish arm had more physician speech related to patient history verification and partnering activities (see glossary of speech content analysis terms, Appendix 3 in the Supplement). Differences in speech related to relationship building approached but did not reach statistical significance, and we found no difference in history solicitation, procedural talk, or patient education. When considering patient speech, the direct-Spanish arm had more patient speech focused on history telling and more unprompted patient speech. Patients in the direct-Spanish arm asked more questions during the initial consultation (mean of 11 questions vs 4.4 questions;  $P = .007$ ), including both open-ended questions (4.5 questions vs 1.9 questions;  $P = .012$ ) and closed-ended questions (5.3 questions vs 2.5 questions;  $P = .048$ ). There were no differences in the physician verbal dominance scores between the 2 study arms, with a ratio of physician-to-patient utterances of 5.0 for both the direct-Spanish and the interpreter services arms ( $P = .79$ ).

## Discussion

The HOLA randomized controlled trial was designed to measure the effect of language-concordant care relative to interpreter-based care for Spanish-speaking patients with cancer who had LEP. To our knowledge, this study is the first randomized controlled trial to directly compare these 2 communication modalities in a clinical setting. The results showed significant improvements in patient satisfaction with health care and patient satisfaction with provider communication when physicians communicated with patients in Spanish compared with communicating through professional interpreter services.

The study's findings are consistent with existing research that evaluated the effect of language-concordant encounters among patients with LEP. Published nonrandomized data suggest improvements in patient engagement and satisfaction when care is delivered in a

language-concordant manner.<sup>8,15</sup> One of the largest prospective trials of communication methods for non-English speaking patients, conducted by Gany and colleagues, included a randomized comparison of professional interpretation with usual and customary care, which included nonprofessional translation (eg, translation by an accompanying family member).<sup>7</sup> In the study by Gany and colleagues, assignment to the direct, language-concordant care arm of the study was nonrandomized. Their study also differed from the present study in that the professional translation modality they used was simultaneous interpretation, in which a remote translator conveyed interpreted speech to the patient in real time via an earpiece, as the physician was speaking; the current study used the conventional approach, consecutive interpretation, in which the interpreter waits to translate until pauses in physician speech. Results from the study by Gany and colleagues showed improved satisfaction with professional interpretation compared with usual and customary care. That study, like the current study, found the highest satisfaction among language-concordant encounters. Whereas the current study found increased patient satisfaction after a language-concordant patient-provider encounter, we also found that the improved satisfaction attenuated as the course of cancer treatment progressed. The reason for this attenuated patient satisfaction is not entirely clear; however, it could indicate that although language-concordant care more quickly reduces initial barriers between patients and physicians, interpreter-based care can achieve the same results over time. This study considered the importance of patient and physician language concordance in patient satisfaction and communication patterns. Other existing work has considered the effect of race/ethnicity concordance between patients and providers on survival, treatment intensity, and communication.<sup>16,17</sup> The limited size of the current study prevented a more definitive assessment of racial and ethnic concordance, although this remains an important question for future study.

A key finding in this study relates to the content differences in both physician and patient speech between language-concordant care and the use of interpreter-based services. In general, a language-concordant conversation altered the nature of history obtainment and led to increased patient-provider partnering. These essential parts of the patient-physician interaction not only influence patient care but also affect the underlying relationship between the patient and provider. Language-concordant conversation also increased the number of patient questions and unprompted patient speech. These differences in patient questions and speech raise questions about the differences in patient comprehension between the study groups. With this current study's design, the overall effect of these differences in conversation through an interpreter was difficult to quantify. However, knowledge of these patient-provider communication barriers could help physicians when caring for patients with LEP. Additionally, one could focus on these content differences if considering a more formal intervention to improve patient satisfaction with interpretive services.

Although this study's findings showed improved patient satisfaction with language-concordant care compared with interpreter services, one must also consider the large body of data that supports professional interpretation as an appropriate standard of linguistically competent care compared with ad hoc or other substandard interpretation methods.<sup>6</sup> Whereas one could hypothesize that health care providers with semiproficient communication in another language could confer some fraction of the benefits associated with direct bilingual care, it is also important to consider the data suggesting potential

hazards of less-fluent providers inadvertently contributing to LEP health disparities through patient misunderstandings.<sup>18</sup> Therefore, working with professional interpreters or obtaining standardized certification of non-English proficiency should be the preferred strategy to ensure the highest quality of communication with patients who have LEP.

The results of this study raise the question of what sort of interventions could help reduce the communication gaps between health care providers and patients who have LEP. A focus on increasing diversity among providers and recruiting individuals with foreign-language proficiency represents one workforce-related solution. Although bilingual physicians who speak their patients' native language proficiently constitute a fraction of the physician workforce, the role of the larger number of physicians (in excess of 40%) who report some degree of fluency in a non-English language should be considered.<sup>19</sup> Additional language training for these physicians to increase proficiency could help bridge these communication gaps with patients who have LEP. Other solutions could focus on administrative changes within health care systems, including language-concordant triage of appropriate patients into bilingual provider clinics, which would more efficiently use limited language resources.<sup>20</sup> Finally, from an education perspective, this study's findings also support broader initiatives to integrate cultural humility and competence, including foreign language skills and their appropriate use, into the medical education curriculum. Communication in patient care represents a complex, dynamic, and heterogeneous problem—effective interventions for patients with LEP will likely require a multifaceted approach.

This study has limitations worth considering. Our data were generated from 1 community subspecialty clinic, using specifically video and telephonic interpreter services, and just 2 bilingual physicians, making it difficult to understand whether these findings are generalizable to other clinical settings. Additionally, we focused on a group of patients identified by their preferred language of Spanish, and whether these findings extend to other languages or different ethnic or cultural groups deserves further study. Although using the same physicians for both study arms allowed for an internal control, bilingual providers communicating in English may not represent the average interpreter-based encounter. It is possible that a nonbilingual physician would face a greater challenge in communicating with patients who have LEP than would a bilingual physician, even if both physicians' speech was being translated. We designed the study such that providers would not follow a script during their patient-physician conversation. Although we believed this study design more closely mimicked a real-life patient encounter, one must consider that standardizing the physician conversation in both study arms could potentially mitigate the effects of language-concordant care. The small number of study participants in this trial introduces the possibility of heterogeneity in study arms. Although the observed patient characteristics did not statistically vary between groups, differences in study participants could potentially influence the findings. Furthermore, because the study by necessity was conducted in an unblinded fashion, it is possible that awareness of study arm allocation introduced bias.

In summary, the literature clearly shows that language barriers contribute to poor health outcomes and that appropriate communication is critical to optimize care for patients with LEP. Furthermore, the data describe intrinsic communication differences between direct-Spanish and interpreter-based encounters that translate into disparate patient-reported



satisfaction with cancer care and providers. Results of this study support the approach of delivering quality language-concordant care as a preferred means of achieving the highest patient satisfaction among Spanish-speaking patients with cancer.

## Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

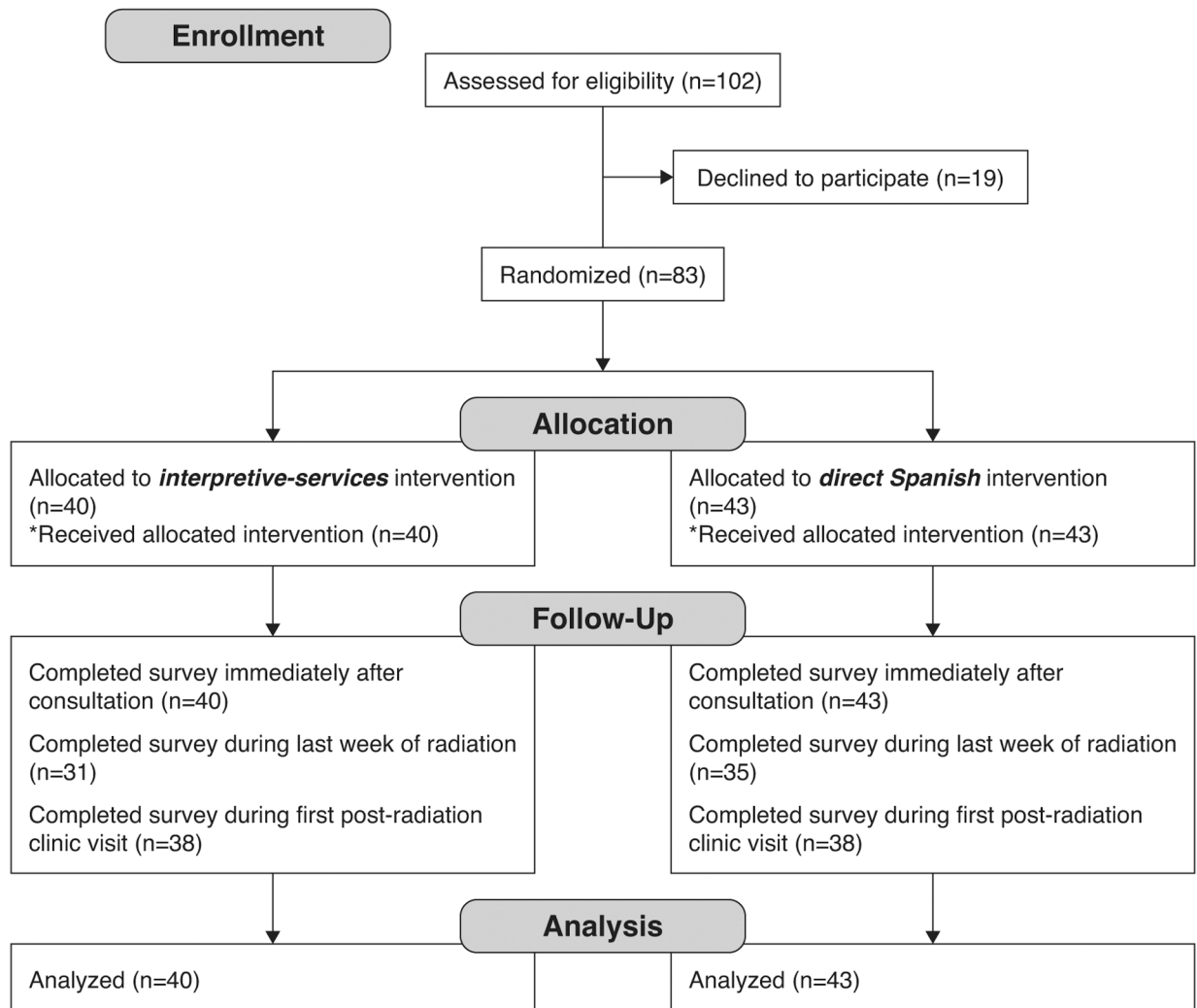
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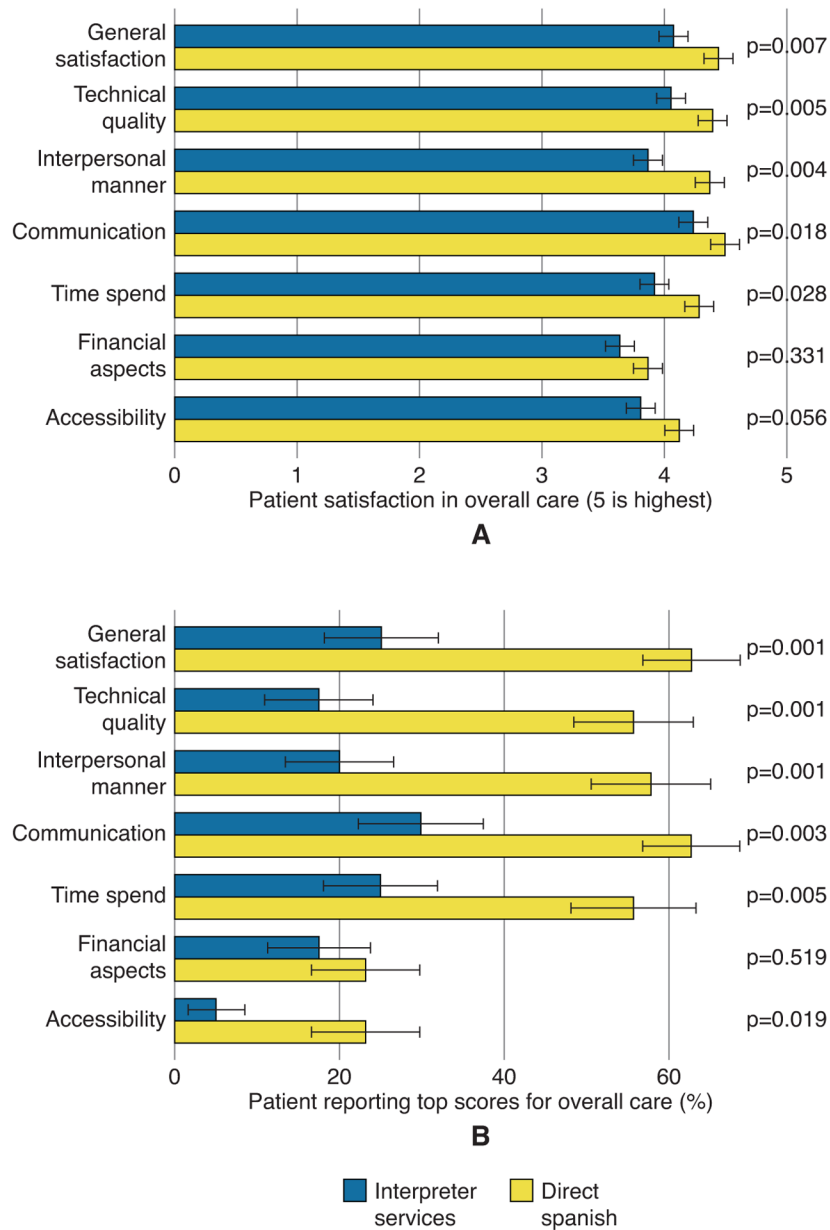
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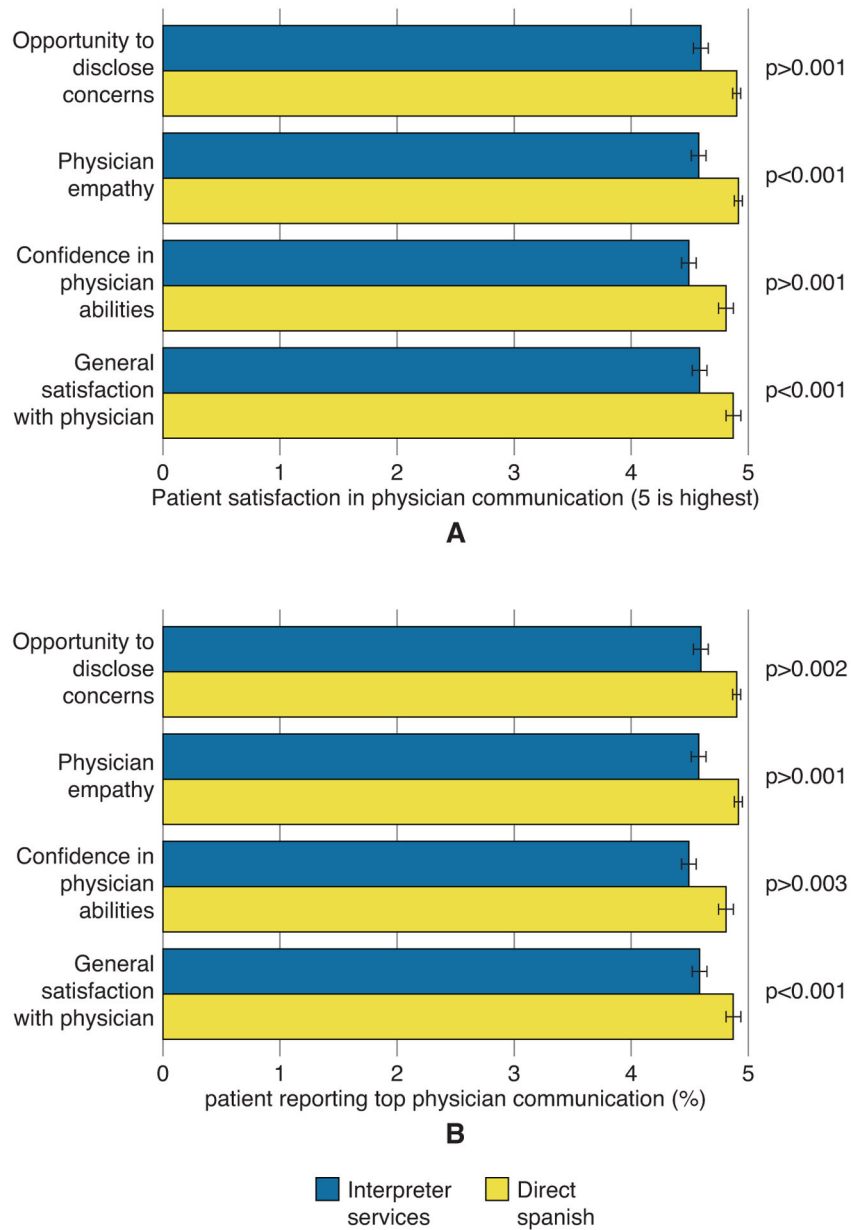
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**Fig. 1.**  
Study recruitment, enrollment, follow-up, and analysis.



**Fig. 2.** General satisfaction scores of patients. (A) Average patient satisfaction scores with individual domains of overall care stratified by study arm (interpreter services or direct Spanish). The *P* values reflect differences in study arms. (B) Percentage of patients reporting top scores (5 out of 5) for each patient satisfaction domain.



**Fig. 3.** Patient satisfaction with physician communication. (A) Average patient satisfaction scores with individual domains of physician communication stratified by study arm (interpreter services or direct Spanish). The *P* values represent differences in study arms. (B) Percentage of patients reporting top scores (5 out of 5) for each patient satisfaction domain.

**Table 1**

## Patient characteristics

| Characteristic                                  | Interpretive services | Direct Spanish | P value |
|---|-----------------------|----------------|---------|
| Patients, No.                                   | 40                    | 43             | -       |
| Age, mean, y                                    | 63                    | 61             | .48     |
| Sex   |                       |                |         |
| Female  | 23 (58)               | 28 (65)        | .63     |
| Male  | 17 (43)               | 15 (35)        |         |
| Patient unaccompanied                           |                       |                |         |
| Yes   | 16 (40)               | 11 (26)        | .24     |
| No  | 24 (60)               | 32 (74)        |         |
| Risk of health illiteracy                       |                       |                |         |
| High  | 30 (75)               | 28 (65)        | .59     |
| Medium  | 1 (2.5)               | 2 (4.7)        |         |
| Low   | 9 (23)                | 13 (30)        |         |
| ECOG performance status                         |                       |                |         |
| 0   | 10 (25)               | 6 (14)         | .36     |
| 1   | 22 (55)               | 27 (63)        |         |
| 2   | 7 (18)                | 6 (14)         |         |
| 3   | 1 (2.5)               | 4 (9.3)        |         |
| Treatment intent                                |                       |                |         |
| Definitive                                      | 31 (78)               | 30 (70)        | .20     |
| Palliative                                      | 8 (20)                | 7 (16)         |         |
| Treatment not recommended                       | 1 (2.5)               | 6 (14)         |         |
| Cancer histology for definitive treatments      |                       |                |         |
| Breast  | 10 (33.3)             | 18 (60)        | .29     |
| Gastrointestinal                                | 2 (6.7)               | 1 (3.3)        |         |
| Head and neck                                   | 1 (3.3)               | 2 (6.7)        |         |
| Lung  | 1 (3.3)               | 1 (3.3)        |         |
| Prostate  | 10 (33)               | 5 (17)         |         |
| Other   | 6 (20)                | 3 (10)         |         |
| Prognostic cancer stage for definitive patients |                       |                |         |
| In situ   | 1 (3.2)               | 3 (9.1)        | .53     |
| Stage I   | 9 (29)                | 10 (30)        |         |
| Stage II  | 12 (39)               | 10 (30)        |         |
| Stage III                                       | 7 (23)                | 10 (30)        |         |
| Stage IV  | 2 (6.5)               | 0 (0)          |         |
| Metastatic site for palliative treatments       |                       |                |         |
| Bone  | 4 (50)                | 4 (57)         | >.99    |
| Brain   | 1 (13)                | 1 (14)         |         |
| Lung  | 1 (13)                | 0 (0)          |         |
| Other   | 2 (25)                | 2 (29)         |         |

Values are presented as no. (%) unless otherwise indicated.

*Abbreviation:* ECOG = Eastern Cooperative Oncology Group.

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**Table 2**

Average patient satisfaction scores across different patient subsets

| Variable                  | Average patient satisfaction score |                      |                | Interaction <i>P</i> value |
|---------------------------|------------------------------------|----------------------|----------------|----------------------------|
|                           | Patients, No.                      | Interpreter services | Direct Spanish |                            |
| Age, y                    |                                    |                      |                |                            |
| <65                       | 44                                 | 4.02                 | 4.32           | .71                        |
| 65                        | 39                                 | 4.17                 | 4.60           |                            |
| Sex                       |                                    |                      |                |                            |
| Female                    | 51                                 | 4.07                 | 4.38           | .64                        |
| Male                      | 32                                 | 4.12                 | 4.60           |                            |
| Patient unaccompanied     |                                    |                      |                |                            |
| No                        | 56                                 | 3.96                 | 4.50           | .19                        |
| Yes                       | 27                                 | 4.28                 | 4.32           |                            |
| Risk of health illiteracy |                                    |                      |                |                            |
| High                      | 58                                 | 4.07                 | 4.27           | .24                        |
| Low to medium             | 25                                 | 4.15                 | 4.80           |                            |
| ECOG performance status   |                                    |                      |                |                            |
| 0–1                       | 65                                 | 4.06                 | 4.41           | .88                        |
| 2                         | 18                                 | 4.19                 | 4.60           |                            |
| Treatment intent          |                                    |                      |                |                            |
| Definitive                | 61                                 | 3.95                 | 4.40           | .75                        |
| Palliative                | 15                                 | 4.62                 | 4.93           |                            |

*Abbreviation:* ECOG = Eastern Cooperative Oncology Group.



Table 3

## Speech content analysis of provider-patient visit

| Component of speech              | Interpreter services (n = 19) | Direct Spanish (n = 24) | P value |
|----------------------------------|-------------------------------|-------------------------|---------|
| Physician speech                 |                               |                         |         |
| Physician verbal dominance score | 5.00                          | 5.04                    | .79     |
| Average number of utterances*    |                               |                         |         |
| Data gathering                   |                               |                         |         |
| History verification             | 8.9                           | 13                      | .01     |
| History solicitation             | 1.2                           | 1.6                     | .20     |
| Partnering activity              | 5                             | 16                      | <.001   |
| Building relationship            | 5                             | 9                       | .07     |
| Procedural speech                | 12                            | 12                      | .86     |
| Patient education                | 46                            | 45                      | .99     |
| Patient speech                   |                               |                         |         |
| Open-ended questions             | 1.9                           | 4.5                     | .01     |
| Closed-ended questions           | 2.5                           | 5.3                     | .048    |
| All patient questions            | 4.4                           | 11                      | .01     |
| Average number of utterances*    |                               |                         |         |
| History telling                  | 3.6                           | 12                      | <.001   |
| Answering yes/no questions       | 7.1                           | 8.3                     | .30     |
| Unprompted speech                | 3.1                           | 11                      | <.001   |
| Family speech                    | 12                            | 19                      | .18     |
| Speech related to toxicity       | 15                            | 13                      | .39     |

\* This table shows the results of the translation, transcription, and coding of the initial consultation visit between the patient and physician. An utterance refers to the smallest unit of speech reflecting a complete thought or phrase, ranging from a single word to a sentence.