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Loss of patient centeredness in interpreter-mediated primary care visits

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Abstract

Objectives: To explore consequences of interpreter mediation of visit communication on patient centered dialogue and patient satisfaction with interpreter listening.

Methods: Fifty-five professionally interpreted primary care visits were coded using the Roter Interaction Analysis System (RIAS). Two corresponding quantitative measures of patient-centered dialogue were calculated as ratios of psycho-emotional to biomedical statements based on (1) patient and clinician expressed codes and (2) interpreter conveyed codes. Multilevel models examined consequences of interpreter mediation on patient-centered dialogue and patient ratings of interpreter listening.

Results: Study participants included 27 Cantonese, 17 Mandarin and 11 Spanish-speaking primary care patients and 31 of their clinicians. Overall, clinicians expressed 2.26 times more statements and patients expressed 1.74 times more statements than interpreters conveyed. Interpreters conveyed significantly less patient-centered dialogue than expressed by patients and clinicians. All differences were evident within each study language. Interpreter conveyed patient centered dialogue positively predicted patient ratings of interpreter listening ($B = 0.817$; $p < .007$).

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CRediT authorship contribution statement

Debra L. Roter: Conceptualization, Methodology, Validation, Visualization, Writing - original draft, Writing - review & editing. **Steven E. Gregorich:** Data curation, Formal analysis, Methodology, Software, Validation, Visualization, Writing - original draft, Writing - review & editing. **Lisa Diamond:** Conceptualization, Writing - original draft. **Jennifer Livaudais-Toman:** Data curation, Formal analysis, Software. **Celia Kaplan:** Conceptualization, Investigation, Methodology, Project administration, Supervision. **Sarita Pathak:** Investigation, Methodology, Project administration. **Leah Karliner:** Conceptualization, Funding acquisition, Investigation, Methodology, Validation, Visualization, Project administration, Resources, Supervision, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

Debra Roter is the author and holds the copyright for the Roter Interaction Analysis System (RIAS). She is also the owner of RIAS Prime, LLC, a company that provides consulting services related to the RIAS and its applications. It is possible that the company may benefit indirectly from dissemination of the current research. The co-authors certify that they have NO affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

Conclusions: The level of interpreter-conveyed patient-centered dialogue was both substantially lower than that expressed by patients and clinicians and a positive predictor of patient satisfaction with interpreter listening.

Practice implications: Fuller interpretation of patient-centered dialogue may enhance patient experience with interpreters and thereby increase care quality.

Keywords

Professionally interpreted visits; Patient–clinician interaction; Roter Interaction Analysis System (RIAS); Patient centeredness

1. Introduction

Patient-centered care has been associated with satisfaction, adherence, improvement in health status, and overall quality of care [1]. Moreover, patient-centeredness is not only significant in relation to outcomes of care, but as a moral obligation to do the right thing [2]. Studies of patient-centered care have not been limited to any particular clinical setting, country, culture or language, although they principally reflect interactions between patients and clinicians in a common native language. As a consequence, the experience of patients who rely on interpreter services are minimally present in the literature.

This is unfortunate as patients with limited native language proficiency are especially vulnerable to health disparities [3]. Professional interpreters have been found to play a significant role in diminishing health disparities mainly through the reduction of communication errors around disease diagnosis, treatment and management [4]. While vital, these elements of medical dialogue only partially represent the full scope of clinically significant exchanges through which interpreters may mediate health disparities, including patient-centered pathways.

The general consensus regarding patient-centered communication domains is that it includes a biopsychosocial perspective, recognition of the patient-as-person, sharing of power and responsibility in regard to medical treatment decisions, and the establishment of a therapeutic alliance [5,6]. Yet, despite conceptual consensus, patient-centeredness continues to be plagued by vague and highly variable definitions held by researchers, clinicians, and patients alike [6–8]. Nevertheless, there are several clear operational definitions that have been applied in multiple studies and reported in the literature over the past 20 years [7,9,10].

Among these is the Roter Interaction Analysis System (RIAS) measure that quantitatively operationalizes patient-centered dialogue as a ratio reflecting two broad spheres of medical visit communication. The numerator reflects the sum of patient and clinician interaction related to psychosocial, lifestyle, and socio-emotional talk. Through these types of statements, patients communicate the meaning and consequences of their illness to their everyday life and clinicians gain entry and insight into the patient's illness experience. The denominator reflects the sum of patient and clinician interaction that fall within the context of disease diagnosis, management and treatment. Both spheres are critically important to the accomplishment of clinic visit goals and each informs and gives meaning to the other.

While the RIAS-based patient-centeredness ratio has been widely applied to medical interaction between patients and clinicians, this study represents the first adaptation of the measure to interpreter based patient-centered dialogue.

The potential utility of an interpreter based measure of patient-centered dialogue is suggested by a recent Swiss study of Albanian & Turkish patients and their Swiss clinicians that included the participation of professional interpreters [11]. The investigators used the RIAS to describe visit communication and found significant differences in the frequency of codes between those directly expressed by patients and clinicians and conveyed by interpreters. Overall, interpreters failed to convey about one-third of provider and patient statements. Biomedical information was conveyed more fully than affective and instrumental codes that reflect emotional and facilitation statements. While the latter categories of communication are relatively infrequent, they reflect an important aspect of patient-centered dialogue.

A recent systematic review of emotional communication in interpreted medical visits concludes that regardless of the coding methodology used to assess emotional communication, the amount and intensity of emotional exchange is diminished as a result interpreter mediation [12].

The current study was designed to expand this line of inquiry by describing the consequences of professional interpreter mediation of Cantonese-, Mandarin- and Spanish-language primary care visits on RIAS-coded medical communication overall and on measures of patient-centered dialogue and its consequences for patient ratings of interpreter listening. We hypothesized the following: (1) professional interpreters will convey fewer RIAS-coded statements overall than clinicians and patients express; (2) differences between interpreter and corresponding clinician and patient statements will be greater in emotional, facilitative and psychosocial relative to medical categories of communication; (3) Measures of interpreter-based and clinician and patient-based patient-centered dialogue will be substantially correlated but will differ in magnitude with the former being lower than the latter; and (4) patient satisfaction with interpreter listening will be associated with measures of patient-centered dialogue.

2. Method

2.1. Sample and procedure

The study took place in a large, urban academic primary care practice. Clinic visits included in the current analysis comprise a subset of a larger study sample of 151 patients and 47 clinicians taking part in a study of language concordance and discordance and use of interpreter services. Visits were considered concordant when both the clinician and patient communicated in Mandarin, Cantonese, Spanish, or English without reliance on an interpreter. Language discordant visits included reliance on professional or informal interpreters (e.g., patient’s spouse or adult child). The subset of visits used in the current analysis was limited to the medical visits of 55 ethnically Chinese and Latino patients (with 31 of their clinicians) in which professional interpretation services were used.

Adult primary care patients met selection criteria for the larger study, including a documented medical care language preference for one of the three most common non-English languages spoken by patients within study practices (Cantonese, Mandarin, or Spanish) and willingness to have a future primary care visit audio recorded.

Immediately following the clinic visit, an in-person satisfaction questionnaire was administered in the patient's preferred language. Participants received $30.00 as compensation for time and effort after completion of the post-visit questionnaire.

The study was reviewed and approved by the Committee on Human Research, University of California, San Francisco and the Institutional Review Board Office of the Johns Hopkins Bloomberg School of Public Health.

2.2. Measures

2.2.1. Communication behavior

Application of the Roter Interaction Analysis System (RIAS).: Recordings of the 55 professionally interpreted visits were coded with the Roter Interaction Analysis System (RIAS). The unit of analysis for RIAS coding is a statement conveying a complete thought by a speaker, most commonly the patient or clinician. These statements can vary from a single word to a simple sentence or a clause in a compound sentence; each statement is independently assigned to one of 37 mutually exclusive and exhaustive codes that carry a speaker designation. In this study, each statement was coded to distinguish four speakers (clinician, interpreter-as-clinician, patient, and interpreter-as-patient).

As in many RIAS-based studies, the large number of coded variables (37 codes applied to each speaker and several codes specific to only one speaker) were reduced to facilitate analysis by creating speaker-specific code composites. Six composites relevant to assessment of patient-centered dialogue were used in the current analysis: (1) medical information (including codes reflecting medical information, therapeutic regimen information, *medical/treatment counseling statements); (2) medical questions (including open and closed questions about the medical condition and treatment); (3) psychosocial/lifestyle information (psychosocial information, lifestyle information and *psychosocial/lifestyle counseling); (4) psychosocial/lifestyle questions (open and close-ended questions about psychosocial and lifestyle topics); (5) emotional statements (concern, reassurance, empathy, legitimation, partnering, self-disclosure*); and, (6) partnership facilitation statements (e.g., asking for understanding, asking for reassurance, cues of interest, checks for understanding, asking for opinion*, *asking for permission to proceed). (Asterisks denote clinician (or interpreter-as-clinician only codes.) Within each clinic visit, these composites were calculated for each of the four speaker roles (clinician, interpreter-as-clinician, patient, and interpreter-as-patient).

2.2.2. RIAS quantification of patient-centered dialogue—In addition to the code composites by each speaker, two ratio measures of patient-centered dialogue was calculated. The first was based on patient and clinician speakers and the second on speaker role of interpreter-as-patient and interpreter–as-clinician. For the first measure, the ratio

numerator included clinician and patient code composites reflecting psychosocial/lifestyle information, psychosocial/lifestyle questions, and emotional statements; plus clinician partnership facilitation statements and patient medical questions; the ratio denominator included clinician and patient biomedical information and clinician medical questions. For the second -based measure, the interpreter-as-patient and interpreter-as-clinician was substituted for patient and clinician speakers.

2.2.3. Ratings of satisfaction with interpreter quality—Patient judgement of clinicians' listening has been used in a number of studies to reflect the patient-centered dimension of being heard and feeling known [8]. We adapted this item to apply to interpreters' listenting to disentangle interpreter skill from clinician-dependent communication behavior such as clarity of explanations. Patients were asked to rate interpreters' listening behavior ("how was the interpreter at listening to what you had to say?") using five ordered response options (poor, fair, good, very good, excellent).

2.2.4. Coder training and reliability—Multilingual coders fluent in English as well as Cantonese, Mandarin or Spanish were trained to apply the RIAS to audio recordings without transcription or translation by the system author (DLR) or staff under her direction. A total of 4 coders participated in the study: one coder was fluent in both Mandarin and Cantonese, one was fluent in Mandarin, and two coders were fluent in Spanish.

A random sample of Mandarin and Spanish visit recordings ($n = 7$) were drawn throughout the coding period to establish inter-coder reliability. Pearson correlation coefficients were calculated between coders for each speaker (patient, interpreter-as-patient, doctor, and interpreter-as-doctor) over the 6 primary code composites as described earlier.

The average inter-coder correlation for the 6 patient composites was .87 (range .78 to .97; median .84); similarly, correlations for the parallel interpreter-as-patient composites averaged .85 (range .77 to .93; median 86).

Inter-coder correlations for the 6 composites of doctor statements averaged .85 (range .73 to .93; median 85). The parallel interpreter-as-doctor composites averaged of .82 (range .38 to .94; median 92).

2.3. Analyses

The data have a three-level nested structure: clinicians, clinic visits within clinicians, and speakers within clinic visits. The first set of regression models was stratified by two speaker groupings: (i) Clinician and interpreter-as-clinician; and (ii) Patient and interpreter-as-patient. We fit one multivariate outcome, mixed negative binomial model within each grouping for each of the six RIAS primary code composites as well as total statement counts. As an example, one model regressed multivariate outcomes describing RIAS medical information composites representing clinician and interpreter-as-clinician conveyed statements onto indicators of speaker (clinician vs. interpreter-as-clinician), patient language (Cantonese, Mandarin, Spanish), speaker-by-language interaction, and a common set of covariates: visit length, patient age, gender, education, co-morbidity count, whether the visit was with the patient's regular clinician, and whether the patient was accompanied by a

caregiver (yes/no) as well as clinician gender and professional status (attending, resident). Each model included random intercepts for clinicians and clinic visits. Any non-significant interaction effect was dropped and the model refit. For each model, we report model-predicted mean composite counts for each represented speaker, i.e., clinician and interpreter-as-speaker or patient and interpreter-as-patient. Factor change (FC) coefficients representing ratios of model-predicted means across speakers characterized overall speaker effects and speaker effects within languages (where significant interaction effects were found), e.g., a FC coefficient of 2.5 for clinician expressed and interpreter-conveyed clinician statements indicates that, on average, clinicians made two and a half times as many coded statements as interpreters conveyed.

Additionally, a conceptually similar multivariate outcome, mixed linear model of the two patient-centeredness outcomes was fit. For this model, predictor variables included speakers used to calculate the patient-centeredness ratio (clinician and patient versus interpreter-as-clinician and interpreter-as-patient), patient language (Cantonese, Mandarin, and Spanish), speaker-by-language interaction, and the common covariate set. Again, non-significant interaction effects were dropped. Model-predicted outcome means and tests of mean differences across speakers are reported.

Finally, two mixed linear models of patient ratings of interpreter listening as the dependent variable were fit. In the first model predictors included the clinician and patient measure of patient centeredness, visit language, and the full covariate set. The second model predictors included interpreter-conveyed patient centeredness along with the same set of additional variables. These two-level models included random intercepts for clinicians.

3. Results

3.1. Participants

3.1.1. Patients—Fifty-five patients were recorded in a professionally interpreted primary care visit. As reflected in Table 1, the sample included 27 Cantonese-, 17 Mandarin- and 11 Spanish-speaking patients, the majority of whom were female. Patients averaged 72 years of age (range 50-96) and made an average of almost 5 primary care visits over the prior year. The majority of patients (65%) saw their usual clinician at the recorded visit and patients had long-standing relationships with these clinicians (average 2.7 years). The majority of all patients used Medicare as their primary insurance (76%) followed by Medi-Cal (i.e., Medicaid; 20%). There were no significant differences in any of these measures across the three visit languages. Differences were evident in more comorbid conditions among Spanish- relative to Mandarin- and Cantonese-speaking patients (5 vs 2 and 3 respectively; $p < .05$) and higher levels of education among Mandarin relative to Spanish and Cantonese speakers ($p < .05$).

Table 1 also displays several key visit characteristics. The length of the interpreted visits averaged 31.4 minutes with a wide range (16.0–72.2). Close to one-third of all patients were accompanied to their visit by a family member or friend. There were no statistically significant differences in these characteristics across visit languages.

3.1.2. Clinicians—A total of 31 clinicians participated in the study visits. Clinician status included 12 attending physicians, one nurse practitioner, and 18 residents who participated in 22 (40%), 1 (2%), and 32 (58%) of study visit recordings, respectively. For convenience we combined data from the attending physicians and the nurse practitioner in all further descriptions. Seventeen of the study clinicians were female and they participated in 32 (58%) study visits and 14 male clinicians participated in 23 (42%) visits.

3.2. Differences in clinician and patient statements and interpreter-conveyed statements across study languages

3.2.1. Difference in overall visit statements by speakers and language of interpretation—As displayed in Table 2, the total count of coded statements indicate that clinicians expressed an average of 218.0 statements whereas interpreters-as-clinicians conveyed a corresponding average of 96.6 statements (Overall FC = 2.26, $p \leq .0001$). A significant speaker-by-language interaction effect was found; the FC coefficient within Spanish-language visits was significantly larger than the FC scores within Cantonese-language visits (FC = 2.85 vs 2.02, $p < .01$) and Mandarin-language visits (2.85 v FC = 2.00, $p < .01$).

Table 2 also displays differences in patient and interpreter-as-patient statements; patients averages 131.2 statements compared to an average of 75.5 interpreter-as-patient statements (Overall FC = 1.74, $p \leq .0001$). Again, a significant speaker by language effect was found; the FC coefficient within Spanish-language visits was significantly larger than the FC found within Cantonese and Mandarin language visits (p values < .001).

3.2.2. Difference in code composites by clinician speakers and language of interpretation—Differences in the counts of clinician and interpreter-as-clinician statements for each of 6 key communication composites are reflected in Table 3. Overall, clinicians expressed significantly more biomedical (medical information and medical questions), emotional and partnership facilitation statements than were conveyed by the interpreter. Psychosocial/lifestyle composites (both information and questions) were infrequent, averaging 1.3 statements per visit, and the overall speaker effect was non-significant. The magnitudes of significant speaker main effects were reflected by FC coefficients ranging from 1.27 and 1.41 times as many clinician than interpreter-as-clinician statements in regard to medical information and questions (respectively) to 1.87 and 3.12 times as many clinician than interpreter-as-clinician emotional and partnership facilitation statements, respectively (p-values <.0001).

We found significant speaker-by-language interaction effects for medical questions and emotional talk. The Spanish-language FC coefficient for medical questions (FC = 2.05) was significantly larger than that for Cantonese (FC = 1.19) and Mandarin-language visits (FC = 1.16; FC difference p-values <.002 and <.001, respectively). A similar pattern was found for emotional talk (FC = 2.62 vs FC = 1.64 and FC = 1.53; FC difference p-values < .001 for both).

3.2.3. Difference in code composites by patient speakers and language of interpretation—In a similar manner, differences in the counts of patient and interpreter-

as patient statements in 6 key communication composites are displayed in Table 4. An exception to the general findings of greater patient expression than interpreter conveyance was found for medical questions as interpreters conveyed significantly more questions than expressed by patients. In this instance, the patient expressed only .80 as many questions as the interpreter conveyed ($p < .01$). With the exception of a psychosocial/ lifestyle questions, all other communication composites had significant overall speaker effects with FC coefficients ranging from 1.39 to 1.60 times as many patient expressed than interpreter-conveyed statements. Significant speaker-by-language interaction effects were evident for emotional talk and partnership facilitation. The Spanish-language FC coefficient for emotional talk (FC = 2.05) was significantly higher in comparison to Cantonese- (FC = 1.28) and Mandarin-language visits (FC = 1.36; FC difference *p*-values < .01 and .03). For partnership facilitation, both Spanish- (FC = 2.00) and Mandarin-language visits (FC = 1.77) had significantly greater speaker effects than Cantonese-language visits (FC = 1.16; FC difference *p*-values < .05 for both).

3.2.4. Differences in patient-centered dialogue by speaker and language of interpretation—The differences between the patient and clinician based measure of patient-centered dialogue and the interpreter-based measure was examined in a multivariate, mixed linear model as displayed in Table 5. While the two measures were substantially related (Pearson correlation = .84), the overall mean of the patient and clinician measure was significantly higher than the interpreter-based measure ($\Delta = 0.12$, $p < .0001$). A significant language by speaker interaction effect was evident for all study languages and highlighted that the difference within Spanish-language visits ($\Delta = 0.19$) was significantly greater than the difference within Cantonese- and Mandarin-language visits ($\Delta = 0.09$ and $\Delta = 0.08$; *p*-values < .05 for both comparisons).

3.2.5. Ratings of interpreter listening and patient centeredness—Patient ratings of interpreter listening ranged from 2 (fair) to 5 (excellent) with an average score of 3.8, SD of 0.9. Two mixed linear models of patient ratings of interpreter listening were fit; the first included the clinician and patient based measure of patient-centered dialogue, visit language, and the covariate set included in prior analyses. The second model substituted interpreter-as patient and clinician for patients and clinicians but was otherwise the same. The clinician and patient based measure of patient-centered dialogue was not significantly related to patient ratings of interpreter listening ($B = 0.406$; $p = .44$). However, the interpreter based measure had a significant positive effect on patient ratings of interpreter listening ($B = 0.817$; $p < .01$). There were no significant effects in either of the models for language or any of the common set of covariates included in the analysis.

In post-hoc analysis, we considered a simple alternative explanation for our findings. We wondered if overall interpreter speech (as-patient or as-clinician) would influence patient judgements of interpreter listening. We reasoned that terse interpretation might create an impression of inattentiveness even though the patient would be unable to judge the extent to which their statements or those of the clinician were accurately conveyed. We explored this possibility by modeling the effect of total speech by all speakers on patient ratings

of interpreter listening (using the same modeling strategy described earlier). No significant relationships were found.

4. Discussion and Conclusion

4.1. Discussion

This study makes a unique contribution to our understanding of interpreter mediated medical visit dialogue and its consequences for patient-centered communication. As others, we found that both patients and clinicians express substantially more RIAS-coded statements than are conveyed by professional interpreters [11]. Further, we found that this pattern is substantially replicated across almost every communication composite examined and that speaker by language interactions were found for a number of these as well.

We also note that speaker differences varied by their function within the medical dialogue with less correspondence between speakers and interpreter-as-speakers in emotional, psychosocial, and partnership facilitation relative to biomedical exchanges.

It is in the analysis of visit dialogue beyond a category by category assessment that allows exploration into the cumulative effect of interpreter mediation on a quantitative operationalization of overall visit patient centeredness. The measure of interpreter-conveyed patient centered dialogue developed for this study is novel although conceptually parallel to the RIAS measure described in the literature. While we anticipated that the two measures would work in tandem, we did not know the extent to which the measures would be related to one another or how the different measures may relate to patient judgements of the interpreter. And, we did not know what if any role language of interpretation might play.

We found that the two patient-centered measures were substantially correlated but differed in absolute levels with the interpreter-based measure being significantly lower than the measure based on patient and clinician speakers. Thus, interpreter mediation shifted the medical dialogue to lower levels of patient centeredness. This is what was lost in translation.

It is interesting to consider that clinicians communicated little about psychosocial and lifestyle topics and patients asked virtually no questions in this category; we are unsure why this occurred. However, the finding is consistent with the conclusions of Theys and colleagues in suggesting that challenges presented in interpreter mediation of emotional talk may also apply to discussions of psychosocial and lifestyle matters resulting in unmet needs in both domains. As a result, emotional rapport may be weak, collaborative decision making ineffective, and patient motivation and commitment to adherence undermined [13,14]. Notably, patients used the psychosocial/lifestyle category with greater relative frequency than clinicians and consistent with their use of categories of emotional and partnership facilitation communication.

We further explored the consequence of patient-centered dialogue on patients' ratings of interpreter listening. Patient judgement of clinicians' listening skills has been used in a number of studies to reflect the patient-centered dimension of being heard and feeling known [8]. We found that patient ratings of interpreter listening were positively associated

with interpreter conveyed patient-centered dialogue and we take this as both conceptual and predictive validation of the measure. The failure to find a relationship between the patient and clinician based measure of patient centeredness and patient ratings of interpreter listening is perhaps simply related to the limited ability of patients to judge conversations they cannot fully understand. This lack of finding does not suggest that what patients and clinicians directly express matters less than what is interpreted. We do not believe that is the case; as noted earlier interpreter mediation of the visit dialogue diminishes patient-centered dialogue but it is the patient and clinician exchange that provides the base of what is interpreted.

An interesting finding by Mead and Bower in their exploration of the predictive validity of the RIAS- based measure of patient centeredness was that patient-directed eye gaze was greater during consultations that were more patient centered [9]. We wonder if it could also be the case that eye contact was greater when interpreters conveyed more patient-centered dialogue to both patients and clinicians and that this nonverbal aspect of the interpretation process might heightened patient perceptions of interpreter listening.

Generalizability of our findings are limited to a single primary care practice based on a sample of 55 professionally interpreted visits in three languages. Nevertheless, our clinical setting serves a large, diverse urban population and the sample size is comparable to other studies of directly observed interpreted visits. The study languages reflect distinct sociocultural contexts of Chinese and Latino patients living in a large American city.

4.2. Conclusions

Interpreters convey substantially fewer statement than are directly expressed by patients and clinicians. Moreover, there is a pattern of lower conveyance of facilitative, psychosocial and emotional exchange relative to biomedical exchange. Cumulatively, the effect of interpreter mediation of the visit dialogue is lower levels of conveyed patient centeredness than that directly expressed by clinicians and patients. Levels of conveyed patient centeredness matters as it is predictive of patient ratings of interpreter listening and a reflection of a meaningful aspect of the patient's experience of care.

4.3. Practice implications

The provision of interpreter services enhances access and reduces disparities for vulnerable patients. Nevertheless, a degree of patient centeredness is 'lost' in the interpretation process. Greater awareness of the consequences of interpreter mediation of medical dialogue may point to ameliorative steps. We urge broadening interpreter training to more fully appreciate the importance of dialogue that captures patient-centered elements of communication and strategies to effectively convey these types of talk. It is also important to recognize the role of active listening and non-verbal sensitivity in accurately identifying patient emotion as part of the interpretation process. There is substantial evidence that training in interpersonal sensitivity is effective [15–17]. In this regard, we believe that both interpreter and clinician training could be effectively broadened to increase interpersonal accuracy in meaningful ways that enhance patient care.

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References

[1]. Rathert C, Wyrwich Md, Boren Sa, Patient centered care and outcomes: a systematic review of the literature, Med Care Res Rev70 (2013) 351–379. [PubMed: 23169897]

[2]. Duggan PS, Geller G, Cooper LA, Beach MC, The moral nature of patient-centeredness: is it “just the right thing to do”?Patient Educ Couns62 (2006) 271–276. [PubMed: 16356677]

[3]. Karliner LS, Pérez-Stable EJ, Gregorich SE, Convenient access to professional interpreters in the hospital decreases readmission rates and estimated hospital expenditures for patients with limited English proficiency, Med Care55 (2017) 199–206. [PubMed: 27579909]

[4]. Karliner LS, Jacobs EA, Chen AH, Mutha S, Do professional interpreters improve clinical care for patients with limited English proficiency? A systematic review of the literature, Health Serv Res42 (2007) 727–754. [PubMed: 17362215]

[5]. Mead N, Bower P, Patient centeredness: a conceptual framework and review of the empirical literature, Soc Sci Med51 (2000) 1087–1110. [PubMed: 11005395]

[6]. Langberg Em, Dyhr L, Davidsen As., Development of the concept of patient centeredness - A systematic review, Patient Educ Couns102 (2019) 1228–1236. [PubMed: 30846206]

[7]. Epstein RM, Franks P, Fiscella L, et al., Measuring patient-centered communication in Patient-Physician consultations: theoretical and practical issues, Soc Sci Med61 (2005) 1516–1528. [PubMed: 16005784]

[8]. Epstein RM, Street RL Jr., The values and value of patient-centered care, Ann Fam Med9 (2011) 100–103. [PubMed: 21403134]

[9]. Mead N, Bower P, Measuring patient centeredness: a comparison of three observation-based instruments, Patient Educ Couns39 (2000) 71–80. [PubMed: 11013549]

[10]. Roter Dl,Hall Ja., Physician gender and patient centered communication: a critical review of empirical research, Annu Rev Public Health25 (2004) 497–519. [PubMed: 15015932]

[11]. Sleptsova M, Weber H, Schöpf Ac, et al., Using interpreters in medical consultations: What is said and what is translated–a descriptive analysis using RIAS, Patient Educ Couns100 (2017) 166–171.

[12]. Theys L, Krystallidou D, Salaets H, Wermuth C, Pype P, Emotion work in interpreter-mediated consultations: a systematic literature review, Patient Educ Couns103 (2020) 33–43. [PubMed: 31431309]

[13]. Haskard Zolnierek KB, DiMatteo MR, Physician communication and patient adherence to treatment: a meta-analysis, Med Care47 (2009) 826–834. [PubMed: 19584762]

[14]. Roter DL, Hall JA, Communication and adherence: moving from prediction to understanding, Med Care47 (2009) 823–825. [PubMed: 19584758]

[15]. Hall JA, Ship AN, Ruben MA, Curtin EM, Roter DL, Clever SL, Smith CC, Pounds K, Clinically relevant correlates of accurate perception of patients’ thoughts and feelings, Health Commun20 (2014) 1–7.

[16]. Blanch-Hartigan D, Andrzejewski SA, Hill KM, The effectiveness of training to improve person perception accuracy: a meta-analysis, Basic Appl Soc Psychol34 (2012) 483–498.

[17]. Schlegel K, Vicaria IM, Isaacowitz DM, Hall JA, Effectiveness of a short audiovisual emotion recognition training program in adults, Motiv Emot41 (2017) 646–660.

Table 1

Family caregivers' facilitation of daily adult prescription medication use. Study participants and visit characteristics

Overall		**Cantonese**	**Mandarin**	**Spanish**
N = 55		*N* = 27	*N* = 17	*N* = 11
Patient characteristics				
Patient age (range)	72.2 (50–96)	71.1 (52–89)	74.5 (50–96)	71.2 (54–90)
Patient gender *n* (%)				
Female	35 (64%)	16 (59%)	10 (59%)	9 (82%)
Male	20 (36%)	11 (41%)	7 (41%)	2 (18%)
Usual PCP seen at recorded visit	36 (65%)	17 (63%)	12 (71%)	7 (64%)
Visits over past 12 months (range)	4.8 (1–13)	4.7 (1–13)	4.4 (1–11)	6.0 (1–12)
Duration of clinical relationship (years)	2.7	2.7	2.8	2.6
Insurance type				
Private	2 (4%)	1 (4%)	0	1 (9%)
Medicare	42 (76%)	20 (74%)	14 (82%)	8 (73%)
Medi-Cal	11 (20%)	6 (22%)	3 (18%)	2 (18%)
Number of co-morbidities (range) *	3.1 (0-9)	3.0 (0-7)	2.1 (0-6)	5.0 (0 -9)
Education *				
< HS	31 (56%)	19 (70%)	4 (24%)	8 (73%)
HS diploma	9 (16%)	5 (19%)	2 (12%)	2 (18%)
Some college	6 (11%)	1 (4%)	5 (29%)	0
≥ College degree	9 (16%)	2 (7%)	6 (35%)	1 (9%)
Visit characteristics				
Visit length in minutes (range)	31.4 (16.0–72.2)	29.6 (16.0–52.6)	32.0 (19.9–46.5)	35.1 (19.4–72.2)
Patients accompanied n (%)	19 (35%)	11 (41%)	4 (24%)	4 (36%)

* significant difference between language groups <.05.

Table 2

Total visit statements by clinicians, interpreters-as-clinicians, patients, and interpreters-as-patients.

	Overall predicted means (factor change)	Cantonese predicted means (factor change)	Mandarin predicted means (factor change)	Spanish predicted means (factor change)
All clinician statements	218.00	197.36	217.70	241.11
All interpreter-as-clinician statements	96.63	97.83	108.82	84.75
Factor change coefficient	2.26****	2.02****	2.00****	2.85***
All patient expressed talk	131.17	108.98	132.95	155.74
All interpreter-as-patient	75.52	73.20	78.43	75.01
Factor change coefficient	1.74****	1.49****	1.70****	2.08****

Factor change coefficients represent the ratio of clinician-expressed coded statements or patient- expressed coded statements to corresponding interpreter-conveyed coded statements.

Covariates included visit language, clinician and patient gender, patient age, visit length, patient education, Faculty status, comorbidity count, clinician seen at visit was patient's PCP and patient accompanied at clinic visit by a caregiver (yes/no).

p-values:

* <.05;

** <.01;

*** <.001;

**** <.0001.

Table 3

Differences in categories of clinician expressed and interpreter-as-clinician conveyed statements

	Overall predicted means (factor change)	Cantonese predicted means (factor change)	Mandarin predicted means (factor change)	Spanish predicted means (factor change)
Medical information				
Clinician expressed	45.77			
Interpreter conveyed	35.91			
Factor change coefficient	1.27****			
Medical questions				
Clinician expressed	17.55	15.66	20.73	16.65
Interpreter conveyed	12.42	13.17	17.92	8.12
Factor change coefficient	1.41****	1.19*	1.16	2.05****
Psychosocial/lifestyle Information				
Clinician expressed	1.37			
Interpreter conveyed	1.30			
Factor change coefficient	1.06			
Psychosocial/lifestyle Questions				
Clinician expressed	1.29			
Interpreter conveyed	1.07			
Factor change coefficient	1.21			
Emotional Statements				
Clinician expressed	13.37	9.94	10.05	23.96
Interpreter conveyed	7.15	6.08	6.58	9.15
Factor change coefficient	1.87****	1.64****	1.53***	2.62****
Partnership/facilitation				
Clinician expressed	34.95			
Interpreter conveyed	11.18			
Factor change coefficient	3.12****			

Factor change coefficients represent the ratio of clinician expressed to corresponding interpreter-as-clinician conveyed statements.

Covariates included visit language, clinician and patient gender, patient age, visit length, patient education, Faculty status, comorbidity count, clinician seen at visit was patient's PCP and patient accompanied (yes/no).

p-values:

* <.05;

** <.01;

*** <.001;

**** <.0001.

Table 4

Differences in categories of patient expressed and interpreter-as-patient conveyed statements.

	Overall predicted means (factor change)	Cantonese predicted means (factor change)	Mandarin predicted means (factor change)	Spanish predicted means (factor change)
Medical information				
Interpreter conveyed	41.95			
Patient expressed	30.11			
Factor change coefficient	1.39***			
Medical questions				
Patient expressed	4.71			
Interpreter conveyed	5.89			
Factor change coefficient	0.80**			
Psychosocial/lifestyle Information				
Patient expressed	6.47			
Interpreter conveyed	4.30			
Factor change coefficient	1.51*			
Psychosocial/lifestyle questions				
Patient expressed	0.03			
Interpreter conveyed	0.03			
Factor change coefficient	0.97			
Emotional statements				
Patient expressed	9.05	6.25	10.47	1.31
Interpreter conveyed	5.92	4.90	7.67	5.52
Factor change coefficient	1.53****	1.28*	1.36**	2.05***
Partnership/facilitation				
Patient expressed	5.21	3.69	7.11	5.40
Interpreter conveyed	3.25	3.17	4.01	2.70
Factor change coefficient	1.60***	1.16	1.77***	2.00**

Factor change coefficients represent the ratio of patient expressed to corresponding interpreter-as-patient conveyed statements.

Covariates included visit language, clinician and patient gender, patient age, visit length, patient education, Faculty status, comorbidity count, clinician seen at visit was patient's PCP and patient accompanied (yes/no).

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p-values:

* <.05;

** <.01;

*** <.001;

**** <.0001.

Table 5

Differences in patient and clinician based and interpreter conveyed patient-centered dialogue.

	Overall speaker predicted means	Cantonese predicted means	Mandarin predicted means	Spanish predicted means
Patient and clinician based patient-centered dialogue	0.61	0.56	0.50	0.76
Interpreter-conveyed patient- centered dialogue	0.49	0.47	0.43	0.57
Est. mean difference	0.12****	0.09**	0.08*	0.19***

The patient and clinician measure of patient-centered dialogue is operationally defined as the ratio of both patient and clinician psychosocial/lifestyle information and questions, emotional statements, facilitating/partnering statements, and patient medical questions *relative* to patient and clinician information related to medical history, medical condition, symptoms, treatment and testing, and clinician medical questions.

The interpreter-conveyed measure of patient-centered dialogue is operationally defined in as the ratio of both interpreter (as patient and clinician) psychosocial/lifestyle information and questions, emotional statements, and facilitative/partnership statements, and interpreter-as-patient medical questions *relative* to interpreter (as patient and clinician) biomedical statements related to the patient's medical history, medical condition, symptoms, treatment and testing, and interpreter-as clinician medical questions. Covariates included clinician and patient gender, patient age, visit length, patient education, faculty status, co-morbidity count, clinician seen at visit was patient's PCP and patient accompanied (yes/no).

p-values:

* <.05;

** <.01;

*** <.001;

**** <.0001.