INNOVATIONS IN EM PRACTICE

The design and pilot of a translation aid to help ED clinicians enhance communication with the Portuguese-speaking patient

Alice Han · Humberto Laranjo · Steven M. Friedman

Abstract

Background Language barriers hinder health care delivery in settings with culturally diverse populations. Interventions to accommodate non-English-speaking patients have been shown to shorten length of stay and reduce non-urgent visits.

Aims Our aim was to design and do a pilot study on an instrument to facilitate history taking with Portuguese-speaking patients in the emergency department (ED).

Methods An instrument was designed to facilitate history taking with Portuguese-speaking patients (PSPs). A pocket-sized document incorporated, bilingual, problem-oriented, closed-ended questions for common ED presentations as well as numbers, measurements of time, and anatomy. A paired audio tutorial on a compact disk (CD) demonstrated correct pronunciation of each phrase. A 3-month pilot was undertaken in a downtown teaching hospital on a convenience sample of PSPs who indicated the need for a translator at triage. A trained Portuguese-speaking observer monitored clinician/patient pairs using the instrument and scored differential patient comprehension in a standardized manner. Qualitative patient and clinician impressions were assessed. A follow-up survey assessed emergency physician (EP) impressions of the instrument.

Results Eight of nine eligible clinician/patient pairs were enrolled. The average proportions of questions answered appropriately in English and then using the instrument were 16.7% and 85.5%, respectively, with mean improvement of 68.8% (confidence interval: 45.6–92.1). Most (7/8) patients agreed that the instrument had helped in communication. Half (4/8) of the clinicians indicated that the tool had helped them communicate, and most (7/8) indicated that they would use the instrument in the future. Few (2/17) physicians utilized the audio guide. Suggested modifications included incorporation of phonetics.

Conclusions The pilot of the instrument was well received by patients and resulted in improved communication.

Keywords Emergency · Language · Communication barriers · Translation · Portuguese

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Introduction

Language barriers (LBs) hinder health care delivery in settings with culturally diverse populations. LBs decrease access to primary and preventive care [1], patient comprehension, and patient satisfaction [2]. The implications of LBs may be greatest in the emergency department (ED). Often considered the "safety net" for the health care system, EDs are used disproportionately by non-English speakers facing barriers to conventional forms of primary care within the health care system [3–8]. ED care is characterized by brief encounters between health care staff and patients [9] and

is increasingly pressured by ED overcrowding [10], increased patient volumes [11], and relative understaffing, all of which hamper optimal physician-patient communication.

Non-English-speaking patients have cited language as the single greatest barrier to health care in the ED [12]. LBs have been reported to increase ED visit times [13], impede diagnoses [14], and possibly lead to inappropriate medication and hospitalization [12]. They may decrease patient compliance upon discharge from the ED and lower comprehension levels of discharge instructions [15, 16]. Interventions to accommodate non-English-speaking patients have been shown to shorten length of stay and reduced non-urgent visits [17].

The handful of ED interventions employed to bridge LBs all have limitations. Cost constraints often limit the availability of in-house language interpreters to weekday business hours. Patients are often less satisfied with such intermediaries than when speaking directly to the physician, and training physicians in communication skills has been advised [18]. Telephone translation services are effective, but introduce a third party, and can be costly. Websites and computer programs that translate common medical vocabulary are frequently cumbersome to use [19, 20]. Hospital employees and family members serving as unskilled translators compromise patient confidentiality and raise potential for medical misunderstanding from using an unskilled translator, who may be reluctant to relay bad news or embarrassing questions to the patient [21].

We designed and pilot tested a brief language education and translation aid for physicians in the ED, as a practical and economical adjunct to currently available strategies. The primary objective of this pilot study was to assess whether the ability of the ED clinician to speak limited Portuguese could enhance emergency physician (EP) ability to obtain a directed medical history among non-English-speaking Portuguese patients. A secondary objective was to investigate clinician and patient perceptions of this intervention. This study represents the first of its kind within Canada, and the first of its kind in Portuguese in North America.

Methodology and methods

Study design The protocol was piloted over a 3-month period in the ED of Toronto Western Hospital, University Health Network, a quaternary care inner city teaching hospital with 42,000 ED visits per year. The hospital is situated in an ethnically diverse community with immigrants from Portugal, China, and Latin America, and approximately 49% of ED patients speak a language other that English as a first language. Portuguese is the most common non-English first language (17% of ED patients) [22].

The study protocol was approved by the hospital Research Ethics Board. All consent forms for patients were available in Portuguese, and a Portuguese-speaking research assistant was available to assist if the patient was illiterate.

Inclusion criteria Patients eligible for recruitment were those over the age of 17 who registered in the ED as a Portuguese-speaking patient (PSP) and indicated requiring an interpreter. Patients were excluded if they required urgent treatment, had a decreased level of consciousness, were intoxicated or otherwise unable to provide informed consent, or were in police custody. ED clinicians were eligible (EPs, nurse practitioners, residents, and senior medical students) if they were working in the ED and did not speak Portuguese.

The protocol consisted of (1) development of a paper-based, problem-oriented language translation aid and companion audio compact disk (CD) demonstrating proper pronunciation of the text in Portuguese, (2) distribution of the instrument and audio CD to ED clinicians for home practice, (3) piloting the instrument at bedside, with post-application survey of patient and clinician, and (4) post-pilot evaluation survey to assess EP impressions of the instrument.

Language education instrument The language instrument consisted of two components: the paper translation instrument and the CD audio guide. (A) Paper instrument: A pocket-sized, foldable brochure (Figs. 1 and 2) was designed to facilitate taking a problem-based history with PSPs in the ED. All phrases were printed as Portuguese and English pairs and employed closed-ended questions designed to prompt responses that were clinically meaningful to the non-Portuguese-speaking questioner, i.e., with yes/no answers, a numeric response, or pointing to a region. Questions and content were formulated by an ED physician (SMF), reviewed by two independent EPs for face and content validity, and translated by a bilingual, native Portuguese-speaking ED nurse (HL). The first column of the instrument translated basic greetings. Each subsequent column facilitated a functional inquiry and history for a common system complaint in the ED, including: cardiac, respiratory, abdominal complaints/genitourinary/gastrointestinal, laceration/minor injury, and headache. An additional column translated anatomy and measurements of time (numbers, telling the time, information to specify dates, such as the days of the week, months, and years).

(B) Audio guide: The purpose of the audio guide was to reinforce proper Portuguese pronunciation. Audio clips were created for each Portuguese phrase by a native Portuguese-speaking ED nurse (HL). The CD audio guide graphically reproduced the pocket brochure, with "icons" alongside the text that would play the spoken Portuguese text upon a mouse click.

(Microphone Icons appear on CD version and play Portuguese text upon mouse click)

Fig. 1 Front: reference card for English/Portuguese problem-oriented ED history.* (Microphone icons appear on CD version and play Portuguese text upon mouse click)

The CD was placed in the ED mailbox of each EP (*n*= 30) and over a 3-week period, EPs were sent regular weekly e-mail reminders, along with an electronic copy of the paper instrument, describing the upcoming pilot and encouraging review of the instrument and audio guide. Though clinicians were encouraged to orient themselves to the CD contents, failure to do so would not preclude study participation.

Bedside piloting and scoring A convenience sample of approximately 15 piloting shifts, determined by the researcher/observer (AH), covered a distribution of days, evening, nights, weekdays, and weekends. Eligible patients and their attending clinicians were identified by the ED triage nurse, ED charge nurse, and ED clinician, upon being informed by the researcher that piloting was occurring for the next period of 4–6 h.

During data collection shifts, a trained Portuguese-speaking researcher (AH) recruited eligible patients and their clinicians for informed consent and enrollment in the study. Participating clinicians were instructed to use the instrument for obtaining a history from the patient. They could select any questions they chose from the printed instrument, but were to ask each question first in English and then in Portuguese. (Each patient thus served as his or her own control.) The observer scored the response to each question (first in English, then in Portuguese) as to whether it yielded a response that was appropriate for the question asked and comprehensible to the non-Portuguese-speaking clinician. (For example, for the question "Are you having chest pain?" an indication in the positive or affirmative would be deemed appropriate; a response that did not speak directly to the question, i.e., "I'm short of breath" or "It's okay" would not be regarded as appropriate). Physicians were permitted to terminate use of the instrument at their discretion. After completion of history taking, both patient and physician were interviewed in a standardized manner regarding the intervention's effectiveness in assisting with communication.

Post-pilot evaluation After termination of the data collection period, an electronic follow-up survey of all ED clinicians initially recruited for participation was undertaken over a 2-week period to further elaborate barriers to communication in the ED, EP compliance with the study protocol, and physician impressions of the instrument

Statistical analyses Statistical analysis was performed using MS Excel and Stata. A thematic content analysis was performed on responses to open-ended questions on the surveys of both patients and clinicians. To identify common words and themes, frequencies of all the words

Respiratory Complaint
- ☐ Have you been coughing?
- ☐ *Voce tem tossido?* 🎤
- ☐ Do you cough up sputum? Blood?
- ☐ *Voce tosse escarro ou sangue?* 🎤
- ☐ Do you have a hx of asthma? Chronic bronchitis? Emphysema? Tb? Heart probs?
- ☐ *Voce tem historia de asma? Bronchite cronia? Emfasema? Tuberculose? Doencas de coracao?* 🎤
- ☐ Do you take puffers? Can you show me? How many times per day?
- ☐ *Tem bomba para a asma? Pode- me mostrar? Quantas vezes usa por dia?* 🎤
- ☐ Do you smoke? How many packs in one week? For how many years?
- ☐ *Voce fuma? Quantos macos por semana? Ha quantos anos fuma?* 🎤
- ☐ Have you had a fever or night sweats?
- ☐ *Teve febre ou suor durante a noite?* 🎤
- ☐ Have you ever had a blood clot in your legs or your lungs?
- ☐ *Voce alguma vez ja teve um coagulo de sangue nas suas pernas ou nos pulmaoes?* 🎤

Laceration / Minor injury
- ☐ Point to where it hurts.
- ☐ *Iindique onde sente a dor.* 🎤
- ☐ Have you had a tetanus shot in the last ten years.
- ☐ *Recebeu vacina de tetano nos ultiomos dez anos?* 🎤
- ☐ How many hours ago did this happen?
- ☐ *Isto aconteceu ha quantas horas atras?* 🎤

Abdominal Pain/ GI/ GU
- ☐ Point to where it hurts most.
- ☐ *Indica com um dedo onde doi mais.* 🎤
- ☐ Any Nausea or vomiting?
- ☐ *Sente alguma nausea ou vomitou?* 🎤
- ☐ Any Diarrhea?
- ☐ *Tem diarreia?* 🎤
- ☐ Black or bloody bowel movements?
- ☐ *Tem tido coco preto ou com sangue?* 🎤
- ☐ When was your last bowel movement?
- ☐ *Quando foi a ultima vez que fez coco?* 🎤
- ☐ Can you pass gas?
- ☐ *Voce pode passar gas?* 🎤
- ☐ Any burning when you pass urine? Are you peeing more often than usual?
- ☐ *Quando voce passa urina, sente queimar? Voce esta passando urina mais frequentemente do que normal?* 🎤
- ☐ Do you have a hx of kidney stones? Bowel obstruction? Diverticulitis? IBD? Surgery? Ulcers? Liver problems?
- ☐ *Sofre de pedras de rim? Obstrucao de tripas? Infecao nos intestinos? Operacoes? Ulceras? Doencas de figado? Pedras na visicula?* 🎤
- ☐ How many alc drinks do you have / day?
- ☐ *Quantos bebidas alcolicas toma por dia?* 🎤
- ☐ Have you ever had surgery on your abd?
- ☐ *Ja fez alguma operacao ao seu abdomen?* 🎤
- ☐ Have you had your appendix removed?
- ☐ *Voce foi operado ao seu apendice?* 🎤

Headache
- ☐ Point to where it hurts (front or back)
- ☐ *Indica com um dedo onde doi (em frente ou atras)* 🎤
- ☐ Did the headache come on all of sudden, over a second?
- ☐ *A dor de cabeca comeceu de repente, em questao de um segundo?* 🎤
- ☐ Do you often have headaches?
- ☐ *Tem dor de cabeca frequentemente?* 🎤
- ☐ Have you had a headache like this before?
- ☐ *Voce ja teve uma dor de cabeca como esta?* 🎤
- ☐ Does the light bother your eyes?
- ☐ *A luz chateia os seus olhos?* 🎤
- ☐ Is your neck stiff?
- ☐ *Seu pescoco esta tenso?* 🎤
- ☐ Does the headache wake you up?
- ☐ *A dor de cabeca acorda-te?* 🎤
- ☐ Did you injure your head?
- ☐ *Feriu a sua cabeca?* 🎤
- ☐ Are you on aspirin or blood thinners?
- ☐ *Voce esta tomando aspirina ou alguma medicina para diluir o seu sangue?* 🎤
- ☐ Did you take any medication for this headache?
- ☐ *Ja tomou alguma medicina para esta dor de cabeca?* 🎤
- ☐ Have you seen a doctor about headaches before?
- ☐ *Antes de hoje, ja foi ao medico por dores de cabecas?* 🎤

Numbers (1-10) 🎤
Um (uma)	*seis*
Dois (duas)	*sete*
Tres	*oito*
Quatro	*nove*
Cinco	*dez*

Days of the week
m *Segunda-feira*	fr *sexta-feira*
t *Terca-feira*	sa *sabado*
w *Quarta-feira*	su *domingo*
th *Quinta-feira*	

Months
Janeiro	*julho*
Fevereiro	*agosto*
Marco	*setembro*
Abril	*outubro*
Maio	*novembro*
Junho	*dezembro*

🎤 Wave Sound

Time units

Seconds, minutes, hours, days, weeks, months, years)
(segundos, minutos, horas, dias, semanas, meses, anos) 🎤 Wave Sound

*(Microphone Icons appear on CD version and play Portuguese text upon mouse click)

Fig. 2 Rear: reference card for English/Portuguese problem-oriented ED history.* (Microphone icons appear on CD version and play Portuguese text upon mouse click)

contained in the responses to this question in the database were tabulated to identify frequently occurring words.

Results

Sampling Eleven patients were eligible to participate in the study. Two patients were excluded for reasons of mental competence (psychiatric presentation), and one patient was excluded because the attending physician declined participation in the study. Eight clinician/PSP pairs completed the pilot (five emergency physicians, one emergency department nurse practitioner, one intern, and one senior medical student.)

Effectiveness of tool The average proportions of questions answered appropriately in English and then in Portuguese were 16.7% and 85.5% respectively, with mean improvement of 68.8% (confidence interval: 45.6–92.1) (see Fig. 3).

Perceptions of tool The majority of patients (7/8) agreed or strongly agreed that the language tool helped them to communicate with the clinician. The majority of patients (5/8) indicated approval of the tool, indicating that it was helpful ($n=2$), made them feel more comfortable ($n=2$), and should be expanded ($n=1$) (see Table 1).

None of the clinicians had reviewed the audio CD prior to using the language translation tool at the bedside. However, half of the clinicians (4/8) agreed or strongly agreed that the tool helped them to communicate, though two were neutral and two disagreed that the instrument would help them in the future. Most physicians (7/8) agreed or strongly agreed that they would want to use the tool in the future. Physicians expressed difficulties with Portuguese language pronunciation (Table 1).
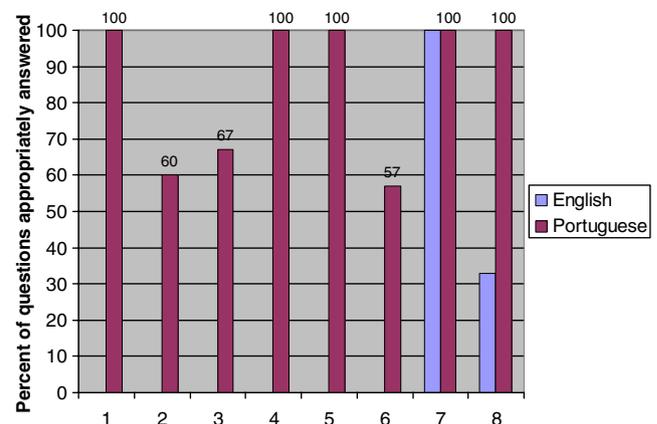
Fig. 3 Enhanced patient ability to provide medical history using language tool ($n=8$ patients, 46 English-Portuguese language pairs)

Table 1 Thematic analysis: patient and clinician perspectives on the instrument

Words used to identify themes expressing patient perception about the instrument (*n*=5)

Theme		Keywords
Intervention is helpful	2	"Will help people who can't speak English."
Intervention was comforting	2	"It made me feel good when he spoke Portuguese."
Intervention should be expanded	1	"All doctors should try to learn more than one language."
Words used to identify themes expressing clinician perception about the instrument (*n*=7)		
Issues with pronunciation	3	"Pronunciation is tricky!"
Good tool	2	"Good tool."
Cumbersome	1	"A bit cumbersome."
Tool not useful because patient understood English well	1	"This particular patient understood English very well. The tool was thus less useful."

Follow-up physician survey The response rate to the post-study survey was high (*n*=25/30 surveyed). In the needs analysis component of the survey, all EPs (*n*=25) indicated that LBs hindered communication with non-English-speaking patients, most (23/25) felt that overcoming the Portuguese LB in particular would enhance care efforts, and few (3/25) were satisfied with current modalities available to communicate with non-English-speaking patients.

The majority of emergency physicians (20/25) had read the pre-study e-mails introducing the study, though only two thirds (16/25) had reviewed the attached document copy of the language translation instrument, and few (2/25) tried the sound clips on the audio CD.

Free text clinical comments included apprehension regarding potential "false understanding" created by translation aids, a suggestion for incorporation of phonetic texts in the instrument, and an expression of dissatisfaction with the suggestion of acquiring language skills to accommodate non-English-speaking patients without their own interpreter.

Discussion

This study piloted an innovative intervention to improve communication with a subset of non-English-speaking patients in the ED. The intervention was well received by patients and physicians and resulted in improved communication despite suboptimal physician preparation. Our study supports previous literature indicating the beneficial impact of attempting cultural competency [17]. Patients were extremely appreciative of EP attempts at language competency, despite the fact that the clinician spoke only a limited number of phrases in Portuguese. This model has the potential to be utilized with other languages and is easily adaptable for use in other EDs.

Other interventions designed to bridge LBs in the ED have been described. Bischoff et al. utilized brief training aimed at communicating with foreign-language patients and working with interpreters and demonstrated improved quality of communication as perceived by patients [23]. Koff et al. developed a medical Spanish website for use in the ED, utilizing phrases and sound clips to facilitate history taking [19]. Mazor et al. demonstrated that a 10-week Spanish course for pediatric emergency physicians was associated with decreased interpreter use and increased family satisfaction [24].

Brief language instruction is associated with hazards as well as benefits. An intervention in the USA assessed eight PGY1 emergency medicine residents who underwent a 45-h medical Spanish course in their first residency month. Upon completion, major errors, such as misunderstanding of duration of symptoms and misunderstanding of vocabulary, were found in 14% of 34 subsequent physician-patient interactions by these residents over 6 months. The authors caution that although medical language courses may be a useful adjunct to interpreters, they are not designed to replace them, and that significant errors may occur when participants in such courses assume their knowledge is sufficient to obtain a good history, give patient release instructions, and provide medical care in general without an interpreter present [25].

Pronunciation of even short Portuguese phrases is difficult to master and requires practice by clinicians to be successful. Shortening and simplifying several of the phrases may be beneficial. Although the tool employed close-ended questions constructed to elicit meaningful responses to the non-Portuguese speaker, patients would occasionally respond with long narratives that were incomprehensible to the clinician. A possible solution might be to design questions even more strictly close-ended than they presently are and to make available to the clinician the translated phrase "Please answer with only yes or no, or a number."

Limitations of the study include small sample size and poor staff recruitment. Small sample size in this pilot study related chiefly to an unusually low number of ED patients who met the inclusion criteria, and possibly incomplete recruitment of eligible patients by the triage nurse and ED clinician given time constraints. (A repeat study with a

revised instrument and larger sample size will allow for more meaningful statistic analysis.) Poor staff compliance with practicing with the audio CD prior to bedside pilot of the instrument limited usefulness of the communication tool, and inclusion of phonetic pronunciation on the printed instrument might have mitigated this weakness. Clinician indication of support for using the tool with future patients may promise greater compliance with practicing with the audio guide and greater success with the instrument after successful use. Having patients translate back the question to a bilingual observer would have further confirmed their comprehension and appropriateness of response.

Conclusion

Language barriers, patient fear, and apprehension impede optimal care. Attempts at cultural competency may go far in enhancing the patient's positive impression of the encounter with the clinician, reducing patient stress, and helping the clinician to more easily elicit patient concerns. Improving language concordance even by learning a few key phrases is likely to have a positive impact on clinical care and demonstrates concern and respect for the patient.

Conflicts of interest None.

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