Observational study on resource utilisation of patients with limited English proficiency (LEP) at a high-LEP serving community hospital emergency department

Matthew Mo Kin Kwok,[1,2] Ryan Sandarage,[1] Manjot Kahlon[1]

[1]The University of British Columbia Faculty of Medicine, Vancouver, British Columbia, Canada
[2]Vancouver Coastal Health Authority, Vancouver, British Columbia, Canada

Correspondence to
Dr Matthew Mo Kin Kwok;
Matthew.kwok@vch.ca

ABSTRACT

Communication barriers often result in healthcare disparities. Language barriers in patients with limited English proficiency (LEP) frequently results in higher healthcare expenditures and potentially poorer patient-centred outcomes. Therefore, we decided to assess resource utilisation of patients with LEP at our high-LEP serving community hospital emergency department (ED) in Canada. Specifically, we examined whether LEP patients have a higher rate of CT utilisation and/or a higher rate of hospital admission from the ED.
We enrolled 100 patients who presented to the ED in our study. Each patient's English proficiency was rated. We classified 31 patients as LEP patients and 69 patients as non-LEP patients. Within the LEP patients' group, 13 out of 31 patients (42%) received a CT scan, while in the non-LEP patients' group, 30 out of 69 patients (43%) received a CT scan. In addition, 28 out of 31 patients (90%) from the LEP patients' group were admitted to the hospital after the initial ED consultation, while in the non-LEP patients' group, 51 out of 69 patients (74%) were admitted.
We did not find a difference in CT scan utilisation between LEP and non-LEP patients (p=0.89). Although there is a trend towards a higher hospital admission rate in LEP patients, our finding was not statistically significant (p=0.062).

INTRODUCTION

Language barriers have been known to impact healthcare in the emergency department (ED) setting. Patients with limited English proficiency (LEP) often have difficulty communicating with healthcare providers and vice versa. Previous studies have reported that communication barriers potentially result in more expensive healthcare and poorer patient-centred outcomes. For example, in one study, LEP patients who presented to the ED received three times more abdominal CT than non-LEP patients.[1] In the USA, LEP patients have been found to experience increased rates of diagnostic testing and hospital admission.[2] In Canada, LEP patients have also been found to have

an increased hospitalisation rate and length of hospital stay.[3] Despite the above studies, knowledge of resource utilisation of LEP patients remains sparse. Resource utilisation appears to be variable among different LEP patient groups and healthcare settings.[2] In addition to the interpretation and translation cost, the potential increase in healthcare resource utilisation could result in increased healthcare expenditures. Especially in a public-funded medical system such as one in Canada, understanding resource utilisation

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Patients with limited English proficiency (LEP) often struggle to communicate effectively with healthcare providers and vice versa. Previous studies have shown that communication barriers often result in more costly healthcare in addition to the interpretation and translation costs. There has also been reports that increased rate of diagnostic testing and hospital admission are potentially brought about by language barriers in different hospital settings.

WHAT THIS STUDY ADDS

⇒ In this study, we examined whether patients with LEP have a higher rate of CT utilisation and/or a higher rate of hospital admission from a high-LEP serving community hospital emergency department in Canada. Although, there is a trend towards a higher hospital admission rate in LEP patients, our finding was not statistically significant. We did not find a difference in CT scan utilisation between LEP and non-LEP patients in our emergency department setting.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ We support robust interpretation and translation being available for patients with LEP. We encourage further studies to be done to evaluate resource utilisation of patients with LEP in different healthcare settings.

of LEP patients facilitates the appropriate allocation of healthcare funding and medical services for LEP patients.

Our hospital background is a high LEP-serving university-affiliated community teaching hospital located in Canada with approximately 60 000 annual emergency visits. According to the latest Canadian census, our city serves a unique community, with 76% belonging to a visible minority group, and 67% of the residents reported their mother tongue as languages other than English.[4] Furthermore, our hospital is the nearest hospital to a busy international airport. As a result, we frequently encounter LEP patients from other countries.

We have limited data on whether LEP patients have increased resource utilisation in addition to their interpretation and translation needs in our hospital setting. We hypothesised that LEP patients could potentially receive more diagnostic studies and are more likely to be admitted to the hospital due to communication barriers despite the availability of interpretation and translation.

METHODS
Participants
We conducted our study in the ED with prospective participants greater than 16 years of age. This is because in our health authority, patients 16 years old and under are considered paediatric patients and would need different consent process. Patients, who were 16 years old or under, could not communicate verbally or did not have the capacity to consent to participation were excluded from this study.

Procedures
We used a random number generator to generate a number within the number of patients in the ED. The randomised number generated corresponded to the prospective patient number on the ED tracking board. The prospective patient was then asked to participate in the study. If patient appears to have language barriers in understanding our request to participate in our study, a hospital-approved 'Interpreter on Wheels' was used for interpretation.[5] If consent was obtained, a standardised survey was used to ask basic demographic information, including age, gender, country of birth, number of years lived in Canada, mother tongue and educational level. In addition, we discussed our intent of collecting data on whether a CT scan was ordered and whether the patient was admitted to the hospital.

From the patient's ability to understand and answer questions without an interpreter, the patient was categorised as LEP if the patient was unable to communicate in English or had limited ability to communicate in English. The patient was categorised as non-LEP if the patient was native English speaking or English as a second language (ESL) but was able to communicate effectively in English. If the patient had LEP, the hospital-approved 'Interpreter on Wheels' was used for communication for the entire interview.

Data collection
Data on whether the patient had a CT scan during his/her ED visit and whether the patient was admitted to the hospital were obtained from electronic medical records. To maintain privacy and confidentiality, all patient data were deidentified and compiled locally on password-protected and encrypted computers.

Statistic analysis
We used χ^2 contingency table analysis to determine whether the frequency of CT scan utilisation and hospital admission was statistically similar or dissimilar between the categorised LEP and non-LEP patient groups.

Public involvement
Although patients were not involved in the design and recruitment of the study, the research question was developed from Vancouver Coastal Health Translation and Interpretation Working Group, which consists of members of community organisations involved in the care of patients with LEP.

Pilot study
A pilot study was conducted in the summer of 2021 to assess the feasibility of our study and the interpersonal reliability of categorising LEP and non-LEP patients. We used the above procedures to categorise 20 patients as LEP or non-LEP. We had one researcher interviewed the patient and categorise the patient. We then blinded the second researcher to conduct the same interview with the same patient. The blinded second researcher is then asked to categorise the patient the second time. We found a concordant rate of categorising LEP and non-LEP patients among three researchers at 85%. The pilot study was successful, and we did not make changes to our initial protocol.

RESULTS
Between October 2021 and February 2022, we enrolled 100 patients in our study. We categorised 31 patients as LEP and 69 patients as non-LEP.

The average age of LEP patients was 69 years old compared with 57 years old in the non-LEP group. The average number of years of LEP patients residing in Canada was 27 years. In the LEP patients' group, 32% received postsecondary education. The majority of the LEP patients listed their mother tongue as one of the Chinese dialects (67%): 32% Mandarin, 32% Cantonese and 3% other Chinese dialects. Other mother tongues listed in the LEP patients group included: 23% Punjabi, 3% Hindi, 3% Japanese and 3% Tagalog (figure 1).

Within the non-LEP patient group, 60% were categorised as native English speakers, and 40% were categorised as ESL but able to communicate well in English. Within the ESL group, 76% received postsecondary education. Mother tongue listed in the ESL group included 18% Mandarin, 14% Cantonese, 14% other Chinese dialect,
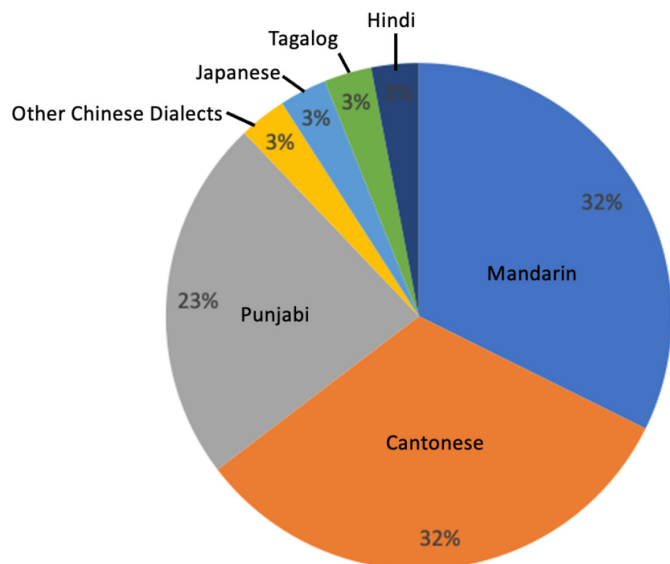
Figure 1 Mother tongue of limited English proficiency (LEP) patients studied.

11% Punjabi, 7% Russian, 7% Malay, 7% Tagalog, 7% Spanish, 4% German, 4% Hindi and 4% Urdu.

Within the LEP patients' group, 13 out of 31 patients (42%) received a CT scan, while in the non-LEP patients' group, 30 out of 69 patients (43%) received a CT scan. Within the LEP patients' group, 28 out of 31 patients (90%) were admitted to the hospital after the initial ED assessment, while in the non-LEP patients' group, 51 out of 69 patients (74%) were admitted (figure 2).

χ^2 contingency table analysis was used to determine whether the frequency of CT scan utilisation and hospital admission was statistically similar or dissimilar between the categorised LEP and non-LEP patients. We did not find a difference in CT scan utilisation between LEP and non-LEP patients (p=0.89). Although there is a trend towards higher admission rates in LEP patients, our finding was not statistically significant (p=0.062) (figure 3).

DISCUSSION

Language barrier poses an important challenge in the healthcare setting. In addition to interpretation and translation needs, we hypothesised that there could potentially be an increase in resource utilisation for LEP
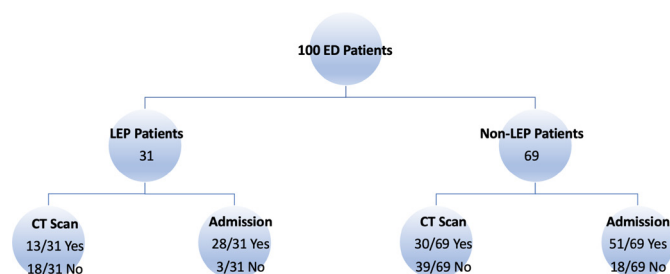

Figure 2 Breakdown of LEP vs. non-LEP pateints studed and their respective proportion who received CT scan and admission (ED, emergency department; LEP, limited English proficiency).
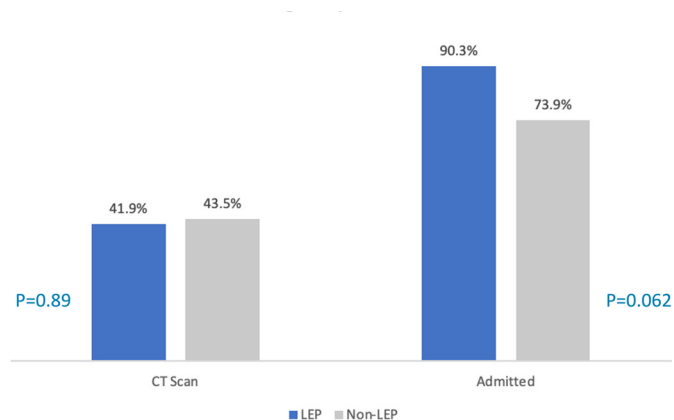

Figure 3 Percentage of LEP vs. non-LEP patients who received CT scan and admission (LEP, limited English proficiency).

patients because of communication barriers. More diagnostic testing and increased hospital admission likelihood could result from difficulties in history taking and miscommunication.

Despite previous studies demonstrating increased diagnostic testing and admission rates in LEP patients,[1–3] we did not find this in our patient population. We found similar CT scan rates between our LEP and non-LEP patients. Although we found a higher hospital admission rate among LEP patients, it was not statistically significant.

We believe there are several reasons we did not find significant differences in resource utilisation between our LEP and non-LEP patients. First, our robust interpretation and translation services in our ED may mitigate any diagnostic and/or treatment differences between the two studied groups. Our ED is an experienced high-LEP serving hospital, and we have access to two 'Interpreters of Wheels' 24 hours a day and 7 days a week.[5] Although we do not have data on what language our clinical staff communicated with the patients studied, we understand that many of our clinical staff can communicate with our LEP patients in their native language. As a result, the healthcare impact of communication barriers may be diminished.

Second, our study was conducted during the COVID-19 pandemic, when the CT scan rate and hospital admission rate were unusually high. As a result, we found that the acuity of our ED patient population was higher compared with the prepandemic level. Subsequently, there may be a bias towards investigations and admissions, resulting in the inability to detect a difference between LEP and non-LEP patients.

Third, another confounding factor is the difference in participants age between the two groups. Our LEP patient's group had an average age of 69 and non-LEP patient's group had an average age of 57. The trend towards higher admission rate may be the result of age discrepancy between the two groups, as older patients generally have a higher rate of hospital admission.

Fourth, our studied LEP patient population is unique compared with other LEP studied populations. In the Waxman and Levitt study, most of the LEP patients studied were Spanish speaking (31%).[1] In the Reaume *et al* study, the LEP population examined was French-speaking.[3] In the Schulson *et al* study, 38.7% of their LEP patients were also Spanish speaking.[2] Interestingly, subgroup analysis of Chinese-speaking LEP patients was not found to have increased diagnostic imaging or admission rates in the Schulson *et al* study. We could not find any published data specifically examining the Chinese-speaking LEP population. As our LEP patient population consisted of 67% Chinese-speaking patients, there may be cultural or socioeconomic reasons not examined in our study that affected our results.

CONCLUSIONS

Improving understanding of healthcare disparities because of language barriers in the ED is essential from the perspective of patient-focused clinical care and resource allocation in the healthcare setting. We examined CT scan utilisation and hospital admission rate in a Canadian community hospital ED setting between LEP and non-LEP patients. We did not find a difference in CT scan utilisation between LEP and non-LEP patients (p=0.89). Although there is a trend towards a higher hospital admission rate in LEP patients, our finding was not statistically significant (p=0.062). We believe a broader study postpandemic with higher number of patients should be considered to evaluate this important clinical question further.

Twitter Matthew Mo Kin Kwok @kwok_matthew

REFERENCES

1 Waxman MA, Levitt MA. Are diagnostic testing and admission rates higher in non-English-speaking versus English-speaking patients in the emergency department? *Ann Emerg Med* 2000;36:456–61.
2 Schulson L, Novack V, Smulowitz PB, *et al*. Emergency department care for patients with limited English proficiency: a retrospective cohort study. *J Gen Intern Med* 2018;33:2113–9.
3 Reaume M, Batista R, Rhodes E, *et al*. The impact of language on emergency department visits, hospitalizations, and length of stay among home care recipients. *Med Care* 2021;59:1006–13.
4 City of richmond, british columbia, canada website. n.d. Available: https://www.richmond.ca
5 Kwok MMK, Chan RK, Hansen C, *et al*. Access to Translator (at & T) project: interpreter on wheels during the COVID-19 pandemic. *BMJ Open Qual* 2021;10:e001062