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ORIGINAL ARTICLE

Utilization of Interpreter Services among Farsi Speaking Podiatric Patients and Adherence to the Pain Management Plan

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Background: Limited English Proficiency (LEP) patients encounter many health disparities and inequalities due to the lack of effective communication. The lack of effective communication places the LEP patients at higher risk for noncompliance with the treatment plan. Pain is one of the main common health issues and LEP patients have

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difficulties reporting their pain and adhering to the plan of care due to the lack of effective communication.

Methods: In this study we measured the effectiveness of using a professional interpreter during office visits for Farsi speaking LEP patients to improve pain management and adherence with follow up visits.

Results: In this single sample quasi-experimental study, sixteen Farsi speaking LEP participants who visited the Podiatry office for foot pain rated their pain level at the initial visit and after the intervention during the first follow up visit. Participants were provided with a professional Farsi speaking interpreter during the visit. Overall, patients reported lower levels of pain during the follow up visit ($\bar{x}=4.19 \pm 2.29$, 95% CI) compared with the initial pain levels ($\bar{x}=6.56 \pm 2.03$, 95% CI). Out of all the participants, 75% showed up for the follow up appointment, which demonstrated that most of the participants adhered to the plan of care.

Conclusions: The use of a professional interpreter during an office visit for LEP patients was associated with improved pain management outcomes and increased adherence to the treatment plan.

Keywords: LEP patients, Language barriers, Professional interpreter, Pain management, Treatment adherence

Limited English proficiency (LEP) is the restricted ability to read, speak, write, or understand English by patients for whom English is not their primary language (1). The

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increasingly diverse patient population challenges healthcare with “a triad of cultural, linguistic and health literacy barriers” (1). Limited English Proficiency (LEP) patients are a vulnerable underserved population in using healthcare services. LEP patients are faced with health disparities and inequalities due to not being able to speak and understand English properly (2).

In the United States LEP individuals encounter language barriers since health care is delivered in the English language (3). The study done by Sentell, Shumway and Snowden (2007) on adult Latino LEP patients receiving mental health services determined that 85% of non-English speaking Latino patients were less likely to receive mental health services compared to English-speaking patients. The study demonstrated that the LEP patients were at risk for health disparity and inequality (4).

Epidemiology

There are 25.1 million LEP individuals, which accounts for 9% of the United States population (5). According to the U.S. Department of Health and Human Services (2011), LEP patients are at risk for incorrect diagnosis, under treatment, noncompliance with treatment, lengthier hospital stays, and eventually costing healthcare organizations more money (6). California has 6.8 million LEP residents, which accounts for the highest number of LEP individuals in any one state in the nation (5).

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State of California Regulations

The federal law mandates the implementation of language rights in health care to address language barriers. The legal obligation to provide language interpretation services applies to all federal program institutions including health care (7). California state law necessitates that all health care providers offer and provide patients with information translated into their primary language and oral interpretation services (8). California Department of Health Care Services has also made it a requirement that all healthcare providers in various health care settings receive educational training focusing on language access and cultural skills and competency (9). An initiation by the State of California to address this issue is providing continuing education classes for healthcare professionals with the goal of increasing the clinician's support and use of language access services for LEP patients (10).

Adherence to the Treatment Plan

Language barriers and not using interpreters while receiving medical services can affect patients' perceived understanding of their disease and treatments and could lead to a low level of adherence to the treatment plan (11). Medical interpreter use is associated with higher LEP patients' satisfaction in communication with healthcare providers. Increased attention to the need for effective interpreter services is required in areas with rapidly growing LEP populations (12). Using interpreter services during care lowers the risk of insufficient treatment and decreases the rate of non-compliance with the treatment

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regimen (8). A study by Parker and associates (2017) revealed that utilization of interpretation services during care for LEP Latino patients with diabetes increased the patients' adherence level to treatment and made a significant improvement in their glycemic control (13).

The study done by Jacobs and associates (2001) on the adult Spanish speaking LEP patients of an out-patient family practice office demonstrated that using interpretation services increased the LEP patients' understanding of the treatment plan. Results of the study revealed that using medical interpreters increased LEP patients' adherence/compliance to the treatment plan. The study demonstrated that there was a significant increase in making follow up visits, medication refills/calls for medication refills and preventative health screenings in the LEP patients who used the translation services compared with the patients who did not (14).

Using interpreter services for LEP patients has the potential to reduce future health care expenses by early detection and prevention of the chronic diseases that require long-term, costly treatments and hospitalizations (11). The presence of Interpretation services reduces the likelihood of medical errors and serious medical events; it improves the quality of care for LEP patients. It also creates a culturally competent environment (15). The lack of effective communication and understanding of the care plan, treatment, or medications could potentially result in low levels of treatment compliance, and could lead to poor health outcomes, such as risks for being under treated, uncontrolled pain, and disease complications (16).

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Pain Management

Pain continues to be one of the most common medical issues among patients. The assessment and treatment of pain are largely based on the patient's self-reports about the intensity and quality of pain (17). LEP patients have difficulties communicating their pain symptoms due to language barriers and may hesitate to communicate their pain needs (18). Research studies revealed that language barriers in LEP patients at the end-life stage resulted in inadequate pain management, decreased quality of end of life care and palliative care delivery (19).

Jimenez and associates (2014) compared postsurgical pain assessment and pain management between the pediatric patients of Hispanic LEP parents and the pediatric patients of the English-speaking parents. The results demonstrated that the Spanish pediatric LEP patients received fewer pain assessments and were less likely to receive pain medication for the similar levels of pain compared with the English speaking pediatric patients. The LEP parents' language barrier and lack of effective pain communication with the care provider led to poor pain management of the Spanish LEP pediatric patient (20).

Effective provider-patient communication is necessary for effective pain assessment and pain treatment; consistent interpreter use improves communication between the LEP patient and the care provider and results in better outcomes for pain treatment (21). Jimenez and associates (2012) found the use of interpreters during medical care was associated with improved self-reported pain levels in LEP patients, and it

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enhanced clinical interactions for pain management and it helped with reduction in pain levels (17).

The Gap in Practice

Healthcare providers are often not aware about their legal obligations to provide language interpretation services for the LEP patients. This has led to a gap in practice when encountering LEP patients such that the consistent use of the professional medical interpreters by healthcare providers specifically in out-patient settings is “suboptimal” (22). LEP patients mostly use their friends or family members as interpreters instead of using trained medical interpreters. The friends/family members of the LEP patients are not qualified medical interpreters and they are not proficient with medical terminology (22).

Study Purpose

The purpose of this study was to implement the use of interpreter services during office visits in a Podiatric medicine practice in Sacramento, California, with Farsi-speaking LEP patients, to improve pain management and adherence with follow-up appointments.

Methods

Design

This study was a quasi-experimental study and used a single group repeated measures pre-test, post-test design.

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Setting

The study was implemented in an outpatient podiatry office at Sutter Health in Sacramento, California. The office was operated by two podiatrists and two medical assistants.

Interpreter

One of the study co-investigators participated as the medical interpreter during the office visits. The co-investigator worked as a Registered Nurse at the Sutter Health facility and was a certified medical interpreter, through Sutter Health, for the Farsi language. The co-investigator successfully completed and passed the Sutter E-learning Interpreter Training and medical terminology courses, which was required by Sutter Health policy (23). The co-investigator went through a series of Healthstream Interpreter Training courses provided by the Sutter Health system for cultural competency and communication and interpersonal skills for patients of diverse backgrounds, along with courses on the importance of providing language assistance for LEP patients.

Participants

The study participants for this study were Persian/Farsi speaking LEP patients in the Podiatry outpatient office in Sacramento, California. According to the U.S. Census Bureau, the Persian/Farsi language is the ninth most common language spoken in California (24).

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In the County of Sacramento about 35.2% of the Farsi speaking population are considered LEP individuals (24).

There were Farsi speaking LEP patients who visited the office and many of them had trouble understanding and communicating with healthcare providers. The Farsi speaking LEP patients were identified through the electronic medical records (EMR). The co-investigator contacted the patients prior to their regular office appointment with the podiatrist and asked if they would like to participate in the study. Sixteen Farsi speaking LEP patients were recruited to participate in the study. The inclusion criteria included adult Farsi speaking patients who visited the office for foot pain. The exclusion criteria included patients with hearing disabilities and patients diagnosed with cognitive disorders such as memory impairment, Alzheimer's disease and dementia. LEP patients with hearing disabilities and the caregivers for the patients with cognitive disorders were referred to other available language assistance services provided by the facility, such as telephone interpretation services.

Data Collection

The demographic data collected included age, educational level, marital status, yearly income, years lived in the United States, conditions causing foot pain, pain management strategy employment status and, if employed, whether their current job required prolonged standing (Table 1). The outcome data were collected on the LEP patients' pain

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level at their initial attendance and again at their first follow up visit to continue their care, after receiving interpreter services.

Each patient's pain level was measured with the Wong-Baker FACES Pain Rating Scale (Figure 1). The Wong-Baker pain FACES scale is a validated pain rating measure used by many healthcare organizations in the United States. It has been adapted to assess pain levels in adults. This tool was originally created for children to help them communicate their pain more effectively. The tool is now used worldwide for people over three years of age to facilitate and improve the communication of pain (25). The faces on the scale are easy to understand and are non-verbal indicators of pain severity and it is a useful tool for LEP patients to communicate pain severity (25). Each face on the scale has a corresponding number, for example number 0 is associated with the face that shows no pain and number 10 is associated with the face that indicates the worst possible pain. Patients were asked to identify their level of pain using the Wong-Baker Faces scale and to identify the face that described their pain level most accurately.

Patients were tracked for treatment adherence through their attendance at the first follow up appointment as recommended by the care provider. Tracking the follow up visits is a valid measure to determine whether the patient is adhering to the treatment plan (26). The Electronic Medical Record (EMR) was utilized to monitor the patient's attendance to the first follow up visit to determine the treatment adherence level.

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Procedures

The procedures for this project was performed and conducted by the co-investigator, Faraneh Heydari. The co-investigator met with the care providers and the office staff to educate them about the procedure and the purpose of the study. An agreement between the co-investigator and the healthcare provider was made to conduct the study on the Farsi speaking LEP patients visiting the office, who were willing to participate in the study.

The co-investigator attended one office staff meeting to educate the staff about the purpose and procedures of the study. The content of the educational meeting for the staff is provided in Appendix A. Recruitment flyers in both English and Farsi languages describing the study purpose were distributed to the Farsi speaking LEP patients who visited the Podiatry office (Appendix B). The co-investigator recruited Farsi speaking LEP patients who visited the office for foot pain and who were willing to participate in the study project. The co-investigator informed the participants on the purpose of the study and the benefits of using interpreter services in the Farsi language.

The co-investigator functioned as a professional Farsi medical interpreter for each participant during the office visit. Participants were instructed to identify their pain severity level using the Wong-Baker Faces Pain Rating Scale (Figure 1). The participants were asked to identify their pain level during the initial visit and during the follow up visit. Using EMR, the participant's attendance to the first follow up visit (as recommended by the care provider) was monitored. Patients who did not show up for the follow up visit received a phone call from the co-investigator to identify their level of pain.

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Implementation

Verbal instruction was provided in the Farsi language to educate patients about the benefits of utilizing a medical interpreter while receiving care and the purpose of the study project. The verbal education content, which was the same educational content used to educate the office staff, has been outlined and is in Appendix A. Patients were educated verbally on how to use the pain scale and rate their pain level prior to the intervention. The co-investigator participated as the Farsi medical interpreter for Farsi speaking LEP patients during their office visit and interpreted the conversations between the care provider and LEP patients. Participants were asked to state their pain level during the initial visit and at the first follow up visit. Participants who did not attend the follow up visit received a phone call from the co-investigator to rate their pain level.

Analysis

The Statistical Package for the Social Sciences (SPSS) version 24.0 software was used to enter and store data and for data analysis. Descriptive analyses were completed to determine the frequencies for the categorical variables and to calculate the means and standard deviations for the continuous variables.

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Results

Participant's Characteristics

The study was conducted from June 12th to August 31st, 2017 in the Podiatry office. A total of 16 Farsi speaking LEP patients were recruited. The sample size included adults between the ages of 30 to 85 years old ($\bar{x}=56.75 \pm 14.13$). Tables 2 and 3 describe the participants' demographic data and conditions causing foot pain and the pain management strategies (Table 2). Participants had foot pain caused by a variety of podiatry conditions. Most common conditions included post-surgical pain (25%) followed by plantar fasciitis (18.8%) (Table 2). Each condition had its specific treatment and management regimen as prescribed by the Podiatrist. The most used pain management strategy included pain medication (62.5%), followed by shoe inserts (18.8%) (Table 2).

Association of English Proficiency and Adherence to Plan of Treatment

All participants received an in-person Farsi interpretation service during the podiatry office visit. Out of the 16 participants 12 (75%) showed up for the follow up appointment and 4 (25%) did not show (Table 4).

Association of English Proficiency and Pain Management

Thirteen out of 16 participants rated lower levels of pain during the follow up visit compared to their initial visit. The average pain level was lower during the follow up visit

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(\bar{x} =4.19 ± 2.29, 95% CI) compared with the initial pain level scores (\bar{x} =6.56 ± 2.03, 95% CI), (Mean Difference=2.38, 95% CI Upper Bound= 3.42, Lower Bound=1.33) (Table 5).

Discussion

In this quasi-experimental study, using interpreter services for the Farsi speaking LEP patients yielded lower levels of pain and higher levels of adherence to the plan of care. The results indicated that most of the participants attended the follow up visit and adhered to the plan of care (Table 4). The results also indicated that using interpretation services during the office visit for the Farsi speaking LEP patients might have contributed to the decrease in the levels of pain and improved pain management (Figure 2).

The outcome of this study is consistent with the hypothesis that ineffective communication and language barrier may result in inadequate pain management and low compliance/adherence to the plan of care in LEP patients (14, 20). The study found that providing interpreter services during the office visit lowered the pain levels and helped the LEP patients understand the pain management strategy and apply the recommendations after leaving the care facility. The findings of this study are consistent with the previous study in which adult LEP patients who received interpretation services reported better pain management (17). The study results are also consistent with the Jimenez and associates study (2014), which determined that more frequent use of professional interpreters is associated with more effective pain management between LEP patients (20).

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The LEP patients' adherence outcome of this study is in agreement with the previous research studies in which using medical interpreters increased LEP patients' adherence/compliance to the treatment plan, which was measured by a significant increase in making follow up visits to continue the plan of care (14). In addition, the higher percentage of appointment adherence is consistent with the previous study by Parker and associates (2017), which revealed that using interpretation services during care for LEP Latino patients with diabetes increased the patients adherence level to treatment and made a significant improvement in their glycemic control (13).

Interpretation services could be offered via in-person, telephone or videoconference methods. This study focused on providing interpretation for the Farsi speaking LEP patients via in-person interpretation method. Different methods of communication affect the LEP patient's perception and his/her overall medical encounter experience (27).

Utilizing in-person interpretation for LEP individuals is linked to better understanding and higher perception about the medical condition and treatments (28). In addition, in-person interpretation has been rated as the most preferred method of communication by LEP patients, care providers and the interpreters (27, 28).

This project was a low-risk intervention that is required by law to be offered to LEP patients (29). Although there have been many previous studies regarding LEP patients' health disparities and importance of language assistant services, this is the first study that specifically addresses Farsi speaking LEP patients.

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Limitations

The study sample size was small based on the number of the Farsi speaking patients that visited the office. Although the patient may have been applying the treatment correctly, environmental factors, such as prolonged standing, may contribute to an increase in pain levels. The difference between the conditions causing foot pain and the treatment strategies could also create limitations in the study since each condition has a unique treatment plan, course of care and recovery time.

Clinical Implications

The result of this study helped the Sutter Health organization to value the importance of using interpretation services for LEP patients even more than before. The result also emphasized the importance of addressing the LEP patients' language barriers to access equal care. As part of the organization's commitment to provide equal and quality care for all patients, the organization and the Podiatry office are now more proactive in identifying LEP patients and offering and providing language assistance services such as in-person or telephone interpreter services to these patients.

Recommendations

It is beneficial to further study the effectiveness of utilizing telephone or videoconference interpretation services for LEP patients and to compare the effectiveness of using in-

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person vs. telephone or virtual interpreters in outpatient office settings. There is always a need to implement more studies to identify and address the health disparities and inequalities that LEP patients face every day due to language barriers and ineffective communication.

Conclusions

The outcomes of this study revealed the importance of using interpretation services during outpatient office visits for the Farsi speaking LEP patients. Using professional medical interpreters during care resulted in better pain management and higher adherence rate to the plan of care in LEP patients.

The result of this study may help improve the LEP patient's adherence to a pain management plan. It is also possible that the results of this study contribute to the development of improved practices for the implementation of interpreter services in ambulatory care settings.

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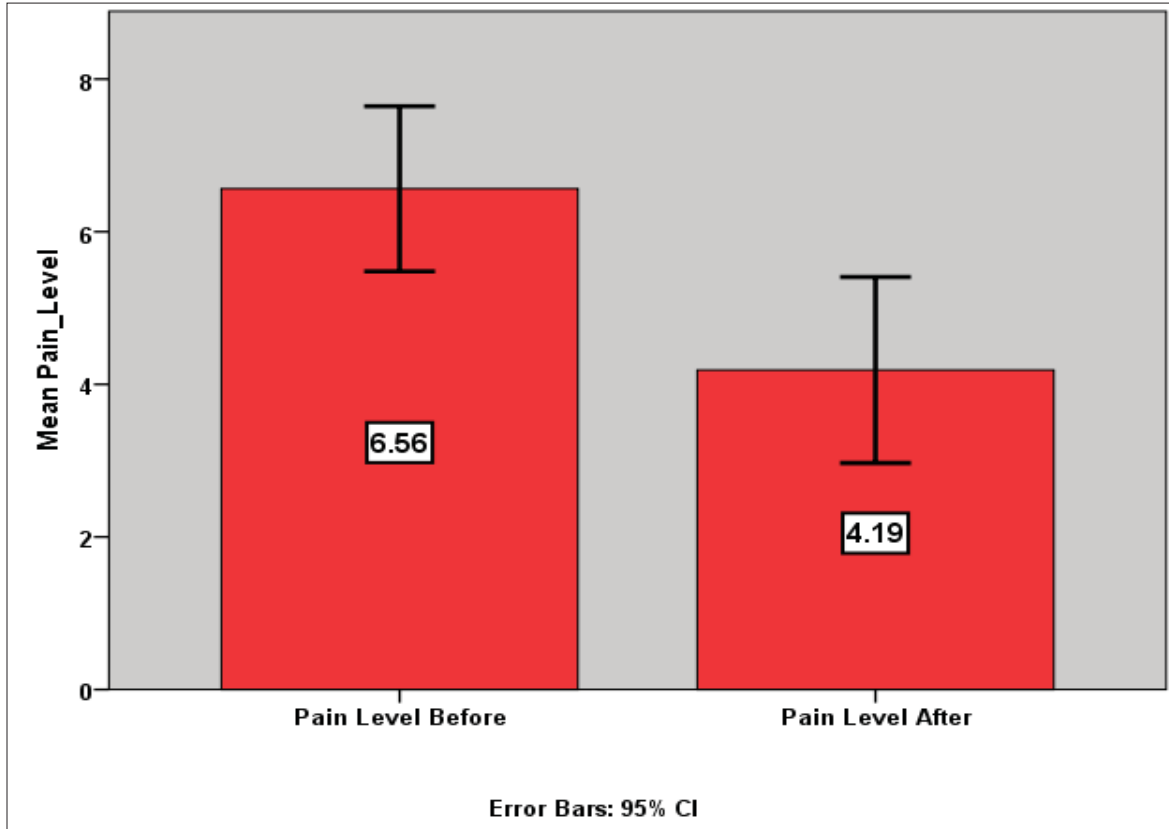
Figure 1: Wong-Baker Faces Pain Rating Scale



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Figure 2: Initial Pain Levels vs. Follow-up Pain Levels



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Table 1: Variable Table/ Demographic Data

Variable	Operational Definition
Pain level	(Using the Wong-Baker pain rating FACES of Pain and the corresponding 0-10 numbers that is associated with the faces) Patient reports at the office appointment and during the follow up appointment
Appointment adherence	(Attended the first follow-up visit as recommended by the care provider, Yes/No?) Data will be collected from the EMR
Age	(Current age calculated from enrollment –DOB) Data will be collected from the EMR
Education level	(High school graduate or less? Some college/assoc. degree? College graduate?) Self-reported
Years in United States	(Number of years lived in U.S.A?) Self-reported
Yearly income	(Below \$15,000? \$15,000-\$24,999? \$25,000-\$39,999? \$40,000-\$49,999? \$50,000 and above?) Self –reported
Marital status	(Married, Single, Others?) Self-reported
Employment status	(Full time Part time Not employed outside of the home) Self-reported
Prolonged standing required for current job	(Current job? and if current job requires prolonged standing hours? Yes/No? Not applicable?) Self-reported
Conditions causing foot pain	Post surgical? Plantar fasciitis? Flatfeet? Soft tissue inflammation? Ingrown toenail? Arthritis? Corn and calluses? Other? Self-reported
Pain Management strategy/ activity?	Pain medication? Exercise? Soaking? Stretching?

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	Shoe insert? Other? Self-reported
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Table 2: Demographic Data and Frequency

Variable	Frequency	Percentage%
Education level		
High school or less	8	50%
Some college or AA	6	37.5%
College graduate	2	12.5%
Income		
Below 15K	2	12.5%
15K-25K	3	18.8%
25K-40K	4	25%
40K-49K	5	31.3%
50K and above	2	12.5%
Marital Status		
Married	12	75%
Single	2	12.5%
Other	2	12.5%
Employment		
Full time	5	31.3%
Part time	5	31.3%
Not employed outside of home	6	37.5%
Prolonged standing job		
Yes	8	50%
No	2	12.5%
N/A	6	37.5%
Condition		
Post surgical	4	25%
Plantar fasciitis	3	18.8%
Flatfeet	1	6.3%
Soft tissue inflammation	2	12.5%
Ingrown toenail	2	12.5%
Arthritis	2	12.5%
Corn and calluses	2	12.5%
Pain management strategy		
Pain medication	10	62.5%
Soaking	2	12.5%
Stretching	1	6.3%
Shoe insert	3	18.8%

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Table 3: Demographic Data

Variable	Mean	SD
Age	56.75	14.13
Years lived in USA	6	2.78

Table 4: Appointment Adherence Rate

Follow up Appointment	Number	Percentage %
Attended	12	75%
Did not attend	4	25%
Total	16	100%

Table 5: Initial Pain Levels vs. Follow up pain Levels

Variable	Mean	SD
Pain Level 1	6.56	2.03
Pain Level 2	4.19	2.29

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Appendix A

Educational Outline for the Office Staff and Participants

Research Purpose and Procedure Outline:

Purpose and Background of the research study:

- Identifying LEP patients
- Importance of utilization of interpreter services for LEP patients
- Benefits of providing interpreter services
- Improved pain management and treatment compliance when interpreter service is used during care
- The purpose of the study: To implement the use of interpreter services during office visits with Farsi speaking LEP patients to improve pain management and adherence with follow-up appointments
- Education on protecting the participant's confidentiality, the content of the Experimental Subject's Bill of Rights and the consent form

Procedures:

- Participants recruitment
- Participants education about the purpose and procedure
- Initial visit: rating current pain level using the Wong-Baker Faces pain rating scale tool
- Educating participants on how to use the Wong-Baker Faces pain rating scale tool
- Intervention: providing interpreter during office visit to interpret conversation between care provider and LEP patients
- Follow up visit: rating pain after intervention
- Tracking patient's attendance to the first follow up visit as recommended by the care provider

This Original Article has been reviewed, accepted for publication, and approved by the author. It has not been copyedited, proofread, or typeset and is not a final version.

Appendix B

Recruitment Flyer (English)

If you are a second language Farsi-speaking patient and you have trouble understanding and speaking in the English language with your Podiatrist! Please let us know!

You may be eligible to participate in a research study for Farsi-speaking Limited English Proficient (LEP) patients.

Investigators at Merritt University are conducting a research study to learn about the effects of utilization of interpreter services among Farsi-speaking podiatric patients and adherence to the pain management plan.

Research is Voluntary!

If you decide to participate:

1. You will be educated about the purpose and procedure of the study.
2. We will provide you with a Farsi-speaking medical interpreter who can help you understand and communicate with your Podiatrist during your office visit.
3. You will be asked to rate your pain level during the initial visit and during your first follow up visit. If you are not able to attend your follow up visit you will be contacted via phone to provide your pain level information.
4. We will also track your follow up appointment attendance using Electronic Medical Record.

Potential benefits if you participate in this study:

- Effective communication with your Podiatrist
- Better understanding of the treatment plan/recommendations
- Improved adherence to the treatment plan
- Improved pain level

To participate in this research study or for more information, please contact Faraneh Heydari at (925) 234-5351 or email Faraneh_H@yahoo.com.

